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## THE

# CYCLOPEDIA; 

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OF
arts, sciences, and literature.

VOL. XX.

Printed by A. Strahan,

## THE

## CYCLOPÆDIA;

OR,

UNIVERSAL DICTIONARY

OF

# Arts, Seiences, and siliterature. 

BY

ABRAHAM REES, D.D. F.R.S. F.L.S. S.Amer.Soc. WITH THE ASSISTANCE OF EMINENT PROFESSIONAL GENTLEMEN.

ILLUSTRATED WITH NUMEROUS ENGRAVINGS, BY THE MOST DISTINGUISHED ARTISTS.

IN THIRTY-NINE VOLUMES.
VOL. XX.

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L O N D O N:
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Printed for LONGMAN, HURST, REES, ORME, \& BROWN, Paternoster-Row, F.C. AND J. RIVINGTON, A. STRAHAN, PAYNE AND FOSS, SCATCHERD AND LETTERMAN, J. CUTHELL, CLARKE AND SONS, LACKINGTON HUGHES HARDING MAVOR AND JONES, J. AND A. ARCH, CADELL AND DAVIES, S. BAGSTER, J. MAWMAN, JAMES BLACK AND SON, BLACK KINGSBURY PARBURY AND ALLEN, R. SCHOLEY, J. BOOTH, J. BOOKER, SUTTABY EVANCE AND FOX, BALDWIN CRADOCK AND JOY, SHERWOOD NEELY AND JONES, R. SAUNDERS, HURST ROBINSON AND CO., J. DICKINSON, J. PATERSON, E. WHITESIDE, WILSON AND SONS, AND BRODIE AND DOWDING.

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# CYCLOPADIA: 

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OF
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## K I L N.

KILN, in Agriculture, a kitd of oven or flove for admitting heat, in order to dry fubltances of various kinds, as corn, nalt, hops, \&c. It alfo fignifies a fabric or building conftructed for the purpole of burning lime-ftone, chalk, and other calcareous ftones, into lime. Kilns are of different kinds, and formed in different ways, according to the purpofes for which they are defigned.

KilN-Afpes, the afhes made in kilns where wood, ftraw, furze, \&cc. are burnt. Thefe athes are ufeful as manure for almoft any kind of foil, but efpecially fuch as poffefs much vegetable matter. In the weftern dill ricts, the farmers fift them over their corn and grafs; but this muft not be done in windy weather, becaufe they are fo very light, that they would eafily be blown away and loft. They are found to fucceed beit when laid on jutt before rain falls.' See Asies.

## Kila, Brick. See Brick-Kiln and Brick.

Kilv, Hop, a flove or kiln conftructed for the purpofe of drying or ftoving hops. See Hop and Oast.

Kilx, Lime, a fort of kiln conftructed for the purpofe of burning varions kinds of calcareous fubtances, fuch as lime-ftone, chalk, fhells, \&c. into lime. They are built of different forms or fhapes, 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 fetched from a dittance, and where the fuel is coals, and alfo expenfive, the form of a kiln is moftly that of an inverted cone, a form which has its inconveniencies; but in diftricts where the art of burning lime is practifed with fuperior attention and correctnefs, the form has of late years been gradually changing from conical to elliptical. But, in his opinion, "the beft form of a lime furnace, in Vol. XX.
the eftablifhed practice of the prefent day, is that of the egg placed upon its narrower end, having part of its broader end ftruck off, and its fides fomewhat compreffed, efpecially 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 fuppofed that "two advantages are gained, by this form, over that of the cone. By the upper part of the kiln being contracted, the heat does not fly off fo frecly as it does out of a fpreading cone. On the contrary, it thereby receives a degree of reverberation, which adds to its intenfity." But the other, and itill more valuable effe: 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 "bang" upon the fides of the kiln, and either form a dome at the bottom of the burning mafs, with a void fpace beneath it, thereby endangering the fructure, if not the workmen employed; or, breaking down in the centre, form a funnel, down which the under-burnt ftones find their way to the draft-holes." And "the contraction of the lower part of the kiln has not the fame effect; for, aftee the fuel is exhautted, the adhefion ceaies, the mafs boofens, and, as the lime cools, the lefs room it reauires: It therefore runs down freely to the draft-holes, notwithltanding the quick contraction of the bottom of the kiln or furnace."

And, laftly, that, " with refpect to the lime-furnace (which is, he thinks, entitled to the mof fedulous attention of agricultural chemitry), the fire requires to be furnifhed B with.
with a regular fupply of air. When a kiln is firf lighted, the draft-holes afford the required fupply. But after the fire becomes ftationary, in the middle, or towards the upper part of the kiln (efpecially of a tall kiln), while the fpace 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, efpecially in front, over the draft-loles. But thefe convey the air, in partial currents, to one lide 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 mals; and, morcover, 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 ttones taken jointly (air paffing more freely among large than among fmall flones), and that the required fupply of air fhould be wholly admitted at the draft-holes. By a fliding or a thifting valve, the fupply might be regulated, and the degree of heat be encreafed or diminihed, at pleafure, " according to circumftances.

The molt 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 neceffary; and afterwards building up the fides, or not, according to the circumflances of the cafe: 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 efcaping; and the fire lighted at the bottom, and the whole of the contents burnt, in a greater or lefs fpace of time, in proportion to the nature of the flone, and the quantity that is contained in the kiln. From the circumflance of the top parts of thefe kilns, in fome diftricts, being covered over, and the fides fometimes built up with fods, they are termed fod-kilns, in order to diftinguifh 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 neceffary. Thefe kilns are obvioufly 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 recourfe to. Where lime is much wanted, either for agriculture or other purpofes, they therefore ufe perpetual kilns, or what are more generally known by the name of drasw-kilus. Thefe, as all lime-kilns ought to be, are, the author of Modern Agriculture fays, fituated by the fide of a rifing bank, or fheltered by an artificial mound of earth. They are generally built either of ftone or brick; but the latter, as being better adapted to ftand exceffive degrees of heat, is confidered as preferable. The outfide form of fuch kilns is fometimes cylindrical, bat more generally fquare. The infide fhould be formed in the thape of a hogthead, or an egg, opened a little at borh ends, and fet on the fmalleft; being fmall in circumference at the bottom, gradually wider towards the middle, and then contracting again towards the top. In kilns confructed in this way, it is obferved, fewer coals are neceffary, in confequence of the great degree of reverberation which is created, above that which takes place in kilns formed in the fhape of a fugar-luaf reverfed. Near the botton, in large kilus, two or more apertures are made : thefe are fmall at the infide of the kiln, but are floped wider, both at the fides and the top, as they extend towards the outfide of the building. The
ufes of thefe apertures are for admitting the air neceffary for fupplying the fire, and alfo for permitting the labourers to approach with a drag and Govel, to draw out the calcined lime. from the bottom of the kiln within, in fome cafés, a fmall building, called a horfe, is raifed in the form of a wedge, and fo conilructed as to accelerate the operation of drawing out the burned lime.ftone, 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 clofe 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-fone, which is previoully 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 intenfe as poffible. The fire is then lighted in the apertures; and when the lime-tlone towards the bottom is completely calcined, the fuel being confiderably exhaulted, the lime-fone at the top fubfides. The labourers then put in an addition of limethone 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-tone is burned with coals from $2 \frac{1}{2}$ to $3 \frac{1}{2}$ bufhels, on a medium, 3 bufhels of calcined lime-ftone are produced for every buftel of coals ufed in the procefs.

A lime-kiln of this fort is defcribed in count Rumford's Effays, which is in poffeffion of the Dublin Society, as well as the principal objects that ought to be had in view in conftrueting of the kiln pointed out : the firlt of which is, "to caufe the fuel to burn in fuch a manner as to confume the finoke, which has here been done by obliging the fmoke to defcend and pafs through the fire, in order that as much heat as poffible might be generated. Secondly, to caufe the flame and hot vapour, which rife from the fire, to come in contact with the lime-ftone by a very large furface, in order to economize the heat, and prevent its going off into the atmofphere ; 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 procefs of burning lime perpetual, in order to prevent the wafte of heat which unavoidably attends the cooling of the kiln, in emptying and filling it, when, to perform that operation, it is neceffary to put out the fire.
"And, fourthly, to contrive matters fo, that the lime in which the procefs of burning is juft finifhed, and which of courfe is fill intenfely hot, may, in cooling, be made to give off its heat in fuch a manner, as to affift in heating the frefh quantity of cold lime-ftone with which the kiln is replenifhed, as often as a portion of lime is taken out of it.
"To effectuate thefe purpofes, the fuel is not mixed with the lime-ftone, but is purned in a clofe fire-place, which opens into one fide of the kiln, fome diftance above the bottom of it. For large lime-kilns on thefe principles, there may be feveral fira-places all opening into the fame cone, and fituated on different fides of it; which fire-places may be conitructed and regulated like the fire-places of the furnaces ufed for burning porcelain.
"At the bottom of the kiln there is a door, which is occafionally 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,

## K I L N.

the empty fpace in the upper part of the kilh, which is occafioned by this fubtraction of the burned time, is immediately filled up with fref lime-itone.
"As foon as a portion of lime is taken away, the door by" which it is removed mult be immediately fhut, and the joinings well clofed with moift clay, to prevent a draft of cold air through the kiln. A fmall opening, however, mult be left, for reafons which are explained below.
"As the fire enters the kiln at fome diftance 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 barned; and as this lime is intenfely hot, when, on a portion of lime from below being removed, it defcends into this part of the kiln, and as the air in the kiln, to which it communicates its heat, nwuft arife upwards in confequence of its being heated, and pafs off through the top of the kiln, this lime, in cooling, is by this contrivance made to affift in heating the frefh portion of cold limeoflone, with which the kiln is charged. To facilitate this communication of heat from the red-hot lime juft burned to the lime-ftone above in the upper part of the kiln, a gentle draft of air through the kiln, frem the bottom to the top of it, mult be eltablifhed, by leaving an opening in the door below, by which the cold air from without may be fuffered to enter the kiln. This opening (which thould be furnifhed with fome kind of a regifter) mult be very fmall, otherwife it will occafion too ftrong a draft of cold air into the kiln, and do more harm than good; and it will probably be found bell to clofe 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 reprefented in Plate (Kiln) Agriculture, fig. I. is on a fcale of 15 feet: its internal diameter below, two feet; and above, nifie 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-athes. To give greater ftrength to the fabric, thefe 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 reprefented nearly full of coals, and the flame pafling off laterally into the cavity of the kiln, by an opening made for that purpofe 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 regitter for regulating the fire. A fection of this plate, and of the chain by which it is fupported, are fhewn in the figure: $b$ is an opening in the front wall of the fire-place, which ferves occafionally for cleanfing out the fire-place, and the opening by which the flame paffes from the fire-place into the kiln. This opening, which muft never be quite clofed, ferves likewife for admitting a fmall quantity of air to pafs horizontally into the fire-place. A imall proportion of air, admitted in this manner, has been found to be ufeful and even neceffiary in fire-places, in which, in order to confume the fmoke, the flame is made to defcend. Several fmall holes for this purpofe, fitted with conical ftoppers, may be made in different parts of the front wall of the fire-place.

The bottom of the firc-place is a grate conftructed of bricks placed edgeways, and under this grate there is an afhpit; but as no air mult be permitted to pafs up through this grate into the fire-place, the allh-pit door, $c$, is kept cualtantly clofed, being only opened occafionally to remove the aftes $:^{\circ} d$ ' is the opening by which the lime is taken out
of the kiln; which opening muft be kept well clofed, in order to prevent a draught of cold air through the kiln. As only as much lime muft 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 irto 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 meafure for it. And while the lime is removing from the bottom of the kiln, frefh lime-ftone fhould be put into it above; and dure ing this operation, the fire may be damped by clofing the top of the fire-place with its iron-plate. Should it be found neceffary, the fire, and the diftribution of the heat may, in burning the lime, be further regulated by clofing more or lefs the opening at the top of the lime-kiln with a flat piece of fire-ltone, or a plate of caft-iron. The double wallis of the kiln, and the void fpace between them, as alfo the horizontal layers of bricks by which they are united, are clearly and diftinctly expreffed in the figure in the plates.

This method of conftructing lime-kilns, though ingenious and philofophical, is probably much too expenfive for general ufe.

It is a common practice to burn lime-fone with furze in fome places. The kilns which are made ufe of in thefe cafes are commonly known by the denomination of fame-kilas, and are built of brick; the walls from four to five feet thick, when they are not fupported 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 largeft pieces of limeflone, the whole breadth of the kiln, and oppofite to the arches in the front wall. When thefe arches are formed, the lime-ftone is thrown promifcuoufly into the kiln to the height of feven or eight feet, over which are frequently laid fifteen or twenty thoufand bricks, which are burned at the fame time with the lime-ftone. When the filling of the kiln is completed, the three arches in the front wall-are filled up with bricks almoft to the top, room being left in each fufficient only for putting in the furze, which is done in fmal! quantities, the object being to keep up a conitant and regular flame. In the fpace 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 thoufand bricks, are thoroughly calcined. Kilns confructed in this way may be feen near Wellingborough, in Northamptonfhire, 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 diftance from coal, it is alfo a common practice to burn lime-ftone with peat; and, confidering the rude ill-conftructed kilns which are ufed for he purpofe, it is aftonifhing with what fuccefs the operations are performed. In fome of thefe diftricts, it is ftated that lime-flone is fufficiently calcined with peats, laid fratum fuper firatum, 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 expofed fituation of many of thefe kilns, the wafte of fuel is immenfe. But the moft common method of burning lime-ftone with peat, is in kilns conltructed fomewhat fimilar to thofe in the diftricts where furze is ufed as the only fuel: There are in general only two arches, or fire-places, and the peats are thrown into the bottom of thefe arclise, the fronts of which are feldom clofed up, by which means thie wind has.

- fren great influence in retarding the operation, and frequently prevents the complete calcination of the lime-ltone. An improvement might, it is fuppofed, be made on thefe $^{2}$ kilus at a very trifing expence: if an iron grate were laid acrofs the bottom of the arch, with a place below for the afhes to fall down, and the front of the arch clofed up by a door made of calt-metal, one-third of the fuel might be faved, and the operation performed in a fhorter 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 conftructing his kiln in the mannuer fhewn 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 fhovel 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 exadty of the fame dimenfions. On the mouth of the kiln a cap is placed, built of long flones, and expeditioufly contracted, about feven or cight fcet high. In the building of the cap, on one fide of the Rope, the mafon 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 fquare, 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 clofe fhut. The outfide wall mult be three feet at the bottom to batter up to two feet at top, and made at fuch a diflance from the infide 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 fplit, and the ftrength of the fire be thereby exhautted. At eight feet high from the eye of the kiln, two flues flould be carried through the front wall, through the packed clay, and to the oppofite fides of the kiln, to give power to the fire." It is obferved, that with this kiln, he has produced one-third more lime from a given quantity of fuel; and fones of bad quality will be here reduced into powder, and may be put into the kiln without the neceffity of being broken fo fmall as is ufual. 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 thould be proportioned to the height to which it is carried up.

And it is further ftated, as another application of this for: of coatrivance, that "for feveral years he has made nfe of a fmall kiln in an outfide kitchen, the height nine feet, the dimeter three feet 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 cook, which fupplied the family with conftant boiling water; for the two others, he had tin veffels made to fit the infide with clofe covers, in which meat and vegetables with water were placed and put into the two fmaller boilers, which never had any water, but hud clofe covers. The tin boilers were heated fooner than on the Atrongeit fire, and when the meat, \&cc. were fulficiently dreffed, the whole was taken out of the metal boilers. At one frete he had an oven placed for roafting and hoiling meat; the bottom was metal of twenty-fix inches diameter, and ore 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, fhut clofe by a metal door of eighteen inches fquare, 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 efcaped through the half-inch plate, though not near the fire, was fufficient to do all fmall puddings, pies, breakfaft-cakes, \&c. \&c. The meat in the large oven was placed on an iron frame which turned on a pivot and ftood on a dripping-pan, and was turned by the cook each half hour. And over the kiln he had a tiled ftage for drying corn, and a chimney at one fide, with a cawl on the top, which carried off all fteam and fulphur: a large granary was altached 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 dreit for fifty men, without interfering with his family bufinefs in any great degree.

There is another form of lime-kiln, which anfwers extremely well for general ufe, reprefented at fig. 3. in the fame plate. This is capable of being built without any very confiderable expence.

It has been found, by experience, in fome of the northern diftricts, that lime-kilns are rendered much lefs liable to crack and burt 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 purpofe of drying malt or any kind of grain upon. In the confruction of kilns of this fort many improvements have lately been made. A defcription of a kiln of this kind by Mr. Pepper, of Newcaftle-under-Line, has been given, in which fig. 4 . is the ground plan, fuppofed to be twenty feet fquare, but, if requires larger or finaller, by following the fame proportion, it may be made to any fize or fituation. The dark fhaded walls rife four feet high, to put the reflector upon over the fire, and alfo what the fide arches Itand upon, the brick piers, that carry the fpark-ftone, and bearcrs that the tiles lie upon. Letter $a$, the fire-grate, which lies nine inches below the bottom edge of the reffector; $b_{\text {, }}$, bottom edge of the reflector; $c, c, c, c$, brick pillars nine inches fquare, that carry the fpark-fone ; $d, d, d, d, d, d$, brick pillars nine in lies fquare, that carry the bearers for the floor tiles to lie upon; $e$, fhews the bottom of the fide arches on each fide of the kiln; $f$, exhibits the fpace 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 ftand upon. For. 5 . is a fection of it; $g$, fhews the fection of the wall which the fide arches ftand upon ; $b$, the door to go to the fire-place; $i$, the reflector of calt iron that covers the fire; $k$, fnall door in the reflector to feed the fire; $l, l$, the ears of the reflector that the iron pipes are fitted upon, which convey the fmoke, \&cc. from the reflector round the kiln, to the chimney; $m$, what is commonly called the fpark-ltone; it prevents the kilm from being too hot in the middle, and affilts in fpreadmg the heat to the outfides; $n$, bearers of callimon or wood, that carry the kiln floor; 0,0 , thew the ends of the ribs that carry the tiles ; $p$, the kiln tiles, that the malt lies upon; $q$, the fteam-pipe that conveys the fteam from the malt; $c, c$, brick pillars nine inches fquare, that carry the fpark-ftore; $d, d$, brick pillars nine inches fquare, that carry the bearers for the floor tiles to lie upon ; e, e, fhew the arches on each fide the kiln; $u u$, denotes the fituation of the pipes under the floor. And fig. 6. is a plan of the kiln floor, and fhews the ribs that the kiln-tiles lie upon: 0,0 , the calt 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
pillars that carry the bearers, \&ce; B, the reflector that covers the fire, which is of caft iron, about an inch thick, hollow, and on a femicircular plan, as fhewn in the figures; $r, r$, the iron pipes that convey the fmoke 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 fupported by iron ftays from the fide arches; $f, f$, the ends of the iron pipes that go into the chimney; $t, t$, regifters 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 fame fort, invented by Mr. Jofeph Coppinger, of Harbour View, near Cove, Ireland, is reprefented at fog. 8. This is Itated to be particularly adapted to the ufe of farmers, who, in wet feafons, often lofe quantities of grain for want of fuch convenience. The advantages it appears to poffefs above the kilns now in common iife, are many ; firft, it may be erected for one-tenth of the expence, if the value of the feparate buildings be taken in, which are now almolt invariably allotted for this purpofe; ficondly, any kind of fucl may be ufed without prejudice to the malt or corn to be dried in it : thirdly, the heat (by the conftruction of the flues) will be more regularly and evenly diftributed without any waite, as at prefent: fourthly, the health of the people attending, will not, as at prefent, be expofed to certain injury, by always breathing and fleeping in a heated and unwholefome atmofphere, as their beds will be placed in a fhed on the outfide of the building. This, in his mind, is the mont important part of the plan, and highly worthy the attention of every humane and confiderate employer in this way: fifthly, this conitruction of a kiln may be erected on a loft or ground floor. If in the latter fituation, fufficient clevation fhould be given to the fre-place, fo as not to impede the draught. Thefe 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 cafe of a new building, to carry up the flues of the chimnies in the thicknefs of the walls. In a houfe already built, they may be carried up either infide or outfide the building: $d$, the fire-place, which may be divided, or in one, jult as defired, by which the half or the whole may be heated, as is moft convenient.

It is fated that kiln tiles eighteen inches fquare, and two inches thack in the folid, with a lapping of half an inch broad and one inch deep round the edge of each tile, are propofed for covering the flues, which, if fairly calt, may be laid dry, without mortar. If it thould be difficult, or too expenfive, to procure tiles of eighteen inches, nine inches can be made to anfwer. The flues are propofed to be divided by a brick, on edge, fo as that every eighteen-inch tile will covet two flues. The breadth of the flees may be fix inches and a half, and ten inches high. This proportion, it is hoped, will be found to anfwer in moft cafes; but it may be varied according to the better judgment of the party erecting. The fides and bottoms of the flues fhould be plaitered. The platform of this kiln fhould, in all cafes, be well rammed with earth, aud made perfectly level before lay ing out the fues. Iron grate-doors are intended to be hung on hinges, in a recels, at the mouth of each flue, to prevent them being choked with large pieces of cinder, or other fubftances. It is alfo intended that thefe doors fhould fhut and open at pleafure, as may be found neceflary in carrying on the bulinefs.

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

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. 'I'his is of a very plain ftructure ; its hearth or floor is made of one large ftone, and this is covered with another, fupported at fix inches height above it. The uppermoit has a hole is the middle, through which the ore is poured on the under one; and when it is diftributed over it in a bed of three or fout inches thick, it is burnt by means of a fire of furze buthes kept underneath, and communicating with the fpace betwern the two ftomes by an aperture bebind; the lower ftone nu: 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 roated ore is thruft off the flone by the rake into the aperture behind, through which it falls into the open fire. The fire is kept up with new bufhes, and there is a new bed of ore thrown in at the hole above. Thus the fire is kept up day and night, and fup. plics of frefh ore made through the hole by the black tin brought from the buddles of wafhing troughs. When the lower part of the furnace is filed up with the ore thrown into it, there is a hole behind the kiln, through which this ore, and the coals and afhes, are all raked out together, and left in the open air to cool; and the whole mafs thus faked 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 wafled again before it is put into the melting furnace. It is obferved, that the different ores require for this laft operation a different proportion, and different fort of fuel. The moortin, that is, fuch ore as is dug up in the moory countries. melts beit with moor-charcoal charred; but that dug on the hills is found to run beft with a mixture of charcoal and peat in equal quantities. The ftones ufed for the kilns are always moor-ftone. Phil. Tranf. Ne 69.

Krla, in Ship Building, a convenience for boiling or Atcaming planks to make them pliable. A boiler-kıln is either made of fheet-copper, bottom and fides rivetted tugether, or the bottom of theet-copper and the fides of lead, rivetted and foldered together. This is fixed in a body of brick-work, and under each end, or in the middle, are furnaces to caufe the water to boil after the planks are in. The upper part, to preferve the fteam and facilitate the boiling, is inclofed by thutters, opening by hinges and fmall tackles.

|  |  | feet. in. |  |
| :--- | :--- | :--- | :--- |
| Long - | - | 40 | 0 |
| Broad at the ends | - | - | 4 |
| 3 |  |  |  |
| Deep - middle | - | - | 6 |
| 0 |  |  |  |

And weighed 53 cwt . 3 tt . $44^{\mathrm{lb}}$.
A fteam-kiln is a trunk compofed 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 diftances, which anfwer the purpofe of bearers, whereon the planks relt while fteaming. It is fupported, about four feet above the ground, upon a ftrong 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, iffuing into the trunk wherein it is confined, enters into the pores of the plank, and renders it very pliable.

BII.ONDA:

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 confulting the king of Loango. The chief article of trade is clephants' teeth. Kelingo, the capital, is fituated on the coait; 30 miles N.W. of Loango. S. lat. $4^{\circ} 25^{\prime \prime}$.

KILPATRICK, Old and New, two parimes in the weft of Scotland, and county of Dumbarton. Old Kilpatrick is fituated on the banks of the river Clyde, about five miles caft 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 molt pleafantly fituated villages in Scotland, being directly oppofite to the pleafure grounds of Erfkine-houfe, the refidence of lord Blantyre, the fuperior of the parifh. The parochial Itipend being paid in grain is confidered to be one of the bett in Scotland. The church is a very ancient building of the Gothic kind, and here are faid to be depofited the remains of the tutelar faint of Ireland, from whence the village takes its name. There is an extenfive 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. Thofe engaged in the cotton manufacture are employed from Glafgow and Pailey. New Kilpatrick is about four miles dittant 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 Garfcule, bart. lord prefident of the Court of Seffion.
KILSYTH, a town of Dumbartonfhire, bordering on Stirling fhire, in Scotland, about thirteen miles north-eatt from Glafgow, upon the old or north road from Edin. burgh to Glafgow, and near the banks of the great canal; or Forth and Clyde navigation. The country about Kilfyth is level to the fouth, eaft, and weft, but very mountainous to the north. The valley is in general fine arable land, and the cultivation is now extremely good and moit rapidly improving, for which there are the greatelt facilities afforded by the inexhaultible fupplies of coal and lime, which are found in every part of the neighbourhood. Kilfyth is of no importance as a commercial or manufacturing place, its chief manufacturing trade being confined to the labour of operative tradefpeople in weaving, tambouring, and fewing muflins for the manufacturers of Glafgow. There are, however, fome extenfive printfields at no great ditance. Kilfyth gave the title of an earl to an ancient and noble family of Scotland, but the title and eitate were forfeited by the rebellion, in the jear 1715. Cumbernauldhoufe, in the neighbourhood, is the refidence of lord Elphinftone, the chief perfon 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 beloag to fir Charles Edmonftone, of Dunleath.

KILTZESTI, a town of Walachia, on the Tifmana ; 12 miles S.S.W. of Tergofyl.

KILWARA, a town of Hindoottan, in the circar of Rantampour; 32 miles S. of Suifopour.

KILWINNING, a fmall town and parih in Ayrfire, upon the coaft, about two or three miles from Irvine. It contains but little population, and is not remarkable for any particular ant or manufacture. The lands around it are chictly the property of the earl of Eglintown, whofe fuperb caltle is in the inmediate vicinity. Kilwinning is chiefly remark. able for the attention paid in it to the order of freemafonry, the lodge of Kilwinning claiming precedency, in peist of
antiquity, to every other lodge in Scotland, which, in their turns, affert their antiquity to be greater than thofe of England; the Scottilh mafons affuming the title of ancient as a mark of their priority, and refufing to acknowledge or receive thofe whom they denominate modern mafons until they have qualified themfelves to be reccived, by undergoing certain ceremonies of initiation only known to the brethren. The claim of the Kilwinning mafons is fo far admitted, that many of the lodges of Scotland receive charters of conflitution from them in place of the grand lodge of Scotland. Thefe lodges generally diftinguifh themfelves by adding the word Kilwinning to the title which they have affumed. They are numerous through every part of the country, and the circumltance alluded to creates no kind of rivalry or diffention between them and thofe conftituted by the authority of the grand lodge.

KILY Harrour, a bay on the W. coaft of the ifland of Celebes. S. lat. $1^{\circ} 33^{\prime}$. E. long. $119^{\prime \prime}$ 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 tranfparent fhorl.

KIMBOLTON, a fmall market town in the hundred of Leightonftone and county of Huntingdon, England, is fituated 10 miles from Huntingdon, and $\sigma_{3}$ from London. In the population return of 1800 , the number of houfes was itated 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 Kim-bolton-caftle, a feat of the duke of Manchetter, 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 Wingtield built new, fair lodgyns and galleries upon the old foundation of the caftle. There is a plotte now clene defolated, not a mile by weft from Kimbolton, called Caftlehill, 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, firit earl of Manchetter, expended large fums 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 moft fuperbly fitted up, and decorated with numerous paintings. Beauties of England, vol. viii.

KIMBULA, in Zoology, the name of a fpecies of crocodile found in the inand of Ceylon, and of a very beautiful variegation of colours, being mottled all over with extremely elegant black foots fhining with the glofs of black velver.

KIMCHI, David, in Biograpby, a learned rabbi, who acquired high reputation as a fcripture commentator, was a native of Spain, and flourifhed in the twelfth ard thirtcenth centuries. His father, Jofeph, was a bitter enemy to Chriftians, and wrote fome fevere treatifes againft them, but the fubject of the prefent article fpeaks of Chrillians with moderation, and he is highly celebrated for his philological labours, which reflect luftre on his name. His works are hold in the higheft eftimation by the Jews, who maintain that there is no true fcience without Kimchi. Moft of his commentaries have been incorporated in the great bibles of Venice and Batil ; and Pfeiffer, in the "Critica Sacra," remarks, that his grammar is like- the Trojan horfe, from which crowds of Chriltian grammarians have iffued forth, of whom thofe have fhewn themfelves moll learned who
have been moft perfectly acquainted with Kimchj. He took a decided part in the controverfy concerning the 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 Teftament, and from the bibles of Venice and Bafil have beens tranfplanted into the labours of Catholic and Proteftant commentators, and have unqueitionably afforded much valuable affitance in illuftrating the true fenfe and meaning of the Hebrew text. Kimchi's philological works confitt of a Hebrew Grammar, called "The Book of Perfection ;" and of a Hebrew Dictionary, intitled "The Book of the Roots." They were firt publifhed at Cullfantinople, but have been feveral times reprinted. Buxtorf made thefe works the foundation of his "Thefaurus Linguæ Hebrexe," and his "Lexicon Linguæ Hebrææ." Several of Kimehi's letters may be found in a volume of "The Letters of Maimonides," publifhed at Venice in the ycar 1545.

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 Buchareft.

KIMLASSA, a town of Hindooftan, in the country of Malwa; 35 miles S. of Chanderee. N. lat. $24^{\circ} 15^{\prime}$. E. long. $75^{3} 4^{2}$.

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 Tergovifta.

KLMOS, a lake of Ruffia, in the gevernment of Olonetz; eight miles N.W from lake Nuk, with which it communicates by a fmallifiver. N. lat. $64^{\circ} 45^{\prime}$. E. long. $30^{\circ}{ }^{1} 4^{\prime}$.

KIMOSSES, or Qumosses, a name given in the language of Madagafcar to a race of pigmies, or human beings of a diminutive fize, who inhabit the interior parts of the illand, and there form a confiderable national body. M. de Commerfon, cited by M. Rochon in his "Voyage to Madagafcar," gives the following account of themp. "The natural and dirtinctive character of thefe little men is to be white, or, at leaft, of a pa'er 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 fcarcely any breaits, except when they nurfe their infant offspring; fo that many of them are obliged to have recourfe to cow's milk, for feeding their new-born infants. As to intellectual faculties, the Kimofles furpafs all the relt of the Malegafhes, who are known to be very ingenious and adroit, though abandoned to the greateft indolence; but the Kinoffes are more active, and alfo more warlike; fo that their courage being, as it were, double in proportion to their fize, their neighbours have not been able to opprefs them, they have attacked them by a fuperiority of number amounting to 10 to I. Attacked as they have been by unequal weapons, (for they do not ufe gunpowder and mulkets, like their enemies, ) they have always fought courageouly, and fupported their independence among their rocks, which being difficult of accefs, 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
their backs, and fheep with long, broad, fat tails,) whiche ferve them as part of their food. They have no intercourfe with the different tribes of Malegafhes, who furround them, neiticer by trade, nor by any other method, becaufe they derive all they want from the territory they inhabit. As all the little Rkirmifhes or wars which take place between them and the other inhabitants of the ifland, have no other object than to carry off fome cattle or flaves, the diminutive fize of the Kimofles 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 fpare, and tie thern to the openings of the defiles which mult be pafled by the cnemy in penetrating into their mountains, of which, they fay, they make a voluntary facritice to the indigence of their elder brethren; but they proteft, at the fame time, to fight to the laft drop of blood, if they fhould penetrate further into their territories by force of arms. 'Their arms are the lance and the arrow, which they dart in the moft mafterly manner. At three days march from fort Dauphin, the natives fhew, with great complaifance, little elevations of ground refembling graves, which owe their origin, as they affirm, to a great maflacre of the Kimoffes, who were defeated in the open field by their anceftors." M. de Commerfon fays further, that he is able to certify, as an ocular witnefs, 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 obfervations, gave him the fatisfaction of fhewing to him, among his flaves, a Kimofs woman, about 30 years of age, three feet feven inches high, whofe complexion was one of the cleareft and brightelt he ever faw among the natives of the ifland. He remarked, that notwithtanding her low fize, fhe was very ftrong-limbed, not refembling a flender diminutive perfon, but rather a woman of common proportion, her defect of height excepted; her arms were long, and reached, without ftooping, the kneepan ; her hair was fhort and woolly; her phyfiognomy tolerably good, and more like that of the Europeans than of the people of Madagafcar. She feemed conftantly to fmile, her temper was fweet and complaifant, and fhe feemed, from the tenor of hef conduct, to be poffeffed of much good fenfe. Her breafts were flat; but this circumftance of itfelf is far from being fufficient to eftablifh an exception from the general law of nature. The defire of recovering her liberty, as much as the fear of inflant embarkation, made the little flave efcape by running away into the woods. This fhortnefs of fize, as Commerfon farther obferves, compared with that of the Laplander, is almolt graduated in both; the Laplander and the Kimofs inhabiting the moft frigid zones, and the moft elevated mountains on the globe. Thofe which form the retreat of the Kimoffes at Madagaicar, are from 16 to 18 hundred fathoms above the level of the fea. The productions of the vegetable kingdom, which naturally grow on thefe high mountains, feem to be abortive : e.g. the pine, the birch, and many other trees, appear like creeping bufhes or hrrabs. M. de Modeve alfo gives an account of this race of beings, who juhabit the centre of the ifland, 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 fhorter than that of the men. The Kimoffes are thick and ftrong-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 fteel, of which they make lances and arrows; which are the only arms they ufe. In other particulars he confirms the account already given of their mode of felf-defence.

## K I N

From other reports, he informs us, that the valley of the Kinoufes is rich in cattle and other provifions. Thefe dwarfs are laborious, and very good hufbandmen. Their chief has an authority more abfolute and more refpected than that of the other chiefs of the different diftriets of Mada. gafcar. The extent of the valley which they inhabit he was not able to afcertain but he knew, that it was furrounded by very high momntains, and that its fituation is 60 leagues N, IV. from fort Dauphin, and weftward it is bounded by the country of Mantanata. Their villages are erected on little eminences, whofe feep fides are the more inacceffible, fince they have multiplied the obitacles 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 Cronfladt.

KIMPOLUNG, a town of European Turkey, in Moldavia; 116 miles W.N.W. of Jafly. N. lat. $47^{\circ} 42^{\prime}$. E. long. $25^{\circ} 8^{\prime}$.

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

KIMSLA, a town of Sweden, in Eaft Gothland ; feven miles S.S.W. of Nordkioping.

KIM-TCHA, a town of Thibet; is miles W.N.W. of Tchafircong.

KIM-TCHEOU, a town of Chinefe Tartary. N. lat. $44^{\prime \prime}$. E long. $126^{\circ} 26^{\prime}$.

KIN, a town of Pesfia, in the province of Segeitan, fituated at the foot of a chain of mountains near the lake Zurrah ; the air is pure, and the foil of the environs fertile, efpecially in fruit; 127 miles W. of Candahar.-Alfo, a town of A rabia, in the province of Nedsjed; 153 miles N.E. of Hajar.

Kin-bote, compenfation for the flaughter of a kinfman. See Bote.

KINAKINA Anomatica, in the Materia Medica, a name by which fome authors have called the cortex eleutherii.

KINASKA, in Geography, a town of Ruflia, in the government of Irkutfk; 28 miles W. of Nertchink.

KINASSO, a town of Africa, in Congo ; 30 miles S.E. of Pango.

KINATJURA, a town of Japan, in the ifland of Niphon; 94 miles S.IW. of Meaco.

KINBURN, a fortrefs of Ruffia, in the government ' of Ekaterinollaf, on a bay of the Black fea, at the mouth of the Dnieper. It itands clofe to the frontiers, oppofite the Turkifh fortrefs Otchakov, which being a place of fuperior ftrength, mult, while it continues in the hands of the Turks, obftruct, in cafe of a rupture, the navigation of the Dnieper. Kinburn was intended for the principal corporation of the merchandize fent from the provinces bordering on the Dnieper; but as the harbour, on account of its quick-fand, affords no fecurity for anchorage, the town of Kherfon or Cherfon is at prefent the great emporium for trade; 16 miles S.E. of Otchakov N. lat. $46^{3} 35^{\prime}$. E. long. $3 \mathrm{I}^{\circ} 36^{\circ}$.

KINCARDINE, a town of Perthfhire, Scotland, is feated on the banks of the river Forth, in a fmall tract of the county, which is nearly furrounded by Clackmannanhire. It was formerly called Weft-Pans, from the number of falt-pans ufed here. 1 n 1780 , there were 15 , but at prefent thefe are reduced to two or three. The foufes are moftly well built, and the ftreets affume a regular appearance. Here are two weekly markets, and feveral annual fairs. A valuable falmon-fifhery is eftablifhed on the Forth, at this place; and here is a commodious harbour: rearly oppofite the town is an excellent roadtead, 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 herc. 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 diftrict of. Scotland, is furrounded by the counties of Aberdeen, Angus, and the Britifh ocean. The area thus enclofed is nearly of a triangular form, and extends along the coalt from the bay of A berdeen, to the North-Efk river, an extent of about thirty miles ; and from Dumnottar cafle; to mount Battack, nearly 20 miles. The fuperficial contents of lands, are 191,575 Scottifl, or $243,4+4$ Englifh miles. The fea-coait 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-Nefs, which prefent to the fea a bold face of rock, from 60 to 80 feet high. The northern part of this county conlifts of a mountainous territory formed by the tract of the Grampians, on the fouth of which is a low diftriet, provincially termed the How or Hollow of the Mearns. On the fouthern fide of the county, the furface is much diverfified with hill and dale, particulariy on the banks of the North-Efk, which feparates this county from that of Angus, on the fouth. Here the continuation of the Sidlaw kills runs under different names, from the banks of the NorthEfk, to the neighbourhood of Stonehaven, and bounds Strathmore on the fouth, or fouth-eaft. 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, mult either have entered by Berwick on the eaft, or by Dumfries on the weft, where the mountains terminate before reaching the fea.

Among the Grampians, fome are of very confiderable height. That of the greateft altitude is mount Battack, in the parifh of Strachan, which is faid to be 1150 yards above the level of the fea. Kerlock, in the fame parifh, is 1890 feet high, and Kloachnabane 2370 feet. To the northward of the Grampians, only a fmall ftripe, or fpots 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 fones; buz on the banks of the brooks and ftreams, loam commonly prevails. In the level part of the county, the foil is generally clay. That ftripe of fine fertile land, lying along the fea-coalt-from North-Efk river, to Stonehaven, is chiefly a deep ftrong loam on a clay bottom, but in fome places obltinate 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 coaft, when manured with lime, fea-weeds, or dung from the fifhing towns, produce abundant crops; the reafon 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 coalt land is a rich loam, fit for wheat and beans.

The mineralogy of this county is of nu great importance. In many places, however, there are lime quarries; and as the ftone is of the beft quality, abundance of fuel only is wanting to render them of great value. They are wrought in the parihes of Ecclefcraig, Laurencekirk, and otherso In the parifh of Arbuthnot, and on the Yea-hore near St. Cyrus, bcautiful pebbles and fine jafpers are found. A

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great part of the coaft, which is bold and dangerous, confifts of rocks of that fingular character called Brectia, or "plumb-pudding flone," having the appearance of loofe ftones bound together by an artificial cement. In the northealtern 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, Johafhaven, and Laurencekirk, are the chief.
The principal rivers connected with this county, are thofe of the North-Enk on the welt and fouth, and the Dee on the north. The other ftreams, which are but of little nute, are called the Dye, the Cowie, the Carron, the Bervie, and the Luther.
The moft remarkahle remnant of antiquity in Kincardine-fhire,- is Dunnottar cafle. It ftands on the eattern coaft, on a rock projecting into the fea, acceffible from the land on the weft fide, and that only by a narrow, tteep, and winding path, over a deep gully, by which it is connected with the main land, and which ferves as a kind of natural folle or ditch, the adjacent rock having been fcarped and rendered inacceffible by art. Here are various buildings and conveniences neceflary for a garrifon; fuch as chapel, barracks, a bafon or ciftern of water twenty feet in diameter, a bowlinggreen, and a forge, faid to have been ufed for cafting ironbullets. On this rock, notwithftanding its difficulty of accefs, the church and burial-place of the parifh were originally fituated; the building now called the chapel being formerly the parihl-church. In this cattle, the regalia of Scotland, (the crown, fceptre, and fiword,) were dcpofited in the year 1651 , to preferse them from the Englifh army, which overran this country during the civil wars of that period.

In the parifh of Ecclefcraig, are the ruins of a fortrefs, formerly a place of great ftrength, being erected on a perpendicular and peninfulated rock fixty feet above the fea. In the parifh of Fettercairn is a ruined building, called Fenella's caftle, faid to be the place where Kenneth III. was affiaflinated. In Fordun parih a houfe ftill remains, called St. Palladius's chapel, where the image of the faint was kept, and to which pilgrimages were performed from the moif diftant parts of Scotland. In the parifh of Arbuthnot, was born the celebrated Dr. Arbuthnot, phyfician to queen Anne. He formed a diftinguifhed literary triumvirate with Mr. Pope and Dr. Swift.

In the population return to parliament in the year 1801, Kincardinefhre was ftated to contain 5990 houfes, and 26,349 inhabitants.
KINCHA, a river of Afia, which rifes in Thibet, paffes through the Chinefe province of Se-tchuen, and enters the province of Hou-quang, where it changes its name to Yangife, after which it crofles the province of Kiang-nan, and suns into the fea, N. lat. $31^{\circ} 55^{\prime}$. E, long. $112^{\circ} 44^{\prime}$.

KINDELBRUCKEN, a town of Saxony, in Thuringia, on the Wipper; 21 miles N.E. of Erfurt. N. lat. $51^{\circ}$ $16^{\prime}$. E. long. $11^{\circ}$ 10'.

KINDERHOOK, a poit-town of America, in Columbia county, New York, on the E. fide of Hudfon's river, containing 50 dwelling-houfes and a Dutch church; 13 miles N. of Hudfon's city. The townfhip contains 424 S inhabitants, of whom 483 are flaves. N. lat. $+2^{2} 25^{\prime}$. W. long, $73^{\circ} 34^{\prime}$.

KINDRED, in Lazu, are a certain body of perfons of kia, or related to each other. See Administration, Acyati, Cognati, Consanguinity, and Degrees.

KINE, in Zoology. See Bull and Cow.
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KINESCHMA, in Gcography, a town of Ruffia, in thie government of Koftrom, on the Volga; to miles S.E. of Koftrom.
KINETON, or Kington, a market town and parifh in a hundred of the fame name, and county of Warwick, England, was formerly poffeflod by the kings of England, and it is faid that Edward the Confeffor, and William the Conqueror, held this town and manor. King John kept his court here, at a calle N.E. of the town. In the fourth year of king Henzy III. Stephen de Legrave, obtained the king's charter for holding a weckly "Mercate," or market here on Tuefdays; and afterwards the fame 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 $16 ;$ houfes, 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 thofe of the parliament. Jago has commemorated the place, and the event, in an intereflirg poem, entitled, "Edge-hill." Dugdale's "Antiquities of Warwickfhire illultrated," 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, powter, or ken, knozyledge, with which every monarch is fuppored to be invefted. The Latin rez, the Scythian reis, the Punic refob, the Spanifh rey, the French roy, come all. according to Poftel, from the Hebrew שׂำ, rofch, shief, heac.

Kings, both among the ancient Greeks and Romans, were prielts as well as priaces. Virgil, fpeaking of Anus, king of Delos, fays,
"Rex Anius, rex idem bominum, Phobique facerdos."
As to the Romans, Livy and Dionyfius are exprefs; they fay, that though Numa inflituted a great number of orders of priefthood, yet fome he difcharged himfelf, and in perfon. After the expullion of the kings, they were obliged to create a rex fucrorum, a king of the facrifices, for the adminiftration of the prieflly part of the royalty.
Lawyers fay, the king of England is a mised perfon, a prieft as well as a prince: at his coronation he is anointed with oil, as the priefts and kings of Ifrael were, to intimate, that his perfon is facred.

Among the Greeks, the king of Perfia had anciently the appellation of the great king; the king of France lately had that of the mofl Cbrifitian 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 Cbriflianif/mus conferred on them; and that of defender of the faith was added by pope Leo X. though it had been ufed by them fome time before.
The title of grace was firlt given to our kings about the time of Henry IV. and that of majgly firlt to Henry VIII. before which tine our kings were called grace, highnefs, \&c.
In all public inftruments and letters, the king ftyles himfelf nos, we; though till the time of king John, he fpoke in the fingular number.

The Hungarians formerly gave the name king to their qucen Mary, to avoid the infamy which the laws of that courtry calt upon thofe who are governed by women: accordingly the bore the title of king Mary, till her mar-

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riage with Sigifmund, at which time fe took the title of queen.

By our laws the fupreme executive power of thefe kingdoms is vefted in a fangle perfon, the king or queen: for it matters not to which fex the crown defcends: but the perfon entitled to it, whether male or female, is immediately invefted with all the enfigns, rights, and prerogatives of fovereign power, as is declared by ftatute I Mar. It. 3. c. 1. (Sec Queen.) As the exccutive power of the Englifh nation is velted in a fingle perfon, by the general confent of the people, manifefted by long and immemorial ufuage, it is become neceflary to the freedom and peace of the ftate, that a rule, uniform, univerfal, and permanent, fhould be laid down, in order to make out, with precifion, who is that fingle perfon, to whom are committed (in fubfervience to the Waw of the land) the care and protection of the community ; and to whon, in return, the duty and allegiance of every individual are due. Accordingly our conltitution has not left the decifion of this important queftion dark or doubtful. It has marked out the right of fucceffion in characters fufficiently obvious. See the article Right of Cnows.

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 difcharge of his duties, the maintenance of his diznity, and the exercife of his prerogative. For this purpofe a diverfity of councils has been eftablifined: fuch are, the high court of parliament, the peers of the realm, the judges of the courts of law, and more efpecially the privy council, generally called, by way of eminence, "the council." (See Parliament, Peers, Judges, and Privy Councle.) The next object of confideration will be the duties incumbent on the king by our contlitution; with a view to which his dignity and prerogative are eftablifhed 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 ftatement of judge Blackfone, 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 Contract.) The principal duty of the king is to govern his people according to law. "Nec regibus infinita aut libera poteflas," was the conflitution of our German anceltors on the continent. (Tac. de Mor. Germ. c. 7.) And this is not only confonant to the principles of nature, of liberty, of reafon, and of iociety, but has always been efteemed an exprefs part of the common law of England, even when prerogative was at the higheft. "The king," fays Bracton, (1. 1. c. 8.) who wrote under Henry III. " ought not to be fubject 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 invefted in him with regard to others; dominion and power; for he is not truly king, where will and pleafure rule, and not the law." And again, (1. 2, c. 16. \$3.)" the king alfo hath a fuperior, namely, God, and allo the law by which he was made aking." Fortefcue, alfo having well diltinguifhed between a monarchy abfolutely and defpotically regal, introduced by conquelt and violence, and a political or civil monarchy, which arifes from mutual confent, fuch as he fuppofes the government of England to be, lays it down as a principle, that "the king of England muft rule his people according to the decrees of the laws thereof; infomuch that he is bound by an oath at his coronation to the obfervance and keeping of his own laws." Moreover, it is exprefsly declared by flatute 12 and 13 W. III. c. 2. "that the laws of England are the birthright of the people thereof; and all the kings and queens who fhatl afcend the throne of this realm ought to admini-
fler the government of the fame according to the faid laws; and all their officers and miniters ought to ferve them refpectively according to the fame; and therefore all the laws and ftatutes of this realm, for fecuring the eftablifhed religion, and the rights and liberties of the people thereof, and all other laws and flatutes of the fame 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 OATn; which fee.

In order to enable the king to maintain the executive power in due independence and vigour, and to difcharge witt honour to himfelf, and benefit to his fubjects, the dutics of his high flation, the conftitution and laws have invelted him with a variety of prerogatives, fome of which are dired and others incistental. (See Prerogative.) The former, or direct and fubttantive prerogatives may be diftributed into three kinds; fuch as regard, firft, the king's royal character; fecondly, his royal authority; and laftly, his royal income. Thefe are neceffary to fecure reverence to his perfon, obedience to his commands, and an affluent fupply for the ordinary expences of government. We fhall refer to the article Revenue, what relates to the royal income; and here content ourfelves with enumerating fome particulars that pertain to the king's political character and authority ; or, in other words, his dignity and regal power ; to which laft the term prerogative is frequently reltricted. In order to exhibit and fupport the royal dignity, the law arcribes 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 tranfcendent nature; by which the people are led to confider him in the light of a fuperior being, and to pay him that awful refpect, which may enable him with greater eafe to carry on the bufinefs of government. Firyg of all, the law afcribes to the king the attribute of fovercignty, or pre-eminence. "Rex eft vicarius," fays Bracton, "et minilter Dei in terra. Omnis quidem fub eo eft, ipfe fub nullo nifí tantum fub Deo." He is faid to have imperial dignity ; and in chatters before the conqueit, is frequently ftyled baffleus and imperator, the titles refpectively affumed by the emperors of the Ealt and Weft. His realm is declared to be an enipire, and his crown imperial, by many acts of parliament, particularly the ftatutes 24 Hen. VIII. oap. 12. and 25 Hen. VIII. cap. 28, which at the fame time declare the king to be the fupreme 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. 2\%.) Hence it is that no fuit or action can be brought againt the king, even in civil matters ; becaufe no court can have juriPdiction over him. Hence it is likewife, that by law the perfon of the king is facred, even though the meafures purfued in his reign be completely tyrannical and arbitrary; for no jurifdiction on earth has power to try him in a criminal way; much lefs to condemn him to punifhment. If any foreign juridiction had this fower, as was formerly claimed by the pope, the independence of the kingdom would ceafe; and if fuch a power were vefted in any domeftic tribunal, there would foon be an end of the conftitution, by deflroying the free agency of one of the conflituent parts of the fovereign legiflative power. It may be aked, however, are the fubjects of England totally deltitute of remedy, in cafe the crown fhould invade their rights, either by private injuries, or public oppreffion? To ahis, fays judge Blackflone, we may aufwer, that the law has provided a remedy in both cafes. As to private injuries; if any perfon has, in

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point of property, a juft demand upon the king, he muft petition him in his court of chancery, where his chancellor will adminifter right as a matter of grace, though not upon compulfion. (Finch. L. 255.) And this is entirely confonant to what is laid down by the writers on natural law. See Puffendorff's Law of Nature, b. 8. c. 10. Locke on Goy. p. 2. § 205 .

As to cafes of ordinary public oppreffion, where the vitals of the confitution are not attacked, the law hath alfo af. figued a remedy. For as a king cannot mifufe his power, without the advice of evil counfellors, and the affltance of wicked minifters, thefe men may be examined and punified. The coaltitution has therefore provided, by means of indictments, and pariiamentary impeachments, that no man fhall dare to affit the crown in contradiction to the laws of the land. As to fuch public oppreffions as tend to diffulve the conftitution, and fubvert the fundamentals of government, thefe are cafes, which the law will not, out of decency, fuppofe; being incapable of diftrulting thofe, whom it has invelted with any part of the fupreme power; fince fuch diftruit would render the exercife of that power precarious and impracticable. The fuppofition of law, fays judge Blackitone, is, that neither the king nor either houfe of parliament (collectively taken) is capable of doing any wrong ; fince in fuch cafes the law feels itfelf incapable of furniohing any adequate remedy. For which reafon all oppreffions, which may lappen to fpring from any branch of the fovereign power, mult neceflarily be out of the reach of any fated rule, or exprefs legal provition; but, if ever they u fortunately happen, the prudence of the times mutt provide new remedies upon new emergencies. It is found, indeed, by experience, that whenever the unconftitutional oppreffions, even of the fovereign power, advance with gigantic frides and threaten defolation to a fate, mankind will not be reafoned out of the feelings of humanity; nor will facrifice their liberty by a fcrupulous adherence to thofe political maxims, which were originally eftablifhed to preferve it. And therefore, though the pofitive laws are tilent, experience will furnilh us with a very remarkable cafe in which nature and reafon prevailed. When king James II. invaded the fundamental conftitution of the realm, the convention declared an abdication, by which the throne was rendered vacant, which induced a new fettlement of the crown. After all, it mult be left to future generations, whenever neceffity and the fafety of the whole fhall require it, to exert thofe inherent (though latent) powers of fociety, which no climate, no time, no coniftitution, no contract, can ever deftroy or diminifh.
II. Befides the attribute of fovereignty, the law alfo aferibes to the king, in his political capacity, abfolute perfedion. The king can do no wrong; by which ancient and fundamental maxim we are not to underitand, that every tranfaction of government is of courfe jult and lawful, but that whatever is exceptionable in the conduct of public affairs is not to be imputed to the king, nor is he anfwerable 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 weaknefs; no injuttice or error; and, therefore, if the crown fhould 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 thofe agents whom the crown had employed. Yet, notwithtanding this perfonal perfection which the law afcribes to the fovereign,
the conflitution has allowed a latitude of fuppofing the contrary, in refpect to both houfes of parliament ; each of which, in its turn, hath exerted the right of remontrating and complaining to the king even of thofe acts of royalty; which are moit properly his own; fuch as meffages figned by himfelf, and rpeeches delivered from the throne; neverthelefs, for the fake of frcedom of debate, thefe acts of ftate are ufually fuppofed to proceed from the advice of the adminiftration. In the king likewife 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 affo there cau be no infany, itain, or corruption of blood. By his crown he is, ipfo facio, 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 aferibes a kind of perpetuity, or immortality to him. Rex Anglie non moritur. Henry, Edward, or George, may die ; but the king furvives them all. His death is termed his dcmifc, becaufe the crown is thereby demifed to another. Hc is faid not to be liable to death, being a corporation of himfelf, 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 thefe 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 Blackitone, the king is and ought to be abfolute; that 1 s , fo far abfolute, that there is no legal authority that can cither delay or refint him. He may rejeft what bills, may unke what treaties, may coin what money, may create what peers, may pardon what offences he pleafes; unlefs where the conflitution hath exprefsly, or by evident confequence, laid down fome exception or boundary; declaring that thus far the prerogative fhall go and no farther.

Some things there are which the king cannot do ; viz. he cannot diveft himfelf, or fucceflors, of any part of his regal prerogative, authority, \&c. There are feveral things allo which he cannot do falvo jure, falvo juramento, Es falva confoientia fua: in particular, there are two things which he cannot do without the confent of parliament; viz. make new laws, or raife new taxes.

In the exertion of thofe prerogatives, which the law has given him, the king is irrefittible, and abfolute, according to the forms of the contitution, and yet, if the confequence of that exertion be manifeltly to the grievance or difhonour of the kingdom, the parliament will call his advifers to a juft and ferere account. For prerogative confifting, as Mr. Locke has well defined it, (On Govern. 2. § 166.) in the difcretionary power of acting for the public good, where the pofitive laws are filent, if that diferetionary power be abuled to the public detriment, fuch prerogative is exerted in an unconflitutional manner. Thus the king may make a treaty with a foreign ftate, which fhall irrevocably bind the nation; and yet when fuch treaties have been judged pernicious, impeachments have purfued thofe minifiers, by whofe 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 flates, and receiving ambafladors at home. See Embassador.
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 itates, and to grant fafe-
conducts.

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conduCts. The king is confidered as the generalifimo, or the firft in military command, within the kingdom: and in this capacity he has the fole power to give commiffions for raifing and regulating fiects and armies, as well as for erecting, manning, and governing forts, and other places of Arength, to appoint ports and havens, to erect beacons, light-houfes, and fea-marks, to prohibit the exportation of arms or ammunition out of the kingdom, difpofe of magazines, caltles, fhips, public moneys, \&c. He convokes, adjourns, prorogues, and diffolves parliaments; and may refufe his affent to any bill paffed by both houfes, without giving his reafons for it.

In domettic affairs the king is confidered as the fountain of juftice and general confervator of the peace of the kingdom. However, by the fountain of jultice the law does not mean the autbor or original, but only the diflributor. Juftice is not derived from the king, as from his free gift ; but he is the feward of the public, to difpenfe it to whom it is due. (Bract. 1. 3. tr. 1. c. 9.) In this capacity the king alone has the right of crecting courts of judicature; and all jurifdictions of courts are either mediately or immediately derived from the crown; their proceedings run generally in the king's name; they pafs under his feal, and are executed by his ulficers. In early times, our kings, probably in perfon, often heard and determined caufes between party and party. But by the uniform ufage of many ages, they have delegated their whole judicial power to the judges of their feveral courts, which are the grand depofitaries of the fundanental laws of the kingdom, and have gained a known and ftated jurifdiction, regulated by certain and eftablifhed rules, which the crown itfelf cannot now alter but by act of parliament. (2 Hawk. P. C. 2.) In criminal proceedings it would be in the highelt degree abfurd, if the king perfonally fat in judgment; becaufe in regard to thefe he appears in another capacity, that of "profecutor." But though the king is not perfonally prefent in his courts of law; yet he is underftood to be virtually prefent; his judges are the mirror by which the king's image is reflected; fo that it is the regal office, and not the royal perfon, that is always prefent in court, always ready to undertake profecutions, or pronounce judrment, for the benefit and proteciion of the fubject. See Court and Judge.

As the king is the fountain of juftice, the prerogative of iffuing proclamations is velted in him alone. (See Proclsmation.) The king is likewife the fountain of honour, of office, and of privilege. Accordingly he is entrutted 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 expreffed in writing, by writs or letters patent, as in the creation of peers and baronets; or by corpoocal inveltiture, as in the creation of a fimple 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 impored but by act of parliament. ( 2 Int. 533.) The king has alfo the prerogative of conferring privileges upon private perfons; fuch as granting place or precedence to any of his fubjects ( 4 Inft, ${ }_{3} 6 \mathrm{r}$. ) ; fuch is allo the power to enfranchife an alien, and make him a denizen. Such is likewife the prerogative of erecting corporations; which fee.

The king is alfo the arbiter of commerce. Under this branch of the prerogative he has power to eftablifin public marts, or places of buying and felling; fuch as markets and fairs, with the tolls belonging to thens; and likewife to regulate weights and meafures; to give money, which is the
medium of conumerce, 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 pafs current. The king may alfo 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 thofe general rules that are cttablined for the relt of the community, we may mention the following. Debts due to him are always to be fatisfied in the firft place, in cafe of executorhip, \&c., and till his debt is difcharged, he may protect the creditor from the arretts of others. He may diltrain for the whole debt on a teuant 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 diftrain where he lifts. In all doubtful cafes, femper profumetur pro rese: no ftatute reftrains him, unlefs he be particularly named. In all cafes where the king is plaintiff, his officers may enter with an arreft ; and, if entrauce be denied, break open a houfe, and feize the party ; though in other cafes a man's houfe is his cafle, and has a privilege to protect him againft all arrefts. Moreover no colts flall be recovered againtt the king; and the king can remove a jointtenant.
He has alfo cuftody of the perfons and eftates of idiots and lunatics; he is ultimus beres jegni, and to him revert all eftates, when no heir appears. All treafure-trove (i. e. money, plate, or bullion, found, and the owners not known) belongs to him; fo all waifs, eltrays, wrecks, lands recovered from the fea, gold and filver mines, royal fifhes, \&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. I Eliz. cap. 1.) In virtue of this authority, he convenes, prorogues, reftrains, regulates, and diffolves, all ecclefiaftical fynods or convocations. See Convocation.
He has the fupreme right of patronage, called patronage paramount, over all the ecclefaltical 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 ecclefiatical preferments. As head of the church, the king is likewife the "dernier refort" in all ecclefiaftical caufes; an appeal lying cltimately to him in chancery from the fentence of every ecclefiatical judge; which right was reltored to the crown by ftatute 25 Henry VIII. c. 19. The king can unite, feparate, enlarge, or contract the limits of bithoprics, or ecclefiaftical benefices, and by his letters erect new bifhoprics, colleges, \&c. See Regalia.
He can difpenfe with the rigour of the ecclefiaftical laws, except thofe which have been confirmed by act of parliament, or declared by the bill of rights; as, for a baltard to be a prieft, for a bihop to hold a benefice in commendam, \&c. He has alfo power to difpenfe with feveral acts of parliament and penal flatutes, by a nonobitante, where himfelf alone is conccrncd; to moderate the rigour of the law, according to equity; to pardon a man condemned by law; except in appeals of murder, and in cafe of impeachments by the houle of commons; and to interpret by his judges, in ftatutes and cafes not defined by law.

King, Champion of the. See Champion.
King, Cibariers of the. See Cuanter.
Kwis, Committce of the. See Committer.
Krng's Coancils. See King, fupra.
IKng's Counfel See Counssib:
Kinc's

King's Courts. See Court.
King's Death, Compafing the. Sce Treason.
King, Peace of sheo See Peace.
King, Quarantain of the. Sce Quarantain.
King, Revenue of the See Revexue.
King, Succeffion of the. See Crown, Right of.
King, Tenint of the. See Tevant.
Kisg, Widow of the. See Widow.
King of the Romans. See Romans.
King, among the Hebrew Grammariuns, is an appellation given to a fpecies of accents anfwering to our colon. See Accest.

King of the Mullets. See Mullus imberlis.
Kivg of the Quails. See Rallus crex.
King of the Sacrifices, rex facrificulus, or facrorumt, was a title of an ancient prielt, or miniter 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 affembly of the centuries, and was at firlt chofen out of the number of the patricians. He could not, during his office, hold any magiftracy, nor harangue the people. He prefided at all the facrifices, proclaimed the fealts, \&c.

His wife bore the title of queen of the facrifices, regina facrorum; and had herfelf 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 bufinefs is to direct the lieralds, prefide at their chapters, and have the juriddiction of armory.

The origin of this title is doubtful. Some of the French writers imagine that it was given to heralds becaufe they attended upon and regulated military ceremonies. Others attribute to them the tyle of kings, becaufe they governed and prefided in ceremonies of tournaments, in like manner as the maiter of the ceremonies at Athens was fyled $\beta \alpha=\bar{\lambda} \lambda \varepsilon \alpha$. Others again afcribe the title to them, becaute in affigning arms, as expreffions of honour to any perfon, they refembled the kingly prerogative. But this fuppofes that the cuftom of granting arms by the kings of heralds is as ancient as their titles: whereas Mr. Edmondfon obferves, in his "Complete Body of Heraldry," that it doth not any where appear that thefe kings had anciently the addition armorum given to them, they being then called, as they truly were, reges heraldorum; which for the moft part continued till about the reign of Henry IV., when they began to be entitled reges armorum, although their primitive appellation was alfo ufed for fome ages. The latter titic of reges armorum was attributed to them before fuch times as thofe 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 majeity ; whillt thofe who appertained to princes of the blood royal, or to the nnbility, were Atyled fimply heralds. The moft probable conjecture is, that this denomination " king of heralds," of later times called "king of arms," was given to that perfon who was the chief, or principal officer prefiding over the heralds of any kingdom, or of any particular province, ufually termed by heraldic writers "the marches," or of any order of knigithood; and owing its rife probably to the French dialect. Among the French, the word roy, or kiny, and from them in their and our hiltories and records, the Latin word rex hath been frequently referred to the principal, the governor, the judge, the vifitor, the fuprome, the prefident, or chief, of many profeffions, arts, or comuninities. In the moft ancient writers, thefe officers are ityled merely "kings of heralds," without the addition of any titie of office; but
in courle of time they became diftinguifhed 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 lalk are alfo called provincial heralds, becaufe they divide the kingdom between them into two provinces, which are feparated by the river Trent.

Thefe, by charter, have power to vilit noblemen's families, to fet down their pedigrees, diftinguifl their arms, appoint perfons their arms, and, with Gartor, to direct the other heralds.

Anciently the kings at arms were created, and folemoly crowned, by the kings of England themfelves; but of later days the earl marfhal has a fpecial commifforn, at every creation, to perfonate the king. Sec Clahencelx, and Norroy.

To thefe 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 publifhing the king's proclamation, marfhalling funerals, reverfing arms, \&c. And alfo Uliter, king of arms, in Ireland.

Uliter was fubtituted, as fome fay, in the roum of Ireland king of arms, by Edward VI.; though the king himfclf in his journal takes notice of it as a new inftitution. "There was a king of arms made for Ireland," fays he, "whofe name was Ulter, and his province was all Ireland: and he was the fourth king of arms, and the firt herald of Ireland." 'The patent paffed under the great feal of England, with an ample teftimony of the neceffity and dignity of the office. Whether Uifter was fubftizuted 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, fill continues, and may execute his heraldic order in this kingdom, though out of his province, in as extenfive 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 eftablined in England, viz. the Garter and the Baith, 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, ${ }^{\text {" }}$ then newly created, by virtue of letters patent, bearing date at Weltminfter, May the ISth, in that year. In conformity to the itatutes pertaining to this order; he was mominated and created, by the great mafter of the order, with the ceremonies ufually obferved in the creation of other kings of arms, to continue in his faid office during good behaviour, denominated Bath, and enjuined feduoufly to attend the fervice of the order. His habit and fervice are particularly preferibed. In the year 1725 , his majeity, by lign manual, conflututed and ordained, the then Bath king of arms, "Gloucefter king of arms, and principal herald of the parts of Wales ;" and letters patent paffed the great feal, granting to him the faid office of "Gloucełter," empowering him to grant arms and crells to perfons refiding within the dominions of Wales; and alfo perpetually coniolidating the office of "Gloucefter" with that of "Bath" kinc of arms : ordering, moreover, that in allaflemblies, and at alil times, he fhould take precedency above and before all other provincial kings of arms. See Collefe. of Heralds, and Herald.

King's Band, in Mufical Hiflory, a royal houfhold eftablifhment. In the reion of king Edward IV., Nufic, after leading a vagrant life in our country, and being paffied from parifh to parifh, feems at length, by the favour of this mo.

## K I N

narch, to have acquired a fettlement; for it appears by his letters patent, under the great fcal of liss realm of England, bearing date the $2.4^{2}$ h of April, 1469 , in the ninth year of his reign, that this prince did incorporate certain minttrels, and give them a charter.

The original charter is preferved in Rymer's Focdera: and in the eleventh year of Charles I., when that monarch was petitioned to grant a new patent to the profeffors of the art and fcience of mufic, 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 intitution, fee Chapel Rojal Effablifoment.

The fplendid robes and gorgeous attire of bards and mindtrels at all times are upon record. The flowing veft of Orpheus in the triple capacity of prieft, legiflator, and mulician, is fpecified by Virgil; Arion is related by Herodotus to have leaped into the fea in the rich veftments he ufually wore in public; Suidas fpeaks of the faffron robe and Milefian flippers worn by Antigenides; and the performers in the tragic chorus, which uled to be furnifhed at the expence of fome wealthy citizen of Athens, wore alfo a fplendid and coftly uniform.

Indeed the cuftom of prefenting ftate muficians with fupcrb and expentive dreffes during the fourteenth century, feems to have travelled into England from the continent, and to have continued here till after the eftablifhment of the king's band of four-and-twenty performers; part of their prefent falary being ftill paid at the wardrobe-office, as an equivalent for the annual drefs with which they ufed to be furnithed at his majetty's expence. The children of the king's chapel ftill continue to wear the fcarlet uniform of the original eltablifhment. And the waits, or muficians who attend the mayor and aldermen of our cities and incorporate boroughs, are ftill furnifhed with fplendid cloaks. See Minstrels and Waits.

## King's Bench. See Court of King's Bench; <br> King's Evil. See Evil and Scrofula. <br> King's Exchange. See Eximange.

King's Hou/bold. See Holsiold, Greencloth, Cofferek, and Revevue.
King's Library. See Library.
Kixg of the Mingrels, in Alufical Hifory. Dr. Plot, in his Hittory of Staflordfire, has minutely related the origin of an ancient and curious, though barbarous, privilege in favour of Englifh minftrels, granted by John of Gaunt, duke of Lancaiter, at his caftle of Tutbury, in the year ${ }^{3} 3 S_{1}$, at the inauguration of the firft king of the minftrels.

Du Cange gives feveral more early initances of minftrels having arrived at the honour of fovereignty in France: particularly Jean Charmillons, rex juglatotorum at Troyes, in Champagne, 1296. Kobert Cavaron, roi des meneftriers du royaume de France, 1338; and others in 1357, and ${ }_{1362}$. Copin de Brequin, roi des meneftriers du royaume de France. Computum de ausiliis pro redemptione regis Juhamis, A.D. ${ }^{1367 .}$ Pour une couronne d'argent quil dona le jour de la tiphaine au roi des meneftriers. And one about fix years later than Joln of Gaunt's inftitution is mentioned in Rymer, tom. vii. p. 555, where John Caunz, king of the minitrels, condefcends to fupplicate for leave to vifit foreign countries.
"During the time in which ancient ear's and dukes of Lancafter, who were ever of the blood royal, great men in their time, and had their abode, and kept a liberal hofpitality here, at their honour of Tutbury, there could not but be a general cencourfe of people from all parts hither; for whofe diverfion all forts of mulicians were permitted likewife to come to pay their fervices; amongft whom, being numerous, fome
quarrels and diforders now and then arifing, it was found neceffary, after a while, they fhould be brought under rulef, divers laws being made for the better regulating of then, and a governor appointed them by the name of a king, who had feveral officers under him to fee to the executian of thofe laws, full power being granted them to apprehend and arrelt any fuch minftrels appertaining to the faid honour, as fhould refufe to do their fervices in due manner, and to conftrain them to do them; as appears by the charter granted to the faid king of the minftrels, by John of Gaunt, king of Caftile and Leon, and duke of Lancatter, bearing date the 22 d of Augurt, in the fourth year of the reign cif king Richard II., entitled "Capta le Roy de Minftralae," which is as follows :
"John, by the grace of God, king of Caftile and Leon, duke of Lancaiter, to all them who fhall fee or here thcfe our letters, greeting-Know ye, we have ordained, conflituted, and affigred to our well-beloved the king of the minftrels in our honour of Tutbury, who is, or for the time fhall be, to apprehend and arreft all the minftrels in our faid honour and franchife, that refufe to do the fervices and minftrelfy 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 minftrels, for the time being, full power and commandment to make them reafonably to juftify, and to conitrain them to do their fervices, and minftrelfies, in manner as belongeth to them, and as it hath been there, and of ancient times accuftomed. In witnefs of which thing we have caufed thefe our letters to be made patent. Given under our privy feal, at our cattle of T'utbury, the 22d day of Auguft, in the fourth year of the reign of the moft fweet king Richard II." For a further account of this eftablifhment, fee Burney's General Hiftory of Mulic, vol. ii. p. 361 , \& c. and the article Minstrets.

King's Palace. The limits of the king's palace at Weftminfter, extend from Charing Crofs to Weftminfter Hall, and fhall have fuch privileges as the ancient palaces. ( 28 Henry VIII.) If any perfon flall ftrike another in the king's palace, he fhall have his right band cut off, be impriloned during life, and alfo be fined. 32 Henry VIII. cap. 12.

King's Prerogative. See Prerogative, and King. King's Privy-conncil. 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 refpect of a licence there granted to any man for levying a fine of lands, or tenements, to another perfon. See Fixe.
King's Spear, in Botany. See Asphodelvs.
King's Thanes. See TManes.
Kina's War. See War.
King's Wardrabe. See Wardrobe.
King-ffb, in Icbtbyology. See Opari.
King-ffber, ijpida, in Ornithology. See Alcedo i/fida.
Krag-piere, in any Buildings, is a piece of timber itanding upright in the middle, between two principal rafters, and having frrutts or braces going from it to the middle of each rafter.

## King Charles I. in Biography. See Charles. <br> King Charles II. See Charles.

King of Pruflia, Frederic. Among German dilettanti in mufic, his late Pruffian majefty is entitled to the firlt place, in talents as well as rank. This heroic and accomplifhed prince having had Quantz carly in life for his matter on the German fute and in compofition, played no other pieces than his own and thofe of his malter, which were never
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 ftudy, practice, and performance of mufic. All the German mafters allowed him the firt place among dilettanti compofers, as well as performers on the flute. Fifcher, however, who was fome time in his fervice before he firtt came to England, did not feem to like his mufical productions, thinking them, even then, fomewhat dry and old farhooned. This prince had certainly great profefiors in his fervice, though he was never partial to Emanuel Bach, the greatelt of them all. His majefty, befides a great number of picces for the flute, and fome for the harpfichord, compofed fometimes for the voice; particularly in the paltoral 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 majefty would fend a new fong to the maeftro di eappelia to be introduced in an opera, and this was univerfally believed to be his own production in all its parts. During the laft years of his life, according to his chapel-matter, Reichardt, his Pruffian majefty having loft fome of his front tecth, not only difgontinued the practice of the flute, but his evening concerts, and became totally indifferent to mufic: a proof that his majelty's chief pleafure in the art was derived from his own performance.

King, Charles. Of this choral múfician, fir John Hawkins, who feems to have known him perfonally, gives the following account in the fifth volume of his hiltory :
"Charles King, bred up in the choir of St. Paul's under Dr. Blow, was at firf a fupernumerary finger in that cathedral, for the fmall tipend of 14l. a-year. In the year 1704, he was admitted to the degree of bachelor in mufic in the univerfity of Oxford; and upon the death of Jeremiah Clark, whofe filter was his firt wife, was appointed almener and mafter of the children of St. Paul's, continuing to fing for his original itipend until the 3 Ift of October, 1730 , when he was admitted a vicar choral of that cathedral, according to the cuftoms and flatutes thereof. Befides his places in the cathedral, he was permitted to hold one in a parifh church in the city, being organilt of St. Bennet Fink, London; in which feveral ftations he continued till the time of his death, which happened on the 17 th $^{\text {th }}$ of March, 1745 . With his fecond wife he had a fortune of feven or eight thoufand pounds, which was left her by the widow of Mr. Primatt, the chemift, who lived in Smithfield, and alfo in that houfe at Hampton, which is now Mr. Garrick's. But notwithfanding this acceffion of wealth, he left his family in but indifferent circumftances. King compofed fome anthems, and alfo fervices to a great number, and thereby gave occafion to Dr. Greene to fay, 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 mufician he is but little efteemed. His compofitions are uniformiy reftrained 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 juft as they found it. Some who were intimate with him Lay, he was not void of genius, but averfe to ftudy; which character feems to agree with that general indolence and apathy which were vifible in his look and behaviour at church, where he feemed to be as little affected by the fervice as the organ-blower."

King, William, organit of New college, Oxford, let to mufic Cowley's "Mittrefs," and publifhed it with the following title, "Poems of Cowley and others, compofed into Songs and Ayrs, with a Thorough-bafe to
the Theorbo, Harpficon, or Bafe-violl," fol, Oxford, 1 fe8,
King, Roberit, bachelor in mufic, of Cambridgc, 16 ofo, one of the royal band of William and Mary. He compofed feveral of the airs that were printed in the "Tripla Concordia;" as well as many of the fongs that were publifted in the "Theatre of Mufic."
King, Jonn Gles, an Englifh divine, was born in the county of Norfolk about the year 1732. He completed his youthful ftudies a: Caius college, Cambridge, where he took his degrees of B. A. and M. A. in the years 1752 and 1763 , and at fubfequent 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, be obtained the appointment of chaplain to the Englifh factory at Peterfburg. In this fituation he was Ied to inquire into the ceremonies of the Ruffian church, which he continually faw practifed, and determined to give a faithful defcription of the fame in his own language. He accordingly publifhed, in 1772, in a handfome quarto, illullrated with engravings, a work, entitled "The Rites and Ceremonies of the Greek Church in Ruffia; containing an Account of its Doctrine, Worfhip, and Difcipline." In 1778 , he wrote and publifhed a letter to the bifhop of Durham, containing fome obfervations on the climate of Ruffia, and the northern countries, with a view of the flying-mountains at Zarfko Sello, near St. Peterfburg. Soon after his return to his native country, he was prefented to the rectory of Wormley, in Hertfordifire, in 1783, and 1786 he purchafed the chapelry of Spring Garden, in which he officiated as preacher. While he refided at Peterburg, the emprefs of Ruffia had appointed him her medalif, and he was engaged in a medallic work it 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 "Obfervations on the Barberini Vafe," which are printed in the eighth volume of the Tranfactions 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 confliderable tradefman. He was intended to fucceed in the bufinefs, but having a ftrong inclination for reading, he purchafed books, and fpent all the time he could command in improving his mind. He was related to the celebrated John Locke, who, difcovering the bent of his inclinations, advifed that he fhould be fent to Leyden for literary improvement. At this period his attention was chiefly turned to theology, and in 169. he publifhed "An Inquiry into the Conftitution, Difcipline, Unity, and Worhip of the Primitive Church, that flourifhed three hundred Years after Chrift; faithfully collected out of the extant Writings of thofe Ages." In the firlt volume, only three of the fubjects were treated on, and he afterwards publifhed a fecond part on worfhip. The chief object of this work was to prepare the way for that compreheri. fion of the diffenters within the pale of the eftablifhed church, which the revolution was fuppofed likely to effect.. After his return from Leyden, he was perfuaded by Mr Locke to make choice of the law for his profeffion, and he accordingly entered himfelf of the liner Temple. He now employed all his powers in acquiring an extenive knowledge of the laws and conftitution of his country, and obtained a reputation which introduced him into the houfe of commons in 1699. This fituation he held during fix fucceffive parliaments, but his legal and political avocations did not allow him to abandon his former theological ftudies; but having been led by his inquiries to examine the origin of the Apoftles' Creed, he publifhed, in 1702 , a volume, intitled "The Hiftory of the Apoftes' Creed, with critical Obfervations
on its feveral Articles." Mr. King's employment as a law. yer increafed with his general reputation, and in 1708 he was chofen recorder of London, and about the fame time he received the honour of knighthood: in the following year he was appointed by the houfe of commons to be one of the managers on the trial of Dr. Sacheverel, and in 1712 he boldly appeared as gratuitous counfel for Mr. Whilton, on his profecution for herefy before the court of delegates, and, in the end, obliged the bifhops and civilians to defift. On the acceffion of Gcorge I. he was appointed to the lord chief jufticefhip of the common pleas, and was fworn of the privy council. In 1725 , the judge was raifed to the peerage by the ityle 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 highoffice being too great for his frength, in 1733 he refigued 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, Wiliam, a mifcellaneous writer, born in London about the year 1663 , was educated at Weftminiter fchool under Dr. Bufby, whence he was removed to Chrilt-church college in Oxford. He took his degree of M. A. in 1658, and in that year made his appearance as an author in a refutation of Varilla's account of Wickliffe, in his "Hiltory of Herefies." About this time he began the profeffional itudy 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 publifhed, in anfwer to lord Molefworth's account of Denmark, his "Animadverfions upon the pretended Account of Denmark," which were fo highly approved by prince George of Denmark, that he was appointed fecretary to the princefs, afterwards queen Anne. In fome fubfequent years he publifhed feveral works of the humorous kind, fuch as "A Journey to London," intenjed as a burlefque on Dr. Martin Lilter'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 induftry, he deferted all his profeffional profpects, and, in 1702, he accepted an offer to gq 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 fludent's place in Chrift-church college, where he finifhed his largelt poem in imitation of Ovid's Art of Love, and compofed feveral other pieces. He clofely connected hinfelf 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 fhort time. He died on Chriftmas-day, 1712. As a profe writer he is forgotten, but his account of ancient mythology was long a popular book in the fchools. His works have been collected and publifhed in three vols. Svo., under the title of "Original Works in Profe and Verfe." Biog. Brit. Johnfon's Lives of the Poets.

King, William, a learned Irifh prelate, was born at Antrim, in the province of Uliter, in the year 1650. From the grammar [chool, in which he had made great progrefs, he was fent to Trinity-college, Dublin, in 1667 ; here he was remarkable for his attention to the fludies of the place, and took his degrees in 1570 and $\mathbf{1 6 7 3}$, and in the latter of thefe years he was ordained deacon. In the following yeár he was admitted to priefts orderg, and was patronized by Dr.
'Parker, archbihop of Tuam, who appointed him his chaplais in $\times 676$. From this period ecclefiattical honours and preferments began to flow rapidly upon him, till at length, in 1685, he was ele Aed dean of St. Patrick's. He had already publifhed three tracts on the controverfy between the Papilts and Proteflants, and no fooner had the revolution taken place in England, than the dean became active in promoting the fame eltablifiznent in Ireland, both before and after the landing of king James there in 1689. That prince, fuily fenlible of the dean's influence, and of the weight of his oppolition, confined him twice in the tower of Dublin cafte on that account. This did not prevent him taking the degree of D. D. the fame year; but the Jacobite party continued to inveterate againt him, that they threatened to take away his hife, and actuaily made two or three unfuccefsful attempts for the purpole. Upon the flight of king James into France, after the batte of Boyne, in the year 1690, and the appointment of a day of thank io giving for the prefervation of king William's perfon, the dean preached the ferron on the cccafion, at St. Patrick's cathedral, and, in 1691, his zeal and activity in favour of the revolution were rewarded with the bifhopric of Derry. He now publifhed " The State of the Proteltants in Ircland 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 bifhop Burnet obferves, 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 fuli and faithful account. When public tranquility was reltored, the billop applied himfelf very diligently to the immediate duties of his pattoral care, and was exceedingly defirous of converting the Prelbjeterian party to the epifcopal forms. With this view, he publifhed, in 1694 , a treatife, entitled "The Inventions of Men in the Worthip of God:" this drew him into a controverly with Mr. Jofeph Boyfe, a diffenting minilter of Dublin, which terminated without effecting the object which the learned prelate had at heart. In 1yo2, bifhop King publifhed at Dublin his celebrated work, entitled "De Origine Mali," which was reprinted the fame year at London. The cbject of this work is to fhew in what way the feveral kinds of evil with which the world abounds, are confiftent with the goodnefs of Gód, and may be accounted for without the fuppofition of an evil principle. The bifhop was attacked by Bayle, Leibnitz, and others, upou 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 controverfy. He was not, however, an inattentive obferver of the arguments adduced againft him, but left behind him a great number of MSS., in which he confidered their feveral objections to his fyftem, and laboured to vindicate it from the lealt cavil : the fubftance was afterwards given to the public. In 1702, Dr. King was tranfated to the archbifhopric of Dublin, and, in $17 \times 9$, he publifhed a fermon, preached before the Irifh houle of peers, entitled "Divine Predeftination and Forc-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. Authony Collins, to neither of whom did the archbinop reply, though he had prepared anfiwers, which were found among his MSS. at his death. In the year 1717, archbithop King was appointed one of the lords juftices of Ireland, and he held the fame office in the years 1721 and 1723. He died in May 1729, when he had nearly completed his 79 th year. He was a prelate of great learning, and fleadily attached to the principles of the Re volution ;

Solution; realous for the profperity of the eflablinhed clurch, to which he belonged; and of an unblemifhed and excmplary moral character. He was ambitious of the primacy of Ircland, which was refufed him, under the pretence of his being too old to perform the duties of the office. This reafon, it is faid, was as little agreeable as the refufal itfelf; and when the new primate called upoin him after his cleva. tion, archbilhop King received him in his own houfe, without rifing from his chair, malking this apology, in a fort of farcallic manner, "My lord, I am certain your grace will forgive me, becaufe 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 bihon of Carlifle, who publithed a tranflation of his work "De Origine Mali," corrected and enlarged from the author's ootes, to which were added two fermons on the Divine I'refcience, and the Fall of Man, 2 vols. Svo. Biog. Brit.

Kisa, or Kin yuch, in Geography, a town of China, of the firlt clafs, in the province of $Q$ uang-li. N. lat. $24^{\prime} 21^{\prime}$. E. long. $108^{\circ}$.

King, a town of Africa, in the kingdom of Cacongo ; 40 miles S.E. of Effena.

Kinc's. a maritime county of New York, in the United States, containing that part of the fate that is bounded E. by Queen's county ; N. by New York county; W. partly by Hudfon river, and partly by the ocean; and S . by the Atlantic ocean, including Concy iflands. T'his fertile tract of land, fituated on the W . end of Long ifland, and feparated from Staten ifland by the Narrows, ferves very much to the fupply of the New York market with butter, vegetables, fruit, \&cc. It is divided into lix townhips, and contains. 5740 inhabitants, includjng 1479 llaves. Its chief towns are Brooklyn, and Flatbufh-Alfo, a county of Nova Scotia, comprehending the iflands on the S.IV. and S. fides of the bafin of Minas. The rivers Habitant, Canaid, and Cornwallis, are navigable to fone difaince. The lands on thefe rivers afford arable and palture foil ; the rivers abound with fifh: and in the bafin of Minas are fine codfifh, haddock, and different kinds of flat fifh.

King's, or Pearl 1 fland, a fmall ifland in the bay of Panama; belonging to Spain, and famous for its pearlfilhery. N. lat. 7 12 $2^{\prime}$. W. long. $81^{\circ} 36^{\prime}$.

Kinc's Day, a bay on the S.E. coalt of Nova Scotia. N . lat. $44^{\prime} 32^{\prime}$. W. long. $59^{\circ} \mathrm{IO}^{\prime}$.

Krva's Bridge, a poll-town of New-York, 15 miles N. of New York city. The bridge conneets New York ifland with the main land.

King's County, a county of Ireland, part of the old diftrict of Ophaley, which, having been confifcated in the reign of the firlt Mary, was called the King's county, and its chief town Philip's-town, in compliment to her hufband, Philip II. of Spain. It has Weltmeaih and Meath on the N. ; Kildare and the Queen's county on the E. ; Tipperary on the S. and S.IV. ; and part of Galway and Rofrommon on the W. Its chief natural boundary is the Shannon, which feparates it from Galway. The little Brofna and the Barrow ferve, each of them, to mark its limits for a few miles. Its breadth, in the norihern and broadelt part, is 32 Irifh miles ( 39 Englifh), but it contracts very much as it flretches to the fouthward. In this part of the country it extends $3+$ Irinh ( 43 Englifh) miles from N. to S. It contains 282,200 acres, which make upiwards of $44^{\circ}$ fquare miles, equal to 453,370 acres, or yo7 fquare miles Euglifh. There are $5^{2}$ parifhes and 25 churches, and, according to Dr. Beaufort, a population of about $74,5 \mathrm{co}$. The completion of the grand canal has, however, iended much to increafe the population of this county. The only Vob. XX.
mountains in it are the Sticbhthoom, in the S.E. whith extend into the Queen's county. 'Thefe run in a range of about 15 mikes, having but one pafs, called the gai, of Glendine, which is wery difficult of approach, flcop and craggy, and not five feet wide. The foil in the noorthern part is montly argillaccous, and requires a great deal of lime to make it arable. The rocks are red zaggilite and freeflone, which iuterfect each other. In the centie there are varions foils, light fandy loan, fitif yeliows clay, gritty fhallow gravel, and deep brown earth. In this part of thic range the land is often fertile in patture, and grazed throughout the year with numerous flock of fhecp and young cattle: limettone is thickly interfperfed, and the bottom is a difl clay, where abundant crops of corn are yielded. In another part we lind a cold, fpongy clay. and at the foot, where the declivity vanifles, a deep irreclaimable bog, which can be approached only in very dry feafons. The mineral productions of this mountainou dilltict have not been yet afcertained. In the arable parts of the count $y$, we are informed that the foil is not naturally fertile, and is only rendered fo by manures, and proper attention to a rotation of crops. The quality of the foil is cither a deep moor, or a fhallow gravelly loam: the moilt feafon being moft favourable to the produce yielded by the latter, and the moors very productive in dry fummers. There is every where abundance of lime-ftose and lime-ftone gravel, which is found the bef manuse. The paftures, though not luxuriant, are kind and fattening, and well adapted for fheep-walks, where numerous flocks are fupported, the wool of which is abundant, and of a very fine quality. The coarect pafture, 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 fo:ne parts, however, improvements in hufbandry are attended to, in the raifing of green crops, introducing artificial grafes, and drilling potatoes. Conliderably more than a third part of the whole county is occupied by bog and mountain. The bogs, however, fupply an abundance of moft excellent fuel, which not only ferves the inhabitants, but is fent by the canal to Dublin. They alfo yield, when calcined, an excellent and lafting manure, both for their own improvement and that of the high grounds. As there is a natural fall in many places, thefe bogs are very capable of being drained and reclaimed by lime-itone. Such land is fit for all the purpofes of hufbandry, and will be found more productive, either in patture or tillage, than the general run of the beft lands in the county. This reclaiming of bog is now purfued with much fpirit in many parts ; and nothing furely can be more gratifying than to behold rich carpets of white clover and trefoil in fpots which had been dark and barren moor. Thefe bogs have been lately furveged by the direction of the commiffioners for the inveftigation of bogs, and it is to be hoped that fome extenfive plart of drainage will be carried into effect. The mineral productions of the county are inconfiderable. Sir C. Coote, author of the Statiltical Survey, mentions only manganefe, iros ores in fmall quantity, ochre, marle, lime-ftone, freeflone, and potter's clay. There is a great fcarcity of timber, except ornamental plantations, though the bogs afford abundant proof of its having once been an almolt uninterrupted foreft. The alder appears to have been a native of this county, and a few of them fill rear their venerable tops in a park at Droughtville. This county is well watered: Befides the Shannon and the little Brofna, before mentioned, the greater Brofna, after winding through a great part of it, between pleafant banks, lofes iifelf in the Shan:
non. There are alfo feveral fmall rivers, and fome lakes, of which Lough Pallis and Lough Annagh are the largett; and the Grand Canal crofles the northern part of the county. Of the towns, Birr is the molt confiderable; but Philip'stown is the county town. Tullamore is a pretty and thriving place. The county is reprefented in parliament by the two knights of the suire only; the boroughs of Philip'stown and Banagher having been disfranchifed by the Union. Coote's Statiftical Survey. Beaufort's Memoir.

Kisc's Court, a poftown of the county of Cavan, Ire. land; 39 miles N.W. from Dublin.

King's Creek, a river of Virgiuia, which runs into the Chefapeak, N. lat. $37^{\prime} 20^{\prime}$. W. long. $76^{\prime} 3^{\prime}$. - Alfo, a river of North Carolina, which runs into the Cangaree, N. lut. $35^{\circ}$ 8. W. long. $81^{\circ} 40^{\prime}$.

KING's Ifand, an ifland in the Eaft Indian fea, near the W. coatt of Siam, about 51 miles in circumference. N. lat. 12 $2^{\prime}$ 18'. E. long. 98 . - Allo, a fmall ifland in Beering's itraits. N. lat. $65^{2^{\prime}}$. W. long. $168^{\circ}$ - Alfo, an ifland near the W. coaft of North America, feparated by Fifher's canal from the fouthernmok of Princefs Royal's iflands, and by Burk's canal from New Hanover ; fo called by captain Yancouver, after captain James King, of the Britifh navy. It is about 33 miles in length, and rather more than fix in breadth. Point Edward is the farthelt point to the N. and point Wailer to the S. N. lat. $51^{\circ} 56^{\prime}$ to 52 26'. E. long. $232^{\prime} 9$ to $232^{\prime} 43^{\prime}$.

Kivg's Keys, illets and rocks in the Spanifh main, near the Morquito fore. N. lat. $12^{\circ} 42^{\prime}$. W. long. $82^{\circ} 35^{\prime}$.

King's Point, the N.W. extremity of the inland of Sumatra; 15 miles IV. of Acheen. N. lat. $5^{\circ} 30^{\prime}$.

King and Quecn, a county of Virginia, on Mattapony river, which feparates 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 polt-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 $39^{9} 7$ flaves. In the count houfe is a polt-office.

King George's, J/funts, two iflands in the South Pacific ocean, difcovered by commodore Byron in $17 \sigma_{5}$, and vifited by captain Conk in 1773. The commodore's landing was oppofed by the natives, when, a thot or two being fired, one man was killed, and the re!t fled. The canoes were eurioufly wrought with planks, ornamented with carving, and the feams filled up by frips of tortoife-fhell. They were about 32 feet long, very narrow, with bottoms as fharp as a wedge. Two of them were joined together laterally by flrong fpars, fo that between them there was an interval of about fix or eight feet; each had a malt, and the fail was neatly made of matting. The houfes were low mean hovels, thatched with brancnes of cocoa-nut tree ; but they were delightfully fituated in a grove of itately trees. The cocoanut tree feemed to afiord them alnolt all the neceffaries of life; particularly food, fails, cordage, timber, and veffels for holding-water. The fhore appeared to be covered with coral, and the thells of large pearl oyfters. The illand was covered with fcurvy-grafs, The frefh water is good, but farce, being furmficd by very fmall wells, which are foon emptied, and as foon filied again. In one of the iflands was a lake or lagoon, in which were obferved two or three $\boldsymbol{v}$ cficle, one of which bad two tratts, and fome cordage aloft to fupport them. S. lat. $14^{\circ} 35^{\prime}$. W. long. $149^{\circ} 2^{\prime}$.

Kivg George the Third's Aichipelago, a group of illands in the North Pacific ucead, extending from N. to S. about

150 milcs in length ; about 15 miles broad towards the N . and diminifhing to little more than a mile at the fouthern extremity. N. lat. 56 10' to $5^{\prime}{ }^{\prime} 18^{\prime}$. E. long. $223^{\circ} 45^{\prime}$ to $225^{\circ} 40^{\prime}$.

Kivg George the Third's Ifand. Sce Otameme.
King George the Third's Sound, a harbour on the S.W coalt of New Holland, difcovered by captain Vancouver. in 1791. In approaching it from the weftward, it is the firf opening that appears like a harbour caltward of Cape Chatham. The Eclipfe iffands 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 accefs any where between its outer points of entrance; Baid-head and Mount Gardner lying N. 623 E. and $S, 62^{\circ}$ W., it miles diftant from each other. S. lat. $355^{\prime}$. E. long. it 8 1 $7^{\prime}$.

King: George's Sound, a name given by Captain Cook to Nootka found. See Nootka.

King William's I/fand, a fmall inland in the Eaft Indian fea, near the N . cozit of the ifland of Poggy. S. lat. $2^{\circ} 33^{\prime}$. E. long. $99^{\circ} 43^{\circ}$ - Alfo, a fmall ifland in Dampier's ftratt, near the S. coatt of the iflard of Waigoo. S. lat. $0^{\circ} 32^{\circ}$. E. lonj. ${ }^{13} 30^{\circ} j^{\prime} 1^{\prime}$ - Alfo, a cape on the eaflern extremity of New Guinea. S. lat. 6 45'. E. long. it $8^{\circ} 5^{\prime}$.

KINGDOM, the dominion of a king. See Kixg and Monarchis.

Kingom, ameng Chemfls, is a ter:n which they apply to each of the three orders or clafles of natural bodies ; animal, vegetable, and mineral.

Kinganom of God, or of Heaven, in the Gofpel Hilfory, is a phrafe, which, according to Dr. Campbell, has a manifett allufion to the predictions in which this economy was revealed by the prophets in the Oid Teltament, particularly by Daniel, ch. ii. 44. vii. 13, I4; by Micah, ch. iv. 6, 7 ; and by other prophets. T'o thefe predictions there is a
 or fimply in $\beta_{a \sigma i \lambda s} x$, given, in the New Tellament, to the religious conflitution which would obtain under the Miefliah. In molt cafes $\beta_{\text {acineac }}$ anfwers to the Latin regnum. But this word is of more extenfive meaning than the Englifh, being equally adapted to exprefs both our terms reijan and king dom. The firft rclates to the time or duration of the fovereignty ; the fecond to the place or country over which it extends. Neverthelefs, though it is manifelt in the Gofpels, that it is much oftener the time than the place that is alluded to ; it is never, in the common verion, tranfo lated reign, but always kingleni. Yet the expreffion, fays Campbell, is often thereby rendered exceedingly awkward, not to fay abfurd. In order to prevent this mifapplication of terms, $\beta_{z \sigma b i s t z}$ 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, kinglom. There are, however, a few paffages in which neither of the Euglith words can be confidered as a tranflation of $\beta_{\alpha J i \lambda t s z}$ iltrictly proper. In fome of the parables. (Matt, xviii. 23.) it evidently means adminilhration, or meitiod of governing; and. in one of them (Luke, xix. 12. 15.) the word denotes royalty, or royal authority, there beng a manifelt allufion. to what had been done by Herod the Great, and his imimediate fucceffor, in recurring to the Roman fenate in order to be invelted with the title and dignity of king of Judea, then dependent upon Rome. Upon the whole, we may obferse, that the phrafes, kinsdom of God, and king dom of bearen, are fynonymous; and that they fometimes denote the thate of the bleffed, and fometimes the goffel difpenfation. Campbell's I'rel. Dillo p. 83 g, se.

KINGHALE, in Geography, a town of Africa, in Cacongo, fituated on the Louifa. S. lat. $5^{\prime} 20^{\prime}$. E. long. $12^{\circ} 10^{\prime}$.

KINGHORN, a fmall fea-port town in the county of Fife, in Scotland, fituated on the north bank of the frith of Forth, nearly oppolite to the city of Edinburgh and port of Leith, from the latter of which it is about feven miles diftant. Kingloorn is principally inhabited by fifhermen and boatmen empliyed on the ferry, which is one of the chief routs of intercourfe between the metropolis and the counties of Fife and Angus. The boats employcd on the ferry are large, well built decked-boats; full-decked for carrying carriages, horfes, and black cattle; and there are handfome lmall pinnaces for pleafure parties, and paffangers who hare no equipage or horfes. The fares are regulated, and the conduct of the ferrymen fuperintended by the magitrates of Edinburgh, who punifh offences and frauds upon paffengers upon a fummary complaint. In the middle of the frith is a fmall pleafant ifland, about a mile in circumference, called Inch-Keith, upon which is the ruins of an old callle, which was once a place of fome flrength. About the comanencement of the prefent war fome entreachrents were made, and guns mounted upon this inand for the p:otection of the fhipping in the Forth from any furprite, probabiy from the recollection of the daring but nugatory attempt of Paul Jones, during the American centeit; but hitherto there has been no occafion to employ them. Inch-Keith, we believe, is the property of the city of Edinburgh.

KINGIKSOK, a town of Weit Greenland. N. lat. $61^{\prime} 55^{\prime}$. E long. $47^{\circ} 40^{\prime \prime}$.

KING-KI-TAO, a city and capital of Corea, fituated in the province of King-ki, and the ordinary relidence of the fovereign. N. lat. $47^{-} 3^{\prime}$. E. long. $1266^{\prime} 4^{\prime}$.

KI-NGNAN, a city of China, of the firlt clafs, in the province of Kiang-ff, 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 perfons provided in this city. The adjuining lields and vallies are agreeable and fertile; and the mountaias are faid to contain mines of gold and filver. N lat. $27^{\prime} 7^{\prime}$. E. long. $114{ }^{2} 32^{\prime}$.

KINGROAD, a part of the Severn below Brittol, from whence the outward-bound fhips from that city take their departure.

KINGS, Books of, in Scripture Hiflory, two canonical books of the Old Teitament, fo called, becaufe they contain the hiitory of the kings of Ifrael and Judah, from the beginning of the reign of Solomon, down to the Babylouifh captivity. The firlt book of Kings contains the latter part of the life of David, and his death; the flourighing ftate of the Ifraelites under Solomon, his building and dedicating the temple of Jerufalem, his fhameful defection from the true religion, and the fudden decay of the Jewifh nation after his death, when it was divided into two kiugdoms: the reft of the book is taken up in relating the acts of four kings of Judah and eight of Ifrael. The fecond bnok, which is a contimuation of the fame hiltory, 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 Aflyria by Salmanaflar, and the other two into Babylon by Nebuchadnezzar.
It is probable that thefe books were compofed by Ezra, who extracted them out of the public records, which were kept of what paffed in that nation. Thefe are the only books which the Hebrews call "Malachim or Kings," though the two books of Samuel have been alfo mentioned
under lhis sुencral title; and anthors have enumerated fone books of Kings, thofe of Samuel (which fee) being the tivet and fecoud. The four books contain the hittory of a!nout 600 years.

KINGSBRIDGE, in Geography, a frall market town and parifh in the hundred of Starborough, and county of Devon, Lingland, is fituated on a brauch of the Salcombe river, and, according to Rifion, derives its name from the bridge, which connects it wih Dodbrooke. The town i. in gencral well built. A frec-fehool was founded here by Mr Crifpin of Exeter, and has obtained fone degrec of repitation. The parifh was returned, under the populatioa act of 1800, as containing $1_{55}$ houfes, and 111 in inhabitant. Kingbridge is diltant from Dartmouth 10 miles, frors Exeter 39, and from London 207. It has a weekly market on Saturdays, and three aunual fairs. David Tolley or Tolbey, called by Leland Tavelegus, an eminent Greek and Latin fcholar in the time of Henry VIII., was a native: of this town. Beanties of England and Wales. Pulwhele's Hiftory of Devonflire, folio.

KINGSBURY, a townflip of America, in the county of Wafhington, and ftate of New York, fituated on the bend of Hudfon's river, on the N.E. fide; containing 165 r innabitants.

KINGSCLERE, a fmall market torn and parifh in the hundred of the fame name, Hampfhire, England, is fituated on the edge of a chain of hills, 17 miles from Reading in Berkfhire, and 55 from London. It is mentioned by Camden as being a conluderable town, but is now of a mean appearance, and only remarkable for having been the refldence of the Weft Saxon kings. The church is a fmall fluccoed building, with a low tower. This parifh was returned in the year 18or as containing 394 houfes, and 1939 mhabitants, 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 fhort diftance to the fouth, as that is known to have been a royal refidence in the time of king John, and was in the poffeffion of the crown fo late as the reign of queen Elizabeth. The manfion has been laiely pulled down, and the park pluughed up and converted into a farm. Beaúties of England.

KINGSEY, a townfhip of Lower Canada, N.W. of Shipton, adjuining on both fides of Nicolet river, having about 30 inhabitants.

KINGSLAND Creek, a river of Virginia, which rums into James river. N. lat. $37^{\circ} 24^{\prime}$. W. long. $77^{\circ} 40^{\prime}$.

KINGSTON, or Esopus, a polt-town of America, in New York, in Ultter county, on the weft fide of Hudfon's river, fix miles welt of Rhinebeck, and on the eaft fide of Efopus hill, or creek. In 1777, this town was burned by the Britifh troops, under the order of general Vaughan. It has been fince rebuilt on a regular plan, and contains about 150 houles, a court-houfe, gaol, a Dutch reformed church, and an academy. Its fituation is pleafant, being furrounded by a fpacious plain; 56 miles S. of Albany. N. lat. $41^{\circ}$ 56. W. long. $73^{\circ} 5^{\circ}$. The townhip contains 4615 inhabitants. - Alfo, a townfhip in Addifon county, Vermont, containing 58 ; inhabitants.-Alfo, a port-town in Plymouth county, Maflachufetts, on the weftern part of Plymouth bay, bounded northerly by Duxborough, and containing 1037 inhabitants. It was incorporated in $1707 ; 38$ miles S.E. of Bofton.-Alfo, a polt-town in Rockingham county, New Hamphire, on the road that leads from Exeter to

Haverhill

Haverhill in Maffachufetes; 6 miles from the former, and 32 from the latter. It was incorporated in 1694 , and contains 785 inhabitants.- Alfo, a town, now "Conwayborough," in Horry difriet, South Carolina, on the weft tide of Wakkamaw rirer, having an epifcopal church, and about 36 houfes; 41 miles N. by E. from George iown-Alfo, the chicf town of Lenoir county, Newbern diftrict, in North Carolina. It is a poft town, fituated on a beautiful plain on the north fide of Neus river, and containing a courthoufe, graol, and about 30 houfes; 40 miles W . of Newbern.-Alifo, a townthip in Luzerne county, PennfylVania, containing 752 inhabitants. - Alfo, a town of Upper Canada, at the liead of the river St. Lawrence, on the north thore, oppofite to Wolf illand; occupying the fcite of old fort Frontinac, laid out in 1584 , and now advanced to a confiderable fize. It has a barrack for troops, a houfe for the commanding officer, an hofpital, feveral ftore-houfes, and an epifcopal church. About Kinglon there are feveral valuable quarries of lime-ftone, and the country in general is rather ftony, 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, \&xc. fores and merchandize are conveyed in boats.-Allo, a townihip of Upper Canada, being the fourteenth and uppermoft in afcending the St. Lawrence. It is in the county of Frontinac, and lies partly open to lake Ontario.-Alfo, the capital of the illand of St. Vincent's, in the Weft Indies, and the feat of government. It lies at the head of a bay of the fame name, on the fouth-weft fhore of the ifland, in St. George's parih. N. lat. $13^{\prime} 6^{\prime}$. W. long. 60.-Alfo, a town of Jamaica, in the county of Surrcy, fituated on the sorth fide of a beautiful harbour, and founded in 1693 , when repeated defolations by earthquake and fire had driven the inhabitants from Port Royal. It contains 1665 houles, befides negro-huts and warehoufes. The number of white inhabitants, in the year $1 ; 88$, was 6539 ; of free people of colour, 3280 ; of flaves, 16,659 : total number of inhabitants, of all complexions and conditions, $26,47 \mathrm{~S}$. It is a place of great trade and opulence. Many of the houfes in the upper part of the town are extremely magnificent; and the markets for butchers' meat, turtle, fihh, poultry, fruits and vegetables, \&c. are inferior to none. From comparative regifters of mortality it appears, that fince the furrounding country is cleared of wood, this town has been proved to be as healthful as any in Europe. Afize courts are heldevery three months in Kingiton, for the county of Surrey. N. lat. 18. W. long. $76^{\prime} 33^{\prime}$

- Kingston-upon-Hull. See Hull.

Kngaston-uron-Thames, a market town and parim in the bundred of Kingfon, and county of Surrey, England, derives its name from having been a royal refidence; and the adjunct is affixed to mark its fituation, and diltinguifh it from other Kingitons. It is feated on the fouthern bank of the river Thames, at the diftance of 11 miles from. Weft-minfter-bridge. In the fourth, fifth, and fixth years of king Edward II., this town fent members to parlament; and again in the forty-feventh of king Edward ILI. 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 Kingiton by charters from kings John, Henry III., Edward III., and other fubfequent monarchs. The corporation now confilts of about fifty members. Here are one weekly market, and three annual fairs. In the year 1769 , an at of parliament was obtained for feparating the parifh of Kingtion and its dependent cbapelries of Richmond,

Moulfey, Thames-Ditton, Peterfham, and Kew, into two vicarages and two perpetual curacies. In this town is Car-bury-houfe, a feat of the late lord Dillon, near which is a very large barn, which has four entrances, four threfhing floors, and is fupported by twelve pillars: twelve waggons may be unloaded at once within its walls.

The hiltorical annals of Kingfon relate many interefing events, as having occurred here. In the year 838 , a grand council was affembled at this place, and was attended by Egbert, firlt Saxon king of all England, his fon Ethelwolf, and the principal nobles and bimops of the land; at the fame, the archbifhop of Canterbury prefided. Other monarchs were crowned here, of which the following are fpecified by our ancient hiftorians: Edward the Elder, crowned A.D. 900 ; his fon Athelftan, 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 caftle was flanding here, as that monarch, in the year 1264, marched out of London, and feized the caftle of Kenington, or Kinglton, which then belonged to Gilbert Clare, earl of Gloucefter, and which is not mentioned in any fubfequent period. In the civil wars of the feventeenth century, Kington was again a place of public celebrity; for the firlt armed force is faid to have been aftembled here under the command of colonel Lunsford, with a troop of 400 or 500 horfe. The colonel was proclaimed a traitor, as having levied war againft the parliament, and was apprehended. Refpecting this event, and fome other contemporameons proceedings, the different party writers are very contradictury. 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, Kingiton was poffeffed by both parties: but the townfmen were moftly in favour of the royalitts. Leland ftates, that " many olde monuments be founde yn the declyving doune from Come-Parke towarde the galoys:" alfo, "fundation of waulls of houfes, and diverfe coynes of braffe, fylver, and gold, with Rumayne sufcriptions, 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 maffes to bete into plates to coyne, and chaynes of fylver." The bifhops of Wincheiter furmerly had a hall here.

In the market-place is the town-hall, which was buite 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 manfion, called Ham-houfe, which was intended for Henry, prince of Wales, fon of James 1 . It afterwards belonged to the duke of Landerdale, who furnifhed it in a very expenfive and gorgeous Atyle. In the centre of the houfe is a large hall, furrounded with an open gallery. Some of the ceilings are painted by Verrio; and leveral rooms are ornamented with paintings by the old matters, among which are a few valuable portraits. In this houfe was born John, duke of Argyle, and his brother Archibald, who was allo created duke, and made lord keeper of Scotland. The church of Kingiton has fome ancient parts. On its fouth fide was the chapel of St. Mary, which fell down in the year 1730, and bursed the fexton, his daughter, and another perfon, in the ruins. The daughter, however, was refcued alive, and fucceeded her father. In the church are feveral monumental memorials, fome of which are for perfons of eminence. Near Kingfton is a bridge acrofs the Thames, faid, by Mr. Lyfons, "to be the molt ancient on the river, except that of London. It is men:
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sinned 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 , Finglton contamed 682 houfes, and 3793 inhabitants. Lyfons' Environs of London, vol. i. 4!0. 1796.

KINGSTOWN, a town of Africa, in the kingdom of Kamtor.

KINGSTREE, a poit-town of America, in Williamsherough county, South Carolina; 480 miles from Wahingtan.

KING.TCHEOU, a eity of China, of the firft clafs, in the province of Hou-quang, feated on the Yang-tfe river. The diftrict of this town has two cities of the fecond order, and eleven of the third clafs. 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 Chuefe, the other to the Tarturs, of which the garrifon confifts. N. lat. $30^{\prime} 28^{\prime}$. E. long $111^{\prime} 37^{\prime}$.

KING-TE-CHING, a village belonging to the dilrict of Jao-tcheou in China, in which are collected the belt workmen in porcelain, and as populous as the largett cities of China. It is reckoned to contain a nillion of inhabitants, who confume every day more than ten thoufand loads of rice. It extends $1 \frac{\pi}{2}$ league along the banks of a beautiful river, with crowded buildings, and its ftreets are thronged with inhabitants; for a great number of whom it furnihes 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 thofe who appreach it at night it appears like a large city on fire. Strangers are not permitted to fleep here, but they are required either to feep in their barks, or with their friends. N. Iat. $29^{\circ} 25^{\prime}$. E. long. $116^{\circ} 5^{\circ}$.

KINGTON, or EYYetos, a fmall market town and parih in the hundred of Hunting don, and county of Hereford, is fituated on the Black Brook, under Bradnor mountain. A caltle was conftructed at this plaee, at a former period, for the defence of the marches; but the who'e is now defroyed. The church is a very irregular ftructure, having a detached tower, with a fpire of fingular form. The town is in general well built, and has a free grammar fchool, erected and endowed by lady Watkins. The inhabitants of this parim, as afce:tained by the att of 1801, amounted to 1424 ; the number of houfes to 311 . The principal manufacture is that of woollen cloth. Kingten is diftant from Hereforl 20 miles, and from London 155. Here are four annual fairs, and a weekly market on Wedref. days. The markets immediately before Eafter, Whitfuntide, and Chritmas, are very confiderable for corn, cattle, and cloth; and are equal to moll fairs. On the fummit of Bradnor mountain are the remains of a fquare entrenchment.

About two miles eaftward of Kington are the ruins of Lyons-hall caflle, a very ancient ftructure, of which fcarcely any thing now remains but fragments of the outer walls; the cafte having been demolifhed in the reign of Edward II. Beauties of England, vol. vi.

KING-TONG, a city of China, of the frft clafs, in the province of $Y$ un-nan, on the $P_{\text {a-pien }}$ river. It is furrounded with very high mountains, is which, it is faid, there are filver mines. The adj cent country abounds with rice, and the vallies are well watered. N. lat. $24^{\circ} 30^{\circ}$. E. long. 10039.

KINGUA, a town of Eaft Greenland. N. lat. 65 $21^{\circ}$. E. long 45 26.

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KING-TWILLIAM, a county of Virginia, between Mattapony and lamunky rivers. It is 47 miles lont, and 15 bruad, and contains 5744 free inhabizants, and 3315 nlaves. At the court-huufe is a poft-office.
KINGIVOOD, a townhip in Huntingdon county, New Jerfey, containing 2446 inhabitants, of whom req 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 firft clafs, in the province of Chen-fio N. lat. $36 \quad 6^{\prime}$. E. long. $107^{\prime}$ 20'.

KING-YUEN, or Kix-Yrex, a city of China, of the firit clafs, in the province of Quang-fi. This city is built on the banks of a large river, and furrounded with lofyy and craggy mountains. The valliss between thefe mountains are full of villages and forts, and in the rivers is found gold. Under its jurifdiction are two towns of the fecond order, and five of the third. N. lat. $2 t^{6} 2 G^{\prime}$. E. long.

KIN-HOA, a city of the firlt clafs in China, in the province of T'che-kiang, lituated in the midit of the province, on the banks of a fine river; formerly diftinguifhed both as to the extent and beauty of its buildings, bat much injured by the attacks of the Tartars. It has eight towns of the third order in its diftriet, 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 fmall fhrubs, refembling jeffamine, which produce tallow, that make very white candles. N. lat. 29. 16. E. long. $119^{\circ}$
$16^{\prime}$

KINIC Acin, in Chemiffry, is a peculiar fubltance, recently found in Peruvian bark, where it exilts in combination with. lime. We are indebted for the difcovery to a Mr. Defchampe, apothecary at Lyons, who defcribed the falt in the 4 Sth volume of the Annales de Chimie. He obtained it by macerating the bark in cold water; afterwards exaporating the folution, and leaving it to cryftallize. The cryflals produced were equal to about y per cent. of the bark employed. He did not profecute his inquiry further; and it was not until fome experiments which were afterwards undertaken upon it by Vauquelin, that the falt in queftion was found to contain a new acid. The relearches of this excellent chemilt, however, appear fully to have eltablifhed 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 defcribed was extracted.
The kinat of lime, obtained by the foregoing procefs, is of a white colour, and cryftallizes in plates. It is devoid of tafte, diffolving in about five times its weight of water, at the temperature of $55^{\circ}$. Alcohol exerts no action upon it. By expofure to heat it is decompofed, and carbonat of lime and charcoal are the products. Its folutions are not altered by ammonia; but the fixed alkalis precipitate the lime. This alfo takes place with the oxalis and fulphuric acids. It appears to be compored of 90 aeid, and 10 lime.

To procure the free acid, M. Vauquelin precipitated the lime by an oxalat, and afterwards concentrated the liquid by evaporation. It was of a fyrupy confiftence; and onbeing fet afide to cryftallize, was founds. at the end of a week, to have undergone no change : but the moment he touched it with a glafs rod, the whole mafs affumed the form of divergent crytalline plates. The colour of the aeid was of a flight brown; occafioned, probably, by the eva-

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poration having been carried too far. Its tafte was extremely four ; and there was alfo a bitternefs in it, which might be owing to an imperfect feparation of the other conftituents of the bark. Expofure to the air effected no alteration upon it.

By heat, kinic acid is decompofed, and converted into charcoal. It combines with different bafes; and with the carths and alkalis, produces folmbe and cryitallizable falts. On the nitrats of filver, mercury, and lead, no change is occafioned by it. A mates de Climie, t. 59 .

KINI'I's', in Grography, a town of Moravia, in the circle of Olnutz ; $2+$ miles WV. of Olmutz.

KINK-COUGH, in MEdicine. Sce Pertussis.
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 Geograply, a town of Corea; 15 miles E.N.E. of Cou-fun.

KIN-MEN-LO, an ifland in the Chinefe fea, near the coalt of China, about 24 miles in circumference, of a triangular form. N. lat. $24^{\circ} 30^{\circ}$. E. long. $118^{\circ} 20^{\prime}$.

KINNAIRD's HEAD, a promontory on the caft coalt of Scotland, forming the fouth boundary of the frith of Murray; fuppofed to be the "promontorium Taixalium" of Ptolemy. N. kat. $57^{\circ} 58^{\circ}$. W. long. $1^{\circ} 54^{\circ}$.
kinnaras, or Cinnaras, in Hindoo Mytbology, are male dancers in Swerga, or the heaven of Indra.

KINNBACK, in Geagraphy, a fmall illand on the weft fide of the gulf of Bothinia. N. lat. $65^{\circ} 9^{\prime}$. E. long. $21^{\circ}$ $30^{\prime}$.

KINNEGAD, a polt-town of Ireland, in the county of Weltmeath, province of Leimfter. A kind of cheefe, of a very inferior quality, made in this neighbourhood, is called Kinnegad cheefe, from this town. It is $29 \frac{1}{2}$ 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 Geograplyy, a confiderable town of Africa, in the kingdom of Manding; about 24 miles N.E. of Kamalia. N. lat. $12^{\circ} 55^{\prime \prime}$. W. long. $5^{\circ} 5^{2}$.

KINNOR, in the Jewifg Antiquities. See Cinyra, and Cimnor.

KINO, in Chemifry, is an aftringent fubflance, of a black colour, fuppofed 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 phyfical nor chemical properties characteriltic of that clafs of vegetable products. According to Dr. Duncan, the kino now known in the fhops 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 tamin in a particular Itate ; which has the property of precipitating the falts of iron of a green colour, inftead of black. With gelatine it forms a rofe coloured coagulum. We are indebted to Dr. Duncan for the firt defcription of its properties ; and he has publifhed the refult of his obfervations in the New Edinburgh Difpenfatory, p. 242. Vauquelin afterwards took up the fubject; but the kino that his experiments were made upon, Dr. Duncan fufpects to have been the product of fome of the fpecies of eucalyptus, particularly the refinifera; being the fubtance called Botany Bay gum, a quantity of which was fome years ago imported into Europe. It differs from the kino of the coccoloba in being of a much finer quality. Nicholfon's Journal, vol. vi. No. 24, p. 232-234.

Kivo, 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 butanically afcertained, it is known to grow on the banks of the river Gambia in Africa. The firft account of this drug is related by Moor in his "'Tragels into the interior l'arts of Africa," ed. 2. p. 113, by which we learn, that in wounding the bark of this tree, the fluid kino immediately iffices drop hy drop, and by the beat of the fun is formed into a hard mafs. 'This, which was for fome time confidered as a fpecies of Sanguis draconis, was afterwards fully explained, and its medical character eftablifhed, by Dr. John Fothergill. (Med. Obf. and Enq. vol. i.) Kino has a canfiderable refemblance to Catechu, but redder, and is more firm, refinous, and aftringent. It is now in common ufe, and is the moftefficacious vegetable aftringent, or Ityptic, in the materia medica. The "tincture of kino" is prepared by macerating three ounces of kino powdered in two pints of proof fpirit, for 14 days, and flraining it. All the aftringency of kino is included in this preparation. The dofe is from one fluiddrachm 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 firft introduced into the London Pharmacopeia of 1809 ; the proporion of opium contained in it being one in twenty. The dofe is from five gr. to $\fallingdotseq j$.

KINOGAM, in Geography, a river of Canada, which runs from lake Wiakwa to the river Saguenay. N. lat. $4^{8 \circ} 34^{\prime}$. W. long. $7 \mathrm{I}^{\circ} 31^{\prime}$.

KINOLI, a town of Afratic Turkey, in Natolia, on the coaft of the Black fea; 16 miles N.W. of Sinob.

KINOSA, St., an illand in the Grccian Archipelago. N lat. $36^{\circ} 53^{\prime}$, E. long. $25^{\circ} 34^{\prime}$.

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 ISOI 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 frefh water lake, with two fmall iflands in it, on one of which is a cafle, 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 thofe of the adjoining counties of Fife and Stirling, are fertile and well cultivated. The county returns a member to parliament alternately with the fmall illand of Clackmannan. The town was formerly famous for its cutlery; but the chief manufacture now is Silefia 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. $56^{\circ} 13^{\prime}$. W. long. $3^{\prime 2} 25^{\prime}$.

KINROSS-SHIRE is a fmall inland county in the northern part of Scotland. The ancient fhire of this name was divided, about the year 1426 , into the two counties of Fife and Kinrofs; and at the revolution Kiurofs, being thought too fmall a county as it then flond, was enlarged by the addition of Orwell, C'eifl, and Tillibole; which pirimes, before that period, wcre part of the county of Fife. But though thefe are now two diltinct counties, and are feparately reprefented in parliament, they are both comprehended in the fheriffdom of Fife. Kinrofs-fhire is bounded on the ealt and fouth by Fifehire, and on the north and well by Perthfhire. It extends, from caft to welt, from Foflaway church to Auchmore bridge, eleven miles; and from Kellybridge nearly due north to Damhead, about wine miles and
a half. The general figure of the county is circular, though the line of its boundary is very irregular. That which limits with Perthlhire meafures twenty-one miles; but when taken in a right line is only ahout fourteen : the boundary with Fife meafures nearly twenty-eight miles, buc in a flraight line dues not exceed nineteen. The county contains 78 fquare miles, or about 30,702 Scottifh acres; comprehending one town, kiurofs, with tix other parithes; and was returned under the population aft of 1801 as containing 1409 houfes, and 6725 inhabitants. The furface of the county is areatly varied. The middle portion occupies a fituation comparatively 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 thars the laigh or vale of Kinrofs, with a fingle exception, at the narrow paflage at the ealtern extremity of the county, where the river Leven ifucs from the celcbrated loch of that name. The Ochil hills form the northern boundary of Kinrols-fhire ; the Cleifh hills, the fouthern; and Balneartie hill, with Weft Lomond, or Bifhop's bill, as it is called, bound it on the ealt and fouth-eaft quarters. The fides of thefe hills, which face the central part of the county, are for the moft part excellent paltures, generally, retaining beautiful verdure; patches of mooriand occurring only near their fummits. In the interior and higher part of the Ochils, however, heath becomes more abundant. The chief variety in the appearance of the low grounds is produced by the mixture of corn and grafs-lands, and by a few thriving plantations interferfed with villages. Some intervening moralfes, and extenfive moors, likervife variegate the furface. Even the margin of Lochleven is ornamented in this way by a common moor of more than 300 acres, in the vicinity of the town of Kinrofs, in the very centre of the countr. The afpect of the whole fhire is open and expofed, there being but a fmall part inclofed, and many of the inclofures furmed not of hedges but of flone walls.

Of the waters of this countr, the molt remarkable is the lake called Lochleven, on the weftern banks of which Itands the town of Kinrofs. This lake, though inferior in magnitude and grandeur to Lochlomond, is a noble expanfe of frefh water, about fifteen miles in circumference, including its angular juttings, and covering nearly 3300 acres. The furface of the water at its higheft rife and loweft fall, varies about three feet. Lochleven is bounded on the calt by the Lomond hills, on the fouth by that of Balneartie, and cn the weft by the plain of Kinrofs. It is remarkable for producing trout of a large fize with flefh of a reddifh colour, nearly approaching to the talte and appearance of falmon. Some of them weigh from two to eight, and even tea pourds each. The high colour of there trout is afcribed to the great quantity of fmall red fhell-fifh which abounds at the bottom of the loch; the trouts hase often their ftomach full of them. Lochleven receives the waters of three fmall rivers; Gairny, the fouthermoft ftream 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 paffes through a confiderable part of Fifefhire into the fea, forming the larget water in that county. In September, the eels, which greatly abound in Lochleven, begin to emigrate in great numbers to the fea; but only at tempt this paffage during the night. The county contains feveral imall lakes; of thefe four are in the parifh of Cleifh: the largeft is about a mile and a half in circumfercuce: 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. Frof fets in earlicr, and
continues longer, than in the adjacent dillicks towards the fouth. The county is well interfected with roads, which are, in general, kept in excellent repair by the fatute labour. The carriages and thie perfonal duty may be furnihied in kind, or commuted, at the option of the perfons chargeable. The principal turnpike roads are thofe foom Perth to Qucensferry, and from Stirling to Kinrofs: they are kept in the highint prefersation.
Of the antiquities of Kinrofs-fhire, thofe connected with Lochleven are the moft remarkable. The caftle of Lochleven, now in ruins, flands upon an inand of about two acres in extent. The circuit of the outer rampart is 58 , feet. This caftle is faid to have been built by Congal, fon of Dongart, king of the Piets: but it has been rendered particulariy confpicuous in Scottifh hiltory, by the confinement of the unfortunate queen Nary. In the largeft ifland of the lake was furmerly fituated a priory dedicated to St. Serfi, or Servanus; and fait to have been founded by Brudo, the lan but one of the Piction fovereigns.

KINSALE, a fea-port and poft-town of the county of Cork, Ireland. It is fituated at the mouth of the river Bandor, which forms a fine harbour, and is navigable for large foops near 12 miles above the town, though a bar prevents large men ef war from coming into the balin. In this port there was formerly a dock furnifhed with tores for the ufe of the navy, but this has lately been removed to the neighbouring harbour of Cork, where the accommodations are greater, and which is the chief naval ftation in Ireland. The entrance of Kinfale harbour is defended by 2 fort, which having been contructed in the reign of Charles II. is called Charlesfort, in which there is always a good garrifon. Kinfale is the town which the Spaniards too ${ }^{2}$ poffeffion of, and in which they were befieged and taken prifoners, at the latter end of queen Elizabeth's reign. The town, which contains at lealt ro,000 inhabitants, is built at the fide of Compafs hill; the ftreets are narrow and the houfes indifferent, yet in the bathing feafon it is the refort of much fahtionable com. pany, 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 defcendant of the famous John de Courcy, who procured for himfelf and polterity 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. $51^{\circ} 42^{\prime}$. W. long. $8^{\circ} 30^{\prime}$.

Kinsale, old Head of, a cape of Ireland, projecting a confiderable way into the fea, and forming a very noted land mark. N. lat. $51^{\circ} 37^{\prime}$. W. long. $8^{\circ} 30^{\prime}$.

Kinsale. a poit town of Virginia, 16 miles from Weftmoreland court houfe, and 12 from Northumberland courthoufe.

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

KINTAL, or QUintal, a weight of one hundred pounds, more or lefs, according to the different ufage of divers nations.

The kintal of Smyrna is 123 pounds three ounces nise drachms, or 120 pounds feven ounces 12 drachms; but that of Aleppo is 46 , pounds 11 ounces 15 drachms.

KIN.TAM, in Geography, an ifland in the Chinefé fea, near the coalt of China, about 24 miles in circumference. N. lat. $30^{\circ} 9^{\prime}$. E. long. $121^{\circ} 2 t^{\prime}$.

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

KIN-TCHENG, a town of Corea; 80 miles $E$. of: Kiog-ki-tao..

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## K I N

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KIN-TCHIN, a city and capital of the incs of Lieoukieou. This city is fituated in the S.E. part of the large iीand called "Cheou-li," where the court refides. The king's palace, which is reckoued to be four leagues in circumference, is built on a neighbouring mountain. It has four gates, which correfpond to the four cardinal points; and that which fronts the welt, forms the grand entry; The view which this palace commands is moft extenfive and delightful; it reaches as far as the port of Napa-kiang, at the diltance of 10 lys , ( $2=0 \mathrm{lys}$ making 60 geographical miles ), to the city of Kin-tching, and to a great number of other citics, towns, villages, palaces, temples, monafteries, gardens, and pleafure-houfes. N. lat. $26^{\circ} 2^{\prime}$. I. long. 146' $26^{\prime}$.

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

KINTORE, a fmall borough town and parih of Aberdeenfhire, Scotland, in the dittriet of Garrwik, is feated on the river Don, at the diftance 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 ouly anthentic deed of this defcription was granted by $J$ ames V. : its government is velted in a provolt, two bailifis, a dean of guild, a treafurer, and a council of eight other burgeffes. The firft of thefe offices has long been veited in the earls of Kintore. In this place are a town-houfe and a prifon; and in the year 1800 it contained 198 houfes and ${ }_{4} 6$ inhabitants. In conjunction with Damff, Cullen, Elgin, and Inverury, it returns one member to the Britifh parliament. The parifh of Kinture is about fix miles in length by eight in breadth, and rifcs gradually from the river Don to a range of hills. In it is Thaintone, the feat of Forbes Mitchell, efq, 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 Scatiftical Account of Scotland.

KINTYRE, or Cantyre, one of the three diftricts of Argylefhire, in Scotland. Of the three diarricts or divifions of the comnty of Argyle, viz. Lorn, Kinapdale and Kintyre, the latter is the mott level and beit adapted to the purpores of agriculture. It forms a long narrow peninfula, bordered by Lochfine and the Firth of Clyde on the ealt fide, and by the weltern fea on the welt. Of this peninfula, by much the greatelk part belongs to the duke of Argyle, who has a chamberlain or factor refident at Campbelltown, for the fuperintendance of this part of his eftate. There is alfo a cultom houfe at Campbelitown, for the regulation of the collection and prevention of frauds on the revenue, and fome of the cruizers are generally on this flation, for the detection and capture of fmugglers. The loch or harbour of Campbelltown is excellently adapted for this, as from it a velfel of force can with eafe command the whole fhipping of the Clyde in moderate weather, and may board, over-haul, and infpect almolt every veffel in the leaft fufpected. The termination of the peninfula is called the Mull or Moyle of Kintyre.

KINVACA, a town of Africa, in Fooladoo. N. lat. $33^{\prime} 10^{\prime}$. W. long. $6^{2} 2^{\prime}$.

KINIJRE Poist, a cape of Ireland; in the county of Cork, at the entrance of Oytter haven, and about three miles eaft from Kinfale harbour.

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

KINYALOO, a town of Africa, in the town of Manding. N. lat. $1 z^{\circ} 5^{\prime}$. W. long. $6^{\circ} 5^{\prime}$.

KIN-YANG, a city of China, of the firft clafs, in the province of Chen-li ; which, being regarded as a barrier
againf the incurfions of the Tartars, is ftrongly fortified in the Chinefe manner: the adjacent country is very fruitful; and produces a kind of herb, called "Kinfee," i.e. golden filk, to which is afcribed fome medicinal virtue, and alfo a kind of bean which is faid to be an admirable fpecific againft any fort of poifon. This city has in its dittrict one town of the fecond order and four towns of the third order. N. lat. $5^{\circ} 6^{\circ} 6^{\prime}$. E long $107^{3} 19^{\prime}$.

KINY'AKOORA, a town of Africa, in the kingdom: of Gadou: 36 miles S.IV. of Kanmalia.

KIOANON Point, called in fome maps Kikeloned, 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. Sereral monuments are fill to be feen there, erected in honour of this eminent man.

KIOGE, a fea-port of Denmark, fituated on the ifland of Zcaland, in a bay at the mouth of a river, formerly a place of confiderable trade, with manufactures of valuable tapeftry. In 1659, it was fortified by Charles Guftavus, king of Sweden, with ditches and ramparts; 10 miles S.S.W. of Copenhagen. N. lat. $55^{\circ} 28^{\prime}$. E. long. $12^{\circ} 13^{\prime}$.

KIOLEN, a town of Sweden, in Warmeland; 40 miles N.W. of Carlitadt.

KIONGONG, a town of Bengal ; 30 miles N.N.E. of Burdwan. N. lat. $23^{\circ} 41^{\prime}$. E long. $88^{\circ} 10^{\prime}$.

KIONTONA, an Indian town on Conewango river, in Pennfylvania; in miles N. from its mowh in the river Al. leghany.

KIOPING, a town of Sweden, in Weftmanland, on a river of the fame name, communicating with Malar lake. It is a place of good trade; 10 miles W. of Strocmanalm. N. lat. $59^{\circ} 33^{\prime}$. E. long. $16^{\circ} 43^{\prime}$.

KIORAH, a town of Hindooftan, in Boggilcund; 27 miles N.N.E. of Rewah.

KIOREHVESI, a town of Sweden, in Tavafland; $5^{6}$ miles N. of Tavathus. N. lat. $61^{\circ} 56^{\prime}$. E. long. $24^{\circ} 33^{\prime}$.

KIOV. See Krev.
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 graduaily improving. The manufacture of cotion cloth is the fource of its profperity. A town called "Hinzaelah" near it, is of much greater antiquity ; 76 miles N.N.W. of Rangoon. N. 1at. $17^{2} 42^{\prime 2}$

KIOZDI, a town of Walachia; 77 miles N. of Bu. chareft.

KIPE, a kind of ozier bafket, wide in the middle, and narrow at both ends; ufed for taking fifh.

Kire is alfo a game, which confifts in throwing fomething into a hole, called the kipe-hole.

KIPHANTA, in Geography, a town of European 'Turkes. in the Morea; 20 miles E. of Mifitra.

KIPPER. See Salmon Fisirery.
Kiperr-Time, a fpace of time between the feltival of the finding of the Holy Crofs, May the 3 d and 12 ths day; during which, falmon-fifhing in the river Thames, from Gravefend to Henley, is forbidden by Rot. Parl, 50. Edw. III.

KIPPIS, Andrew, in Biography, an eminent nonconformitt minifter of the laft century, was born at Nottingham on the 28th day of March, in the year $\mathbf{x 7 2 5}$. He was defcended, both by the father's and mother's fide, from ejected minifters of the names of IKing and Ryther, whis are mentioned with refpect in Dr. Calamy's Account of the Miniltere

Miniflers ejected and filenced by the $\Lambda$ et 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 Lincolnhire, where he received his grammatical education. His talents and application attracted the peculiar notice of Mr. Merrivale, who was paftor of a congregation of dif fenters in that town; and by his advice and encouragement, his views were directed to the profeffion of a diffenting minifter, and to thofe literary purfuits in which he aftervards 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 ftudies with fuch diligence and improvement, and conducted himfelf with fuch exemplary propricty, as to conciliate the affectionate elteem and partial attachment of his tutor. Having completed his courfe of five years at the academy, he undertook the charge of a diffenting congregation at Bofton, in Lincolnnire, with which he fettled in September 1746. From Bofton he removed to Dorking in Surrey, in $\mathbf{1 7 5 0}$; and in 1753, he fucceeded Dr. Hughes as paftor to the fociety in Prince's ftreet, Weftminfter. In the fame year he married Mifs Elizabeth Bott, the daughter of a refpectable merchant at Boiton, in whom he found a fenfible, prudent, fprightly, and cheerful companion, and by whofe attentions his mind was relieved from all family concerns; fo that he was left at full leifure to profecute the various duties which his numerons engagements devolved upon him. Whether we confider the literary talents, the minitterial abilities, or the external accomplifhments of the fubject of this article, no perfon could have been better qualified for the fituation into which he was introduced than himfelf. His fettlement with the fociety in Weltminfler laid the foundation of that celebrity which he afterwards acquired, and of that extenfive ulefulnefs which diltinguihed his future life. He was thus foon introduced into a connection with the Prefbyterian fund, to the profperity of which he was afterwards very ardently devoted. In June 1762, he became a member of Dr. Williams's truft; and this appointment afforded him an additional opportunity of being eminently and extenfively ufeful in a variety of refpects. His connection with the general body of Proteflant diffenting miniflers, belonging to the cities of London and Weftmintter, and with many charitable inltitutions, which the liberality of diffenters has eftablifhed, gave him frequent occation to exercife his talents for the honour and intereft of the caufe, to which, both by his fentiments and profeffion, he was zealoully 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 neceffary to make a new arrangement of tutors in the academy, fupported in London by the funds of Wil. liam Coward, efq. the trultees directed their views to him ; and in the year $\mathrm{I} 7 \sigma_{3}$, he was appointed claffical and philological tutor to that inltitution.

In 1767 he received the degree of docter in divinity from the univerlity of Edisburgh; an honour, in the unfolicited grant of which the principal and profeffors very cordially concurred. No one can difpute his peculiar clam to fuch a token of refpect. -

In March ${ }_{177} 8$, 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
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1786 to 878\%. In both thefe focieties he was a regular attendant, and a refpectable and ufeful member.

Having, in the year ${ }^{7} 784$, quitted his connection with Mr. Coward's academy, which, upon the refignation of the two other tutors, was difcontinued, he cordially concurred. with a very refpectable body of diffenters, in 1786, in eftablifhing a new inftitution in the neighbourhood of London, with a view of educating minifters and other young gentlemen intended for civil life. Dr. Kippio was very affiduous and active in his endeavours to accomplifh 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 perfons, for whom be entertained a peculiar refpeet ; and the at length, though not without reluctance, acquiefced in the appointment to be one of the tutors of this new inflitution. The diflance of his refidence from Hackney, where the college was fixed, and fome other circumitarces which it is unneceffary to recite, induced him in a few years to withdraw from it, as a tutor : though he ftill continued to ferve it by a liberal fubfcription, and by his intereft with opulent friends.

Dr. Kippis continued to profecute his other ufeful labours without intermifion; and till within a fortnight of his death, his friends had no reafon to imagine that they were fo near their clofe. In the courfe of the fummer, a few :weeks before his death, he took a long journey on public bufinefs, and returned, as his fellow travellicrs apprehended, with recruited fpirits and eftablifhed health; and they were equally furprifed and grieved when they heard that he was confined to his bed with a fever, which baffled the fill of the molt eminent phyficians, and which haftily advanced to the fatal crifis. His diforder was of fuch a nature, that he found himfelf both difinclined and unable to make any exertion, or to converfe much even with his mof conflant attendants. There is reafon, however, to believe, that in a very early ftage of his diforder he was not without apprehenfions of its terminating in his diffolution. The laft 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 fome 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 eafy to do fufficient jultice to the eminent. talents, the extenfive labours, and exemplary character of Dr. Kippis.

His mild and gentle temper, his polifhed manners, his eafy and graceful addrefs, and a variety of external accomplithments, prepoffeffed thofe who firft faw him in his favour, and could not fail to conciliate efteem and attachment on a more intimate acquaintance. Thefe qualities contributed very much to recommend him to perfons in the higher rauks of life, to feveral of whom he had occafional accefs; and qualified him, in a very eminent degree, for the fituation in which he exercifed his minitterial office. But he was no lefs condefcending, courteous, and affable to his inferiors, than to thofe who occupied fuperior flations. Dr. Kippis had nothing of that aufterity and referve, of that haughitinefs and fupercilioufnefs, of that parade and felf-importance, and oltentations affectation of dignity, which forbid accefs, and which mar the frecdom and the pleafure of all the focial intercourfes of life. And yet thefe difgurfful and odious qualities fometimes accompany literary men, and efpecially thofe who have acquired any confiderable degree of eminence and reputation.

The mental abilitics of Dr. Kippis were of the fuperior kind. He pollefted a comprehenfive underftanding, a found E.
julgment, a retentive memory, a correct imagination, a refincd talle, a quicknefs and a facility of exerting his faculties on any fulbject or occalion, however fuddenly they might occur.
The natural powers of his mind were cultivated with an affiduity and perfeverance of application, in which he had fow fuperiors, and not many equals. They had been habituated through life to regular and conflant exercife, and had acquired itrength and vigour from ufe. He was never hurricd and diftralted by the variety of his literary purfuits; aud though he had many engagements, which requircd his attention, and which diverted his mind from the objects of tludy to which he was devoted, he never feemed to want time. Every kind of bufinefs was referred to its proper feafon. By a judicious arrangement of his Itudies, as. well as of his other occupations. the number and variety of which he never oftentationfy difplayed, and by the punctuality of his attention to every kind of bufinefs in which he was employed, he avoided confufion; he retained on all occafions the poffeffion of himfelf; and he found leifure for reading and writing, and for all his literary avorations, without encroaching on that time which he appropriated to his profeffional dutics and focial connections.
Indeed, there have been few perfons, fays his biographer, who read fo much, and with fuch advantage to thempelves and others, as Dr. Kippis. Hence he acquired that extenfive aciquaintance with books, and with the literature of ancient and modern times, and particularly of the laitt century, which rendered him an inftrutive companion, and which directed him where to apply for neceffary infornation on any fubject that employed his own attention or that of others. But though he read much, he was not one of thofe who walle their time in defultory reading, and who make no addition to their flock of ufeful knowledge by the volumes which they turp 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 converfant, that have iffued from the prefs, for many years, of the fpecific objects and real merit of which he could not give a jutt and fatisfactory account.
There is one circumftance, to which it was principally owing that Dr. Kippis feemed, in the midalk of a great number of engagements, to have time at his own conmmand, and which enabled hinn to difpatch much bufinefs without apparent hurry and confution.
We mention it here, for the dircction of young perfons, and efpecially of young ftudents, whofe habits are not ettablifhed. He had been accuttomed from his youth to carly rifing; and he thus fecured to liinfelf a certain porticn 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 difcharge of his various literary and profefional obligations. Providence had bleffed him with an excellent conltiutuion. He had preferved it unimpaired by a courfe of unifornn regularity and temperance. He was little interrupted through life by any bodily diforder in any of the occupations to which he was devoted. If we except a fever, which laid him afide for fome years before his death, and a conltitutional cough which was rather beneficial than injurious, he enjoyed an unufual fhare of health and fiprits.
Dr. Kippis poffeffed other qualities, befides his mental abilities, however excellent, however affiduoully cultivated, and howerer uffully employed, which rendered his charaticr
in a nill higher degree eftimable and praife-worthy. In private life, his difpolition and deportment were amiable and exemplary. His picty originated in honourable fentiments of the perfections and providence of God; and its practical influence was uniform and permanent. Hc exhibited, in all his connections and concerns, a humble, meek, placable, forgiviug, and benevolent temper. The gentereefs, mildneff, and philanthropy of his difpofition formed very diftinguifling traits of his character. With thefe virtues, fo congenial to the Ipirit of the religion he profefed, fo conducive to the tranquillity of his own mind, and fo powerful as incentives to activity and ufefulneff, he united an infexillle integrity, and an independence of fpirit, which difdained every thing that was mean, felfin, and fervile.
If we accompany Dr: Kippis from private and domeftic life into the various flations of public ufefulnefs, which Providence affigned him, we flalll find him eminently qualified, and ardently difpofed to ferve his generation according to the will of God. His knowledge of the world, the rectitude of his judgment, and the mildnefs of his temprr, gave him confiderable influence in various connections to which he belonged. At the Prefbyterian Board, in Dr. Williams's Truft, and in the general body of affociated minillers, his opinion always claimed peculiar deference. As be was become the father of feveral focieties of this kind to which he ftood related, his age commanded refpect; and his condefcending, complying difpofition rendered, it eafy and pleafant to act with him on every occafion. Notwithttanding the variety of his encagements, he was a conltant attendant. He never pleaded them as an apology for abfence. He never wifhed to decline any public fervice, whatever perfonal inconvenience or trouble might attend it. He preferred the concerns of others, who needed his affiftance, to 1is own.
As a fcholar, the literature of Dr. Kippis was various and comprchenfive. But the fudies to which he principally applicd, and in which he noot excelled, were thofe of the claffics, the belles lettres, and hiillory; belides thofe which were immediately conncted with his profeffion. The hiftory of his own country had been the fubject of his long and laboured inveltigation; and the principles of the Britith conffitution he had diligently fludied. To thefe he was zealoufly attached; and he ably defenced them, though he was not unapprized of the corruption which time liad introduced, and of the necefity and wifdom of a fpecedy reformation. He was a fleady, uniform, and ardent friend to the caufe of civil and religious liberty; and in the courfe of his life he had various occafions of avouching himfelf the advocate of this caufe. But whillt he deteltced tyranny and oppreffion, he dreaded anarchy and tumult. In the political contefts, which have lately agitated this country, the moderation of his temper was eminently conficicous. His difpofition was gentle and conciliating. He was an enemy to every fpecies of violence ; and he thought that calmneff, firmuels, and perfeverance in the purfuit of conllitutional meafures, were the moft likely means of obtaining a reformation of acknowledged abufes, and a ternination to public calamities and evils. Though he thought it moot prudent to withdraw from fome focietics of a political nature, with which he had been long connected, he never abandoned the principles upon which his firlt coanection with them was founded; nor did he cyer difguife his fentiments either of men or of meafurcs, whenever a proper occafion for declaring them occurred.
In many other focicties of a different kind, that were clfablifhed for literary improvement or friendly intercourfe.

Dr. Kippis was a very valuable and ufeful member. Whillt Lis modelty prevented his obtruding his fentiments on others, or aftuming the lead, and prefuming to dichate amongth thofe who were in various refpects inferior to himfelf, he was always communicative and entertaining. He never offended either by an ungracious referve and affected filence, on the one hand, or by an intrutive and troublefome loquacioufnefs on the other. His literary character was univerfally acknowledged by perfons of this defcription, with whom his acquaintance was intimate and extenfive. The courfe of his ftudies furnithed him with a variety of anecdotes, that rendered his converfation, on particular occafions, interelling and infructive. His knowledge of books, and his judgment of their refpective merit, which was always formed with candour and pronomaced with modelty, were very comprehenfive and accurate; and he was often appealed to by thofe who wifhed to obtain information on fubjects of this nature. In thofe 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 fcholar, and the judgment refuiting from experience and an attentive obfervation of the courfe of the world, with the manners of the gentleman, and the decorum belonging to his public character as a Chritian, and his profeffion as a minitter.
Amid! 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 benelit to the young perfors who were under his care. His lectures and his general conduct conciliated the efleem, and promoted the improvement of his pupils. They all honoured and loved him; for he had a haspy talent of attaching their affection and refpect. They lamented his removal from this fphere of public fervice. To young men, and particularly to young minitters, Dr. Kippis was always attentive and friendly. He was ready, on all occafions, to affitt them with his advice in the profecution of their private fludies and public labours s and to thofe who needed pecuniary aid, his hand was extended for the diftribution of his own property, as well as that of others entrulted to his difpofal.

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 afrerwards became a more contant writer in the Monthly Review. Hisarticles were chiefly hiltorical and theological, with occafional ffrictures on works of general crudition. He alfo furnihed a periodical publication, called the Library, with feveral valuable papers. He laid the foundation of the New Annual Regitter; and fuggelted the improved plan upon which that work is conduted. The Hiltory of Ancient Literature, and the Review of modern Books, were, at its firlt commencement, written by him, and continued to the jear $\mathrm{I}_{\boldsymbol{y}} \mathrm{S}_{\boldsymbol{t}}$, inclufive. He was alfo the author of the "Review of the Tranfactions of the prefent Reign," prefixed to the Regiter for 1780; and of the "Hitiory of Knowledge, Learring, and Talle, in Great Britain," prefixed to the fucceeding volumes, to the year 1794 inclutive.

During the application of the diffenting minifters 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 publifhed a valuable pamphlet, vindicating that meafure as to the matter, manner, and time of it. It was intended as an anfwer to a poblication afcribed to a writer who afterwards filled a very high flation in the church, and was
entitled " $\Delta$ Vindication of the Protefant Diffenting Miniflers, with regard to their late Application to Parliament," Svo.

Soon after his admiftion into the Royal Socicty, he publifhed a pamphlet, entitled "Ohrervations on the late Contefts in the Royal Society," ${ }_{1}-8_{+}, 8$ ro, ; with a view of allaying the animofities that fubfitted in that body, which produced a good effect. Wis intimate connection with fir John Pringle, bart. who was formerly a very refpectable and ufeful prefident of the Royal Society, led Dr. Kippis, after his deceafe, to republith hit. Six D:Icourlies, delivered at the affigment of fir Godfrey Copley's medal, to which he has prefixed a valuable life of the author, $1783,8 \mathrm{vo}$. Ast the clofe of the American war he publifhed a political pamphlet, formed from materials which were commun cated to him by perfons of eminence, and detligned to jullify the peace, which terminated that unhappy consell. This pam. phlet was entitled " Confideraticns on itie Provifonal Treaty with America, and the Preliminary Articles of Peace with France and Spain." He a'fo publifhed fereral fingle difo courfes, which were delivered on particular oncafions; fome. of which are reprinted in his volume of fermons, 1794 . Nor fhould we omit to mention his acconst of the life and voyares of captain Cook, $1 \%$ S8, 4 to. ; Lisis new edition of Dr. Doddridge's Leeturcs, with a great number of additional references; his life of this excellent perfon, prefixed to a new edition of his Expolition of the New Tellament, 1792; his life of Dr. Lardner (to whofe abilities, character, and writings he has paid the juft tribute of refpect) prefi:ed ta the complete collection of his works; in II vols. 8 vo. 1788: and "An Addrefs de'ivered at the Interment of Richard Price, D.D. F.R.S., S.C. 1795;" and an "Ordination Charse," $1 ; 58$, Soe. He alfo affilted in felecting and preparing "A Collection of Hymns and Pfalms, for public and private Worhip," 1795, Svo. and raro. which is ufed in many places of worfhip among Proteftant diffenters, and has pafied through feveral editions. But the work, to which Dr. Kippis devoted his principal attention for many of the laft years of his life, and by which he has acquired fingular reputation, was the Biographia Britannica. His indefatigable induftry in col'ecting materials for it, his accefs to the bell fources of information, his knowiedge of men and books, his judgment in felecting and marking every circumitance that could ferve to dittinguifh 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 mach regretted, that he did not luve 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.
Notwithtanding the time that mut have been devoced to the feveral objects now recited, and to the correction and publication of the works of friends, who refpected his judgment and wifhed to avail themfelves of his affitance, which he could never refufe to thofe who requefled it; Dr. Kippis never nogiected the fludies and duties more immediately pertaining to his character as a divine, and his profefiron as a minilter. His acquaintance with the various branclies of theology, and with fubjects fubfervient to his critical fudy of the fcriptures, was very extenfive. He was in the daily habit of reading fome portion of the Net Teftament in the original language. He was converfant with the beit writers on Jewifh and Chriflian antiquities; and in the courfe of his reading no work efcaped him, that was defigned to illuftrate the evidence, to chab in the truth and
divine
divine original, and to inveftigate the geruine doctrines of the Chriftian Revelation.

He was a believer in Cluritianity upon the matureft examination and the fulleft conviction. No perfon was better acquainted with the controverfies which Revelation has produced. He had ftudied 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. Anthority, indeed, is not abfolutely conclufive in queftions of this naturc. Yet whilh Chirittians can rank in the number of the adrocates of their religion fuch men as Bacon and Boyle, Newton and Locke, Clarke and Hoadley, Jortin and Lardner, and many other living wrieers of the firft eminence with refpect both to learning and character, who have profeffedly ftudied the evidence of Revelation; there is no real ground of alarm from tha feeble effurts of avowed inlidels, who have acquired popularity in another way, and to whom a partial attention may be directed, but who manifelt great ignorance of this fubject, and who are tery reprehenfible on account of their mode of attacking Chriftianity.

The principles which Dr. Kippis derived from Chriftianity were the directory of his conduct and the furrese 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 difcoveries and hopes of the gofpel; to fubmit to the practical influence of its doctrines and precepts ; and to cherifh the pleafing and animating expectations which it afforded. He had imbibed in a very high degree the mild and placable and benevolent fpirit of the religion which he profefled, and he exemplified this fpirit both in his preaching and in his practice.

Of his fentiments as a divine, and of his abilitics as a preacher, it is hardly neceffary for us to fay any thing on this occafion. Towards the clofe of his life the inclination of his mind was to the diftinguifhing opinion of the modern Unitarians; though he was far from embracing all the tenets that have been adopted by fome perfons who are thus denominated. However, he difapproved their appropriating this appellation to themfelves, which he confidered as affuming and exclufive ; and he lamented that excefs of zeal, with which fpeculations, comparatively of fmall importance, are maintained and propagated. Thofe doctrines and duties which be thought of principal moment, he feduloufly inculcated. Tenets of inferior importance, and that had no immediate influence on rectitude of tumper and practice, he more generally avoided. Such, indeed, were the meeknefs and moderation of his temper, his folicitude to preferve pace and unity, and his governing defire to guard againit the pernicious effects of a controverfial and contentious firit, that he beheld with concern the intemperate eagernefs and ardour with which difputes of trivial moment have been fometumes conducted, and he deprecated the unhappy divifions which they are likely to occafion.

As a preacher, Dr. Kippis was rational and feriptural; judicious and inffructive ; practical and interecting, efpecially towards the clofe of his difcourles; and he blended the argumentative and pathetic on particular oscafions. His compofitions were always well ftudied; his voice was clear and harmonious; his delivery was natural and unaffected, and on occafirns that required it, animated and impreffive; and though he fought not that popularity which depends more on lound and gelture and mechanical exertions, than on rational and fervent addreffes to the judgment and affections, and which is generally of no long duration, he re-
tained the refpeet and efleem of the fociety in Weftminfter for more than 42 years.

Such are the gencral outlines of the character and labours of Dr. Kippis. "The portrait, I am fenfible," fays the writer from whofe ascrunt of him this article is extracted, " is not fufficiently juut to the original. In delineating a character, which exlibits fo many excellencies and fo few defeets, none can furpect me of approaching to adulation. My refpect for him was great. I honoured him as a father. I loved him as a brother. But my affection, I am confident, has not mifled 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 eltablinhed friendflip; and our friendfhip continued, without fo much as a momentary interruption, and with increafing attachment, for more than 32 years, to the day of his deaith. It muft have been my own fault, if I have not derived advantage from his extenfive literary knowledge, from the wifdom of his counfel, and from the exemplarinefs of his conduct. No apology, I truft, will be thought neceffary for introducing myfelf on this occafion. As it was my anbition to cultivate the friend hhip I enjoyed, it is my pride to have it publicly known, that I valued that friendhip, as one of the chicf honours and pleafures of my life. The friend I have loit cannot be eafily replaced." See Rees's Funcral Scrmon, preached at the Meeting-houfe, in Prince's-ftreet, Weltminfter, Oct. 18, 1795.

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

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

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

KIRALI, a town of Afratic 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 Hindooftan, in Marawar; 20 miles S. of Tripatore.

KIRByE, George, in Biograppy, an excellent Englifh madrigalift on the Italian model; tut who was more rema:kable for fimplicity than tafte and fancy. In 1597, he publifhed his firtt fet of madrigals to $3,4,5$, and 6 voices ; feveral of which were fuccelsfully revived at the concert of ancient mufic and the Catch-club, during the firft years of thofe inftittitions. They are now fuffered again to fleep in peace, with thofe of Walker, Wilbye, Eit, and Bennet, our principal madrigalifts, perhaps never to be waked again.

IKIRCAGATCH, in Geography, a town of Afiatic Turkey, about 40 miles N.E. of Magmi or Magnefia, on the route to Prufa, which has rifen to confiderable population, from the cultivation of cotton.

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

KIRCALDY, a fmall town of Fife, on the N. crall of the Frith of Forth, about threc miles eait of Kinghorn, from which alfo there is a ferry to Leith and Edinburgh. Befides the ferry and the finhing, Kircaldy ufed to employ a confiderable number of flips, brigs, and other veffels, in the trade with the eaflern cotutries of Europe and the Baltic, but thefe were more frequently chartered or freighted firm other ports than their own. It has alfo been long a conficer-
able place for the manufacture of coarfe goods both of linen and cotton, and this trade is ftill profecuted to a very confiderable extent. The chief article of their manufacture confilts in low-priced blue and white checked goods, ufed for feamens' fhirts, and for clothing for the negroes in the Weit Indies. So great has been the demand for thefe articles at particular times, that fhortly after the capture of Trinidad by the Britith, the writer of this article was requefted by an eminent We?t India houfe in Liverpool, to endeavour to procure for them feven thoufand pieces of thefe checks, or any quantity which could be fupplicd. Upon application, however, he found the demand fromother quarters fo great, that only a very fmall proportion of the fupply could be procured. Coarfe low-priced checked handkerchiefs are alfo 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 $16+4$, and is governed by a provoft, bailiff, and council, at which time it is faid that roo fail of fhips belonged to the port: the chief article of export is coals; and the importation confits of corn, flax, flax-feed, linen-yarn, wood, iron, afhes, tallow, bark, hides, Scc. Kircaldy is united with Dyfart, Kinghorn, and Burnt-iland, in electing a member to ferve in parliament. In ISOX, the number of inhabitants was 3248 , of whom 700 were employed in trade and manufactures; 13 miles north of Edinburgh. N. lat. $5^{\circ} 7^{\prime}$. W. long. $3^{\prime}{ }^{\prime}$ 。

KIRCH, Godpres, in Biograpby, an able aftronomer, was born at Guben, a town in Lower Lufatia, in the year 164o. He profecuted his ftudies at Leipfic, where he acquired confiderable reputation by the almanacs which he publifhed. In 1692, he married Mary Margaret Winckelman, who rendered him much ufeful affitance by making aftronomical obfervations for the conftruction of his Ephemerides. In 1jor, on the eftablifhment of the Academy of Sciences at Berlin, by Frederic I., king of Pruffis, that prince invited M. Kirch to be a member of the fociety, and to take upon himfelf the office of aftronomer in ordmary, with an honourable penfion for his lupport. He died at Berlin in 17 to, at the age of feventy-one years. He had been in the habit of correfponding with all the learned focieties of Europe, and publithed a varicty of aftronomical treatifes, which are in con'iderable eftimation.

Kirch, Marx-Margaret, wife of the preceding, was daughter of a Lutheran clergyma:a at Panitzfli, a vilage near Leipfic, where fhe was bora in the year 15 бo. Having loft her father when the was only twelve years of age, the was ellucated by his fucceffor, and induiged the finclination which the difcovered for the :cquifition of knowled $\check{2}$, and particularly that of altronomy. This partiality for his favourite purfuit was a recominendation to M. Kirch, who obtained her hand in ma-riage, and found her a moit valuable affirtant in his fcientific labours. She was nit contented, however, with rendering her hufband iraportant fervices, but fhewed herfelf capable of wiewing thic heavens with the eye of a difcoverer, and in 1702, the firft faw a comet, upon which M. Kirch publifhed his obfervations. In 1707, fhe difcovered a peculiar Aurora Borealis, of which mention is made in the Memoirs of the Academy of Sciences at Paris, for the year 1716. Thefe exertions of her genius procured her the efteem of the learned at Berlin, not. withltanding which fhe was in very low circumftances when lier hufband died. She contrived to maintain herfelf and educate her children, by contristing almanacs, and, in 1711, fhe publifhed a differtation, intitled "Preparations for obferving the grand Conjunctions of Saturn, Jupiter, \&c."

Soon after this the found a patron in the baron de Throfick, Tho furnithed her with apartments in his own houfe, allapted to the carrying a:1 her attronomical obfervations. Here fhe lived till the baron's death, which happened about two years afterwards. She now removed to Dantric, when Peter the Great wifhed to engage her to fettle in his empire. She preferred her native country, and, in 1716, accompanied her fon to Berlin, where fle was appointed affronomer 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-firft year.

Kirch, Christian Frederic, fon of the preceding, was born at Guben, in the year 169t, and difcovered an early and very ftrong bias for fcientific purfuits. He commenced his ftudies at Beriin, and afeerwards continued them at Halle, whence he made excurfions, for improvement, to Nuremberg, Leiplic, and Prufia. He was employed a confiderable time in the obfervatory at Dantzic, and during his refidence here the czar, Peter the Great, offered him an eflablifment at Mofcow ; but his attachment to his mother, who was averfe 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 choferi a correfponding member of the Royal Academy of Sciences ar Paris, and he fhewed himfelf worthy of that diltinction, by the frequent valuable contributions which he tranfmitted to them during the remainder of his life. He died in 1740, in the forty-fixth year of his age. He publifhed feveral works connected with aftronomy, which were in confiderable reputation at the period in which he flourilhed. Moreri.
KIRCHBACH, in Geography, a town of the duchy of Stiria; 14 miles S.E. of Gratz.
KIRCHBERG, a town and caftle of Bavaria; 12 miles N. of Landihut.-Alfo, atown of Germany, in the principality of Hohenlohe, on the Jaxt; 28 miles W. of An-fpach,-Allo, a town of Saxony, in the circle of Erzgebirg; fix miles S. of Zwickau.-Alfo, a town of the principality of Naffata-Dietz, capital of a bailiwic; Give miles S.E. of Dietz. - Alfo, a town of Aultria; 11 miles S. of St. Pol-ten.-Alfo, a town of France, in the department of the Rhine and Mofelle, and chief place of a canton, in the diftrict of Simmern. The place contains 772 , and the canton 6491 inhabitants, in 35 communes.

KIRCHEIN Mus.etm at Rome, was founded by father Kircher about the middle of the feventeenth contury. This celebrated mufeum is full of ancient paintings, vafes, gens, intaglios, cameos, and other antiquities, which are there in fuch abundance, that a fpectator might fancy himfelf at Portici; but the curiofities which we were moit eager to fee and examine, were father Kircher's mufical inftruments and machines celcribed in his Mufurgia, They were almott ali out of order in 157C, and in decay; and it is to be feared that time has not improved them. Their conftruction was not only curious, but manifetted the ingenuity as well as zzal of the learned father, in his mufical enquiries and ex. periments.

KIRCHEIM-Bomlandex, in Geography, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the diftrict of Mayence; 28 miles N.TV. of Manheim. The place contains 1872, and the canton $9 \frac{9}{4} 65$ inhabitants, in 22 communes. N. lat. $49^{\circ} 39^{\prime}$. E. long $75^{\circ}$.

Kircher, Athanasics, in Biograpby, a celebrated mathematician and philofopher, was born at Fulda in the year 1601, and when he was feventeen years of age he commenced lus noviciate in the fociety of the Jefuits, among
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whom he diftinguifhed himfelf by his valt proficiency in literature and fcience. Having finifhed his itndies, he was felected by his fuperiors to fill the chair of profeflor, and taught philofophy, mathematics, the Hebrew and Syriac languages, in the univerfity of Wirtzburg, in Franconia, with great fuccefs till the year 1631. During the war between the emperor Ferdinand II. and Guftavus, king of Sweden, he withdrew to France, and refided fome time in the Jefuits' college at Avignon. After this he was called to Rome, where, for fix years, he filled the pot of mathematical profeflor in the Roman college, and then undertook the profeflurthip of Hebrew. He died in the year 1680, in the eightieth jear of his age. His works amount to twenty-two volumes folio, eleven in quarto, and three in octavo. Of thefe the following are mentioned as the principal, "Prelufiones magneticx;" "Primitix gnomonicx catoptrice ;" "A rs magna lucis et umbre;" "Mufurgia univerfalis;" "Obelifcus Pamphilius;" "CEdipus たgyptiacus ;" "Itinerarium extaticum ;" "Obelifcus Rgyptianus;" "Mundus fubterraneus;" "China illuftrata." Kircher was a man of very extenfive erudition, and of indefatigable indultry, but the fubjects of his ftudious labours were more frequently curious than ufeful, and a vilionary fancy, rather than a cool judgment and accurate enquiry, too frequently guided his pen. Whatever wore the Itamp of antiquity fafcinated his attention, and he had a particular paffion for decyphering hieroglyphical characters, of which, if he could not difcover the true meaning, he was always ready to give what he conceived to be a plaufible one. He had colleeted a rich cabinet of antiquities, curiofities, medals, mathematical inttruments, rare animals, minerals, \&cc. for the mufeum of the Roman college, the arrangement of which was begun by himfelf, and finifhed by father Bonanni, who publifhed a defcription of it at Rome in 1709, intitled "Mufum Kircherianum, \&c." Moreri.

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

The fubjects which he treats are, chiefly, the following: -of the propagation of found; -of the elements of practical mufic;-of harmonics, or the ratio of founds;-geometric and algebraic divifion of the monochord;-new experiments on the conftruction of mufical inttruments;-of melody, comprehending new fecrets for producing every fpecies of can-tilena;-a parallel between the ancient and modern mufic, pointing out the dignity of the ecclefiattical canto fermo, and the means of arriving at the pathetic Ityle;-of compofition, or the combination of found, 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 laftly, of the various derivations of mufic and the phyfical and artificial purpofes to which it is, os may be, applied.

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

Father Kircher has been very truly calleã "Vir immenfox quidem, fed indigeftr eruditions," a man of immenfe, but indigetted learning.

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

His Mufurgia, publifhed at Rome in 1650 , is a large book; but a much larger might be compofed 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, whofe "Harmonie Univerfelle" appeared in 1536.

Kircher, Conrad, a German Proteftant divine, who was fettled at Acgriburg, and was author of a very learned and laborious work, of confiderable ufe in illuftrating the genuine fenfe of the holy fcriptures. This work was intitled "Concordantia veteris Teftamenti Grecz, Ebræis vocibus refpondentes $\pi<\lambda u \chi$ grfor. 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 bell methods to be adopted in undertaking any new tranflation of the feriptures. It contains all the Hebrew words in the Old Teflanient, introduced in an alphabetical order, and underneath is the Greek verfion. of them from the Septuagint, followed by a collection of the paffages of fcripture in which thofe words are differently interpreted. Moreri.

KIRCHHAMB, in Geograply, a town of Carinthia, on the borders of the Tyrol; 16 miles N.N.W. of Greiffenburg.

KIRCHHAYN, a town of Heffe Caffel, on the Wohra, containing more than 400 houfes; 35 miles S.S.W, of Caf-fel.-Alfo, a town of Lufatia, on the Little Elfer; i4 miles S. of Luckau. N. lat. $51^{\circ} 36^{\prime}$. E. long. $13^{\circ} 35^{\prime}$.

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

KIRCHLAUTERN, a tnwn of the duchy of Wurzburg; 8 miles N.W. of Bamberg.
KIRCHPACH, a town of Auftria; 10 miles W.N.W. of Horn.

KIRCHPERG, a town of Bavaria; 13 miles N.W. of Mofburg.-Alfo, a town of Aultria; 8 miles S.W. of Sonneberg.

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

KIRCHWALSEDE, a town of Germany, in the county of Verden ; II miles N.E. of Verden.

KIRCKMAN, JACOB, in Bizgraphy, an excellent harp-fichord-maker from Germany, who canse to England about the year 1740, and worked with the celebrated TMabel, as his foreman and finihher, till the time of his death. Soon after which, by a curious kind of courthip, Kirckman married his maller's widow, by which prudent meafure he became poffeffed of all Tabel's feafoned wood, tools, and fock in trade. Kirckman himfelf ufed to relate the fingular manner in which he gained the widow, which was not by a regular fiege, but by form. He told her one fine morning, at breakfaft, that he was determined to be married that day before twelve o'clock. Mrs. Tabel, in great furprize, afked him to whom he was going to be married, and why fo foon? The finifher told her, that he had not yet determined whom he fhould marry, and that, if fhe would have him, he would give ber the preference. The lady wondered at his precipitancy, hefitated full half an hour ; buthe continuing to fwear that the bufinefs mult be done before twelve o'clock that day, at length fhe furrendered;
dered; and as this abridged courthip preceded the marriage act, and the nuptials could be performed at the Fleet or May Fair, "without lofs of time, or hindrance of bufinefs," the canonical hour was faved, and two fond hearts were in one united, in the moit fommary way poflible, julk one month after the deceafe of Tabel.

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

Theodor:s, the father of Ifocrates, was a flute-maker, who acquired wealth fufficient by his employment not only to educate his children in a liberal manner, but alfo to bear one of the heavieft public burthens to which an Athenian citizen was liable ; that of furnihing a choir or chorus for his tribe, or ward, at feftivals and religious ceremonies.

Each tribe furnifhed their dittinct chorus; which confitted of a band of vocal and in!trumental performers and dancers, who were to be hired, maintained, and drefied, during the whole time of the fettival : an expence confiderable in itfelf, but much increafed by emulation among the richer citizens, and the difgrace confequent to an inferior cxhibition. The fluctuations of trade and public favour have rendered the bufinefs of boring flutes far lefs prolitable at prefent, than it was in the time of Theodorus. But our harpfichord maker, Kircknzai, who was known to be worth $90,000 \%$ twenty years before he died, doubled the prolits of his inAtruments, by becoming a pasmbroker and a ufurer ; obliging young beirs 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 intruments, Kirckman hit on an ingenious expedient which faved himfelf from bankruptcy, and reftored the harplichord 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 autions for twelve or fourten ponds, and the original purchafers turn then out of their houfes as ufelefs lumber. Bot fuch are the viciffitudes of this world, that our defcendants will, perhaps, know as little about the pianoforte, as we do now of the lute or lyrc. Kirckman is fuppofed to have died, in 1778 , worth near $=00,000$.

KIRCUBBIN, in Geograply, a polt-town of Ireland, in the county of Down and profince of Ulfter, fituated in the peninfula of Ardes, and 97 miles N. by E. from Dublin.

## KIRCUDBRIGHT. See Khacunbright.

KIRDORE, a town of Upper Heffe; $3+$ miles W. of Caffel.

KIRENSIS, a town of Rufia, in the government of 1rkuth, on the Lena. N. lat. $57^{\circ} 40^{\prime}$. E. long 10 I $14^{\prime}$.

KIRENSKOI, a town of Ruffia, in the governmeat of Irkutf, on the borders, built in the year $10_{55}$, on a fertile foil, bur now decaying; 112 miles W. of Doruning.

KIRGANELIA, in Bo:any, from Kirganeli, a name in the Hortus Malabaricus for feveral fpecies of Phyllanthus. Juff. 387 . This genas is founded by Juffeu on a frrub called in the ifland of Mauritius Bois de demoifils, and which Commerfon, in conformity perhaps to that appellation, deftined to commemorate a botanical Neapolitan 1.dy, Maria Angela Ardinghelif, who tranflated the works of Dr. Hales into Italian. Our fpecinen from Commerfon is marked Ardinghelia, and we cannot account for Juffieu's paffing this name over in filence. How far the genus is difinct from Phyllanthus, or from Cicca, with which latter its pulpy fruit nearly accords, we are not furnifhed with materials fufficient to decide.

Kirghises, Kingeiscs, or Kirgufes, in Geography, a tribe of Tartars, who occupy about one-half of Independent Tartary, in the north. They are alfo called "Kaizaks," and are of undoubted Tartaric orizin, fo that they feem to live in perfeet amity with their fouthern brethren, the Uzbeks. Thefe Kirgufes are divided from Siberia by the great Stepp, or defort of Iffim, which is interlected by a river of the fame name. On the weft of the Kirgufes there ftill remain fome tribes of Kalmuks, though the moft of them migrated from the Volga in 1770 , when they fought the protection of the Chinefe. The Kirgules are fuppoled to derive their name from the founder of their horde; and from time immemorial lave been claffed under three divifions, of great, middle, and leffer, though quite unknown to Europe till the Ruflian conqueft of Siberia, at which time they nomalifed at the fuperior Yeniffey about the Yufs, the Abakhan, $\mathbb{E c}$. ; and in the year $\mathbf{1} 606$, fome tribes of them became fubject to the Ruffian empire, at the fame time with the Barabinzes. From that period, by their pufillaninity, 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 Ieniffey to the Oby, and gradually farther to the welt and the fouth. They at prefent inhabit the prodigious defert between the Ural and the Irtyfh, denominated by the Ruffians the Kirghilian Steppe, and bordering weftward on the Cafpian and the government of Caucafus, northwards upon the parts about the UFa and the Tobol, and eaftwards on the government of Kolhyvan. The great horde, defended by mountains on the fouth and calt, afferted their independence in repeated contefts with the Kalnuks of Soongaria. The middie and little hordes have acknowledged the Ruffian fovereignty ever fince the year 1731; but having always been unfaithful allies, and a very piratical people, the Ruffians have been obliged to conAruct lines of finall forts along the frontier rivers. Each of thefe two hordes is eftimated at 30,000 kibitkies, or families; and fuppofing the great horde to contain 60,000, and each family to conlit of lix perfons, 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 deferibed by Pallas. Their tents are confrukted of a kind of felt ; their drink is kumifs, made of acidulated mare's nills. The great horde is confidered as the fource of the two others. Being fettled near the mountains of Alak, called alfo Ala Tau, this horde has been denominated the Alataninn Kirgufes. They lead a wandering life from the borders of the Upper Sirr, or Syrt, near 'I'afikund, to the Steppe of Iffim. Each horde has its peculiar khan; but the middle horde, when Pallas approached this country, was contented with a prince, that acknowledged the khan of the leffer horde; and in 1777, this khan of the leffer horde, whofe election had been confirmed by Rufliz, was called Nur Hali, a fenfible and equitable prince. The features of the Kirgufes are Tartaric, with the flat nofe and fmall eyes; but not cblique like thofe of the Monguls and Chinefe. They have horfes, camels, cattle, fheep, and goats. Some individuals in the middle lorde are faid to have 10,000 horfes, 300 camels, 3 or 4000 cattle, 20,000 hheep, 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 furnifned a confiderable quantity of woolly hair, which was fold to the Ruffians and Bucharians, being annually clipped like that of fhecp. Their chief food is mutton, of the large-tailed fort; and fo exquifite is the lamb,

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lamb, that it is fent from Orenburg to Peterßurg for the tables of the palace. The lamb-dkins are the moft celebrated after thafe of Bucharia, being damafked as it were by clothing the little animal in coarle linen. But the wool of the fheep being coarfe, is ufed only in domeftic confumption for felts and thick cloths. The theppes fupply them with objects of the chace, wolves, foxes, badgers, antelopes, ermines, weazels, marmots, $\mathbb{E c}$. In the fouthern and caltern mountains are found wild fheep, "ovis mulimon," the ox of Thibet, "bos grunniens," which feems to delight in fnowy alps; with chanoys, chacalls, tigers, and wild affes.
"As the Kirgufans regard one another as brethren, they are obliged to employ flaves, being captives whom they take in their incurfions. Their drefs is the common Tartaric, with large trowfers and pointed boots. A thin velt fupplies the place of a fhirt, and they commonly wear two fhort robes. The head is fhaved, and covered with a conic bonnet. Their clothes are numerous and light, fo that if they fall from horfeback, they are feldom hurt; their faddle-horfes are richly ornamented; but their riders are fhort in ftature, and their trowfers afcend to the arm-pits, fo that they refemble a pair of pantaloons on horfeback. The dadies ornament their heads with the necks of herons, difpofed like horns. They appear to be Mahometans, 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 Omilk. Sheep, to the amount of 150,000, are annually brought to Orenburg; with horfes, cattle, lambs, fkins, 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 Tafhkend, they receive arms and coats of mail, which Ruffia refufes, in return for camels and cattle. They are extremely ford of the Kalmuk women, who long retain their form and charms; and often marry them, if they will adopt the Mahometan reltgion. There is an annual feftival in honour of the dead. About the beginning of the 17 th century this people, who were formerly Shamanians, became children of circumcifion, by the exertions of the priefts of Turkiltan; but Pallas, in 1769 , found them addicted to forceries and other idle fupertitions."

This barren country, now inhabited by the Kirgufes, has been the fcene of coniferable events: and it is not improbable, that its numerous deferts and plains have been formerly more fertile, at leaft in pafturage. However this be, thefe regions have been held $b$ y fucceffive nations of high repute, from the Maffagetx of early times to the Turks. Pallas, cited by Pinkerton in his Geog. vol. ii. Tooke's View of the Rufian Empire, vol. i.

IEIRIAN, a mountain of Thibet. N. lat. $33^{\circ} 12^{\prime}$. E. long. $79^{\circ} 44^{\prime}$.

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

KIRILOV, a town of Ruffia, in the goverument of Norgorod; 52 miles N.W. of Vologda.
Kirin, or Kiren-Oula, one of the three grand dcpartments of the country of the Mantchew or Mandfhur T'artars, 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 forefs that cover it, is fearcely inhabited; it contains only two or three ill-built cities, furrounded by plain m:d-walls, The valuable plant "ginfeng" grows here ; and the cm.
pcror fends hither thofe criminals, who are condemned ta banifoment by the laws. The capital is alfo called Kirin, or Kerill, and is fituated on the river Sollgari, called at this place Kirin, which falls into the Saghalien or Amur, and was the refidence of the Mantchew or Mand hur general, who was invelted with all the powers of a viceroy ; infpecting the troops and having authority over all the Mandarins; 500 miles N.E. of Peking. N. lat. $43^{\circ} 48^{\prime}$. E. long. $126^{\circ} 24^{\prime}$.
KIRKBY-Lonspale, a market town and parifh in the valley of Lonfdale, whence its fecond, or diftinetive name, on the bank of the river Lune, at the fouthern edge of the county. It is I 2 miles fouth-ealt of Kendal, and 252 north of London. In the year 1800, the town contained $260^{\circ}$ houres, and 1283 inhabitants. At this place Kirkby, bifhop of Carline, repulfed the Scots. He was a native of this town. Over the £une is a curious bridge of three arches, and in the market place is a crofs 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 infcription: "This library, pulpit, and new loft, together with the fchool-houfe, were founded by Mr. Heary Willon, of Underry, who gave to the colleges $100 \%$ befides $35 \%$. yearly to feven poor fcholars going to Queen's-college in Oxford ; and to this church and fchool 2401 ; to the poor of Kirkby-Loufdale lordfhip $500 \%$; befides many other gifts to pious ufes in other places : by all which, he, being dead, yet fpeaks." About two miles from the town, towards Lonidale, is Borrow-hall, the feat of Thomas Fenwicke, efq. It is feated in a narrow dale, and nearly furrounded by mountains. At Kirkby are a weekly market and three fairs, annually. Nicholion and Burn's Hiftory, \&c. of Weftmoreland, 2 vols. 4 to. $177 \%$.

KiRkBy-Moorfide, a market town and parifh in that part of Yorkfhire called the North-Riding, England, as its name implies, is feated among the moors, or mountains, which abound in that part of the inland. This town is 28 milcs N. of York, and 233 from London. In the year 1800 , it contained 287 houfes, and 1396 inhabitants. By the ftatement in Domefday-book the manor of this place, then called Chirchabi, was one of the heads of the ancient family of Stutevilies, one of whom founded an abbey at Keldholone, about one mile from this town. On the top of a hill, to the north-eaft of Kirkby, is the fcite 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 alfo a manor-houfe here. George Villiers, the diffolute duke of Buckingham, part of whole eltates lay here, and at Helinfey, where he had a feat, died in a miferable condition, in a mean houfe in this town. Pope, in his Moral Eflays, has characterifed the place, and feverely reprobated the man in lines of peculiar force and feverity.
" In the worit inn's worlt room, with mat hall-hung, The floors of p!after, and the walls of dung, - On once a flock-bed, but repaired with fraw, With tape-tied curtains, never meant to draw, The Gcorge and garter dangling from that bed, Where tawdry yellow ftrove with dirty red, Great Villiers' dies."
A bout one mile weft of the town is Kirkdale church, an ancient edifice, feated in a mult romantic fituation, and noted for an infeription over the fouth door. An account of this was written by Mr. Brooke, for the Society of Antiquaries, who publifhed the fame with a print in vol. vo Archrologia.

Kinkby-Siephen, a market town and parifh in the county of Weftmoreland, England, is feated on the weftern bank of the river Eden, in a mountainous part of the country. The town confifts of one flreet, running north and fouth, at the extremities of which are profpects of the Helbec and Wildbore mountains. Formerly here was a fpacious 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 ftockings. This town is four miles from Brough, and 266 north of London. The parifh church is a large building, and contains fome old monuments. Adjoining it is a handfome parfonage-houfe, built by the late Dr. Chaters, prebend of Durham, to whofe family the living belongs. In the town is a free grammar-fchool, which has two exhibitions.

Near Kirkby are the ruins of Pendragon-cafle, 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 houfe fallen to decay. Nicholfon and Burn's Hittory, \&cc. of Weftmoreland, 2 vols. 4 to 1777.

KIRKCALDY. See Kircaldy.
KIRK-CLISSA, or Kirkleesas, a town of European Turkey, in the province of Romania; formerly called "Teffaraconta Ecclefix," or forty churches; at prefent it has neither walls nor churches, and but few Chritian inhabitants. It is inhabited by many Jews, who are chielly employed in making butter and cheefe, for which they have a ready market among their friends at Contantinople; 30 miles E. of Adrianople.

KIR KCUDBRIGHT, the chief town of one of the ftew. artries into which the county or fhire of Galloway in Scot'and 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 diftrict, is not eminent for any \{pecies of commerce, manufacture, or trade. The harbour is fate, with good anchorage, and fheltered from all wiads; but being a tide-harbour is well fit for veffels that can take the ground. It was anc:ently a burgh of regality, and held of the Douglaffes, lords of Galloway, as fuperiors. On the forfeiture of the earl of Douglas, laft lord of Galloway, in 1455 , it was by James II. erected into a royal burgh, and is now governed by a provolt, three bailiffs, and towncouncil. In the environs are many traces of ancient camps, Britih and Roman. Its cafte, the mounts and dikes of which are ftill remaining, was evidently conftructed to defend the entrance of the river Dee. In 1801, the number of inhabitants was $2380 ; 28$ miles S.W. of Dumfries. N. lat. $54^{\circ} 55^{\prime}$. W. long. $4^{\circ} 5^{\prime}$.

KIRKCUDBRIGHTSHIRE, a divifion or county of Scotland, called the Stcwartry of Kirkcudlright, forms the eaitern, and by far the molt extenfive portion of Galloway. The latter name was anciently applied to an independent principality, which included the greater part of Ayrfhire and Dumfrieshire, but is now bmited to the two counties of
 tween $54^{\circ} 40^{\prime}$ and $55^{\circ} 20^{\prime}$ of N. latitude, and contains 892,57 fquare miles, on 449,313 Scotch acres. It is bounded on the fouth by the Solway frith, which divides it from England; by Dumfrieshire and the eltuary of the Nith on the eait, by the fame county and Ayrfhire on the north, and by the latter, with the flire of Wigton and the bay of that name, on the weft. Kirkcudbright has no fubdivifions, except that four of the moit northerly parifhes, Cavefairn, Dalry, Kells, and Balmaclellan, are commonly called the diltrici of Glenkens. The afpect of the country,
however, affords a very matural divifion into two pares. it a line be drawn from the centre of Irongray parsin to tho Gatehoufe of Fleet, all to the weft and north, with littl: exception, is fo mountainous, that it may be very properly termed a Highland diftrict ; while the fouth and eaft exhibr: a linc champaign and cultivated country. Thie parifies are 28 in number, the whole population of which, according to the parliamentary returns of 1800, amounted io 29,211 perfons. Kirkcudbright, Gatehoufe of Flect, Crectown, Cattle Douglas, and New Galloway, are the princeipal towns. Belides thefe there are feveral confiderable villages, which it will not be neceffary to particularize in this place. Kirkcudbright is the county town, and a royal borough, as is alfo New Galloway. Creetown, which is fituated at the upper part of Wigton bay, has lately been conitituted a borough of barony: fo likewife has Cattle Douglas, a thriving village, not much above thirty years old, but which now contaims nearly a thoufand inliabitants. Some attempts have been made to introduce the cotton manufactures here; but the high price of coals oppofes an almoft unfurmountable impedinent to ultimate fuccefs. The fame circumftance operates, in no inconfiderable degree, again:t the eftablifhment of manufactures, requiring larga quantities of fuel, in every part of the ttewartry. Thofe villages which are fituated on the coaft, however, being flyplied with coat From England, have made more rapid progrefs, even in the manufacture of cotton, than could reafonably have been expected.
Though, as mentioned above, the greater part of this ftewartry is hilly; yet, upon the whole, it contairs few mountains remarkable for their fize or height. The moft lofty of thofe in the weftern divifion is that called Cairnfmuir, within the parihh of Minisgalf, which rifes 1737 feet above the level of the fea, and is furrounded by Ieveral others of equal altitude, though lefs ftriking to the eye, from the greater elevation of the circumjacent grounds. The hill cafled Cairnbarrow, in the parifhes of Anworth and Kirkmabreek, is inoo feet in height, very little encumbered with rocks, and commanding a very beautiful and extenfive view, not only of the thewartry of Nirkcudbright and the faire of Wigton, but alfo of the Ine of Man, and the oppofite coalts of England and Ireland. Crowfell, which terminates a lofty ridge of hills in the fouth-eaftern part of the county, was formerly one of the alarm-potts for giving notice of the incurfions of the Englifh. The elevation of Douglas-Cairn, on the fummit of this mountain, is faid to be about 1 gos fect, and Knockendoch, which furmouuts the north wheg, 1500 feet above the level of the fea. From this range of hilis, the country defcends towards the fhore in the molt regular and beautiful manner, exhibiting a delightful view of well-inclofed fields in a fate of excellent cultivation. Irio mediately upon the fea, the fcene is of a very different defcription: the coaft here being remarkably bold and rock y, difclofes from the fand, at low water, fome grand and picturefque appearances; tremendous and rugged precipices; high and pointed fpires, under the bafes of which are palfages refembling the form of rude arches; large and regular amphitheatres, leading into caverns, the extent of which no human being lias yet ventured to explore.

At this point, and indeed on almoit every part of the coalt of this county, a great varicty of marime plants are found. Among thefe the moft remarkable are fanphire, ufed for preferves or pickles; and the water poljpus, or fes anemone, which naturalits conlider as the connecting link between the animal and vegetable kingdoms: for, though dellitute of the faculty of locomotion, it poffefies a degree

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of irritability and fenfation much fuperior to any other known vegetalle production. For a particular account of this very curious fubject, fee the article ANemone.
The flewartry of Kirkcudbright gives rite to feveral rivers, belides a number of fmaller ftreams. The molt remarkable of thefe are, the Orr or Urr, the Ken, the Dec, the Flect. and the Cree. The Urr, which is alfo called the Uurre or Whurr, flows from a lake of the fame name, in the parilh of Balmaclellin, fituated in the diltrict of Glenkens. Hence it runs almolt directly fouth, and falls into the Solvay frith near the villaye of Colvend. This river is navigable for veffels of $\$ 0$ tons burden, to the dillance of eight miles from its mouth. By meaus of it, therefore, coals, lime, and other articles, imported from England, are conveyed thus fat up the county, and hence dilitributed to the more interior parts. The dangers and difficulties, however, altending this trade, owing to the numerous fand-banks in the chanive of the Solway, which are every day beconing more extenfive, oppofe powerful obtacles to its increafe, either here or at any other port on this coalt, One advantage poffeffed by this river, is a large baifon called Gibbs-hold, which it forms within land, about two miles from its confluence with the Fea, where large veifels often fecure a fafe retreat during ftormy weather. The Ken, the fecond river above mentioned, takes its rife alfo in the northern part of the ftewartry, near the borders of Nithfdale. Flowing hence, at firt in a fouth-welterly direction, it feparates the parifhes of Dalry and Caveefphairn ; then proceeding towards the fouth, with an inclination eaflwards, it falls into Kenmuirloch, and forms a junction with the Dee. This river begins its courfe among the hills in the north-weftern divifion of the county. After receiving the Ken, it flows towards the Solway frith, into which it difcharges itfelf, after paffing 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 Kirkcubbright; and, were it not for the number of rccks and fhallows 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 fupply the defects of the river by a navigable canal, but the plan was not fucceffful in meeting the approbation of parliament. A fmall canal, however, has been cut by the fleward of the county betweeu the Dee and a lake called Carlinwark-loch, which is fituated above the fhallows of Tongland, and furnihhes marle in great abundance. The Fleet and the Cree are alfo navigable for feveral miles. The former rifes out of a lake called Lochflet, and pours jts waters into the bay of Wigton, at a thort ditance from the village called Gatehoufe-of-Fleet. The Cree takes its rife amoug the mountains which feparate the northern part of the county from Ayrfhire, forming, for feveral mules of its courfe, the boundary of the itewarty. It ferves as a continuation of the navigation of Wigton bay, and produces lifh of various kinas, particularly falmon, in great plenty.
Few counties can boaft of a greater number of lakes or Jochs than Kirkcuabright. With the exception, however, of Lochken, or Keimuir-loch, already mentioned as formed by the waters of the Ken and Dee, which is ten miles in length, they are, generally fpeaking, of fmall extent. The pariin of New Abbey, in the caltern ditriet of the flewartry, coutains three lakes, Lochkendan, Lochend, and Craigend, the two lait of which are nearly a mile long, and more than one half of a mile broad. Lochrutton, which gives name
to a parifh, is of fimilar dimenfions. 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 com. pofed, on the furface, of a valt collection of large ftones. In Balmaclellan parifh there are five lakes. One of thefe, though very fmall, is famous for a particular fpecies of trout, many of which weirh ten Englifh pounds each. Carlingwark-loch, in the parih of Kelton, formerly covered 116 acres, but fince the canal joined it to the Dee, it has been reduced to lefs than 80 . This loch contains an in. exhaultible fund of the very beft thell marle. Before its extent was contracted, there were two illes in it, upon which the country people fay two churches or chapels formerly itood. Indeed, the tradition in the neighbourhood is, that there had been a town in the loch, which was drowned or fiwal. lowed up. The difcovery of an iron forge, on the fouth ifle, fome years ago, feems to give fome probabi ity to this idea. It was furrounded by the remains of a tone building. or rampart, and communicated with the oppolite fide of the lake by a caufeway or road of ftones, fecured by piles of oak wood, and having an opening in it, fuppofed to have been for a drawioridge. Several canoes, hollowed by fire, after the manner of the American favages, and a large iron mallet, have alfo been found in this loch. Befides thofe alread noticed, there are a number of fmaller lakes in different parts of the county. Nonc of them, however, deferve to be particularized except Loch Kohn or Koan, which is fittuated in the parifh of Croffmichael. It extends over 40 acres of ground, and is from 10 to 22 fathoms deep. No rivulets or ftreams flow into it, nor indeed has it any vilible fource of fupp'y excepting the clouds. It never freezes but during the moft intenfe froit.

This county contains a variety of minerals and mineral fprings. The want of coals, however, and the difficulty of thipping them, in general prevents the former from being turned to advantage. A rich iron-mine, in the parifh of Kerrick, was wrought for fome time by an Englifh company, but they were at latt obliged to abandon it. A lead mine, however, has been opened, and is ftill fuccefsfully carried on in the weftern divifion of the ftewartry. Both thefe metals are found in abundance in many other parts. Appearances of copper have alfo been oblerved; but it is not known that any trial of it has been made. There is alfo great plenty of limeftone, though of an inferior quality, as yet untouched; and a valt fund of excellent thell-marle for manure, which is too much neglected by the farmers, and. lime exported in its tlead, at a very confiderable expence.

The remains of antiquity in this county are itill very numerous, and many of them in no fmall degree interelting. The abbey of Sweetheart, or New Abbey, in a parifh of that name, is a beautiful lofty building in the light pointed fyle. It was founded in the 13 th century by Devongilla, the mother of John Baliol, king of Scotland. This flructure ftands in a fine level field about 20 acres in extent, which is enclofed by a ftone wall ten feet high, built of granite ftones, fome of which are of immenfe fize.

Hil's caltle fituated 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 firft lodged here, on his way to Kirkcudbright in the year 1300. A tower and a few finall buildings, which furround a fquare court, are all that remain of this edifice. Buittle cafte, the favourite refidence of king John Baliol, is ftill to be feen in the parifh whence it derives its name. The hand of time, however, has nearly levelled it with the ground. An old coin was difcovered
here fome ycars ago, bearing the date $12200^{\circ}$ This neighbourhood is remarkable for a number of vitsified forts, the nature and formation of which antiquaries have found it difficult to determine; and refpecting which various opinions are entertained.

One of thefe forts appears alfo on the top of a fmall hill in the parifh of Anvorth. The fummit forms an area of thirty paces long and twenty broad, and is nearly furrounded by an irregular ridge of loofe ftones, intermixed with large portions of vitrified matter. Thefe flunes are of the common blue fchitus kind, and from the manner in which they lie fcattered about, it would feem that the fort has either been deficient in regularity of. Atructure originally, or been intentionally demolifhed. Some coins of Edward VI. and queen Elizabeth were lately found near this fpot. Thrieff caftle, which is fituated in an ifland formed by the river Dee, is famous for having been the chief relidence of the Douglaffes. A great fquare tower is all that remains of the once proud and lofty manfion of thefe celebrated warriors.

Lincludden college was founded in the reign of Malcolm IV. It was originally a Benedictine nunnery, 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 Abber, which ftands in the parifh of Kerrich, about a mile and a half from the Solway frith, is alifo a fine ruin. It was founded in the year 1142, and has acquired celebrity as the afylum of Mary queen of Scots after the battle of Langlide. Befides thefe, the ftewartry contains feveral other curious remains of antiquities. The moft remarkable are the rocking yone, in the parifh of Kells, which is to nicely balanced, that it can be moved by the flighteft preffure; the monaftery of Tongland, the Dun of Bareland, the moat of Urr, probably the largelt work of the kind in Scotland, and the caftle of Kennuir, fituated near the lake of that name. To thefe may be added the tomb of king Galdus, called Cairnholy, faid to have been crected to commemorate the fall of that prince in a battle, between the Scots and Piets about the year 82, or, accurding to another tradition, in memory of bifhop Whitchorn and other gentlemen, who were killed in an action with the Englifh about the year 1150 . Which of thefe accounts is the correct one it is perhaps impoffible to determine. This, however, is certain, that this Rewartry was the fcene of many fanguinary contefts, particularly during the invalions of the Romans, and during the contentions of Bruce and Baliol.

The principal country feats in the flewartry are thofe of the earl of Selkirk, Mr. Murray of Broughton, and a large houfe built by the late fir Samuel Hannay, the exterior of which is wholly formed of the moft beautiful granite. The chief products of this dittrict, befides thofe already noticed, are freep and black cattle for the Englifh market. It has given birth to few remarkable characters, except Thomas Gordon, famous for his writings in the Bangorian controverfy; and Paul Jones the celebrated pirate, who fpread fo much terror over different parts of the coaft during the American war.

A very interelting and well written account of this diftrict, was publihed in iSro, entitled "General View of the Agriculture of Galloway; comprehending two counties, riz. the Stewartry of Kirkcudbright, and Wigtonthire," by the Revo Samuel Smith, minilter of Borgue.

KIRKHAM, a fmall market town and parth in the hundred of Amoundernefs, Lancaflhire, England, is fituated in a tract of country called the File-lands, between the Ribble and another fraill river. It is 22 rniles diflant from Lancalter, and 225 from London; and contained, according to the return under the population act of 1800,362 houfes, inhabited by 1561 perfons. The chicf trace is in coarfe linen and fail cloth. Here are a well endowed frec-fchool for the education of 100 boys, and a charity-fchool for 40 girls: two fairs are held atnually, and a makket weekly on T'uefdays. The Lancater canal paffes by this town, from Liverpool. One mile weft of Kirkham is Ribby-hall, a large weil built brick manfion, belonging to Jofeph Hornby, ef $q$. Beauties of England, vol. ix.
KIRKI, a town of Grand Bucharia; 100 miles S.E. of Bokhara.

KIRKIE, a town of Hindooftan, in the circar of Chandaree; $2+$ riles S.S.W. of Chatterpour.

KIRKINTULLOCH, a fmall town of Dembartonflire, 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 lingle arch of great dimentions, which was confidered at the time it was built as a very extraordinary fpecimen of mafonic art. Wirkintulloch is not a place of any importance, but the country round it is populous and well cultivated, and many refpectable land-holders of middling fortunes refide upon their eftates, and contribute much to its improvement. It is a burgh of barony, governed by two bailiffs, annually chofen. In ISOI, the number of inhabitants was $\hat{3}^{210}$, of whom 1785 were employed in trade and manufacture. Its manufactures are linen and cotton.

KIRK-MOTE, a fynod. See Sryod.
Sometimes the word is alfo taken for a meeting in the church, or veftry. See Mote.

KIRK-OSWALD, in Geografhy, a market town and parifh 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 carly 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, whofe arms appear in various parts of the building. Here is an handfome monument raifed to the memory of fir Timothy Featherfonehaugh, an active fupperter of king Charles I. He was beheaded, and his two fons were flain in the battle of Worcefter. A defcendat of the fame name refides near this town. At the weft end of the church iflues a copious fpring of excellent water; which, in the reign of Monachiim, was deemed to poffers miraculous powers. The belfry tower flands on an eminence at fome diftance from the church. In the town is an endowed free fchool, and a meeting houfe for Diffenters. Ans an elevated $\mathrm{f}_{\text {pot, }}$, about a quarter of a mile from the town, are the ruins of a caltle, which Sandford defcribes "as the faireft fabric that ever eye looked upon." At prefent only a fmall tower and fome vaults are all that remain: but originally it was extenfive, of a fquare 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 incluie his woods at Kirk-Ofwald, to furtify his manor houfe, 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 fortrefs.

On a hill about three miles from Firis-Ofwald, near the vil-
lage of Llttle Salkeld, is a noted Druidical monument, called " Long Meg and her Daughters." It contirts of a circular arrangement of unhewn ltones; the circumference of the circle is about 350 yards. Some of the fones are 10 feet high, and from 12 to 15 feet in girth. The flone called Long Meg, about 17 feet out of the circle, is is feet in height, and nearly it feet in circumference. Pennant's Tour to Allton-Moor, 4to. Hutchinfon's Hiftory, \&c. of Cumberland, 2 vols. 4 to. Beauties of England, vol. xi. 8 so. 1 Sioz.

KIRK-SESSIONS, the nare of a petty ecclefiallical judicatory in Scotland. Each parifh, according to its extent is divided into feveral particular diftrifts, every one of which has its own clder and deacon to overfee it. A confiltory of the minifters, elders, and deacons of a parilh, ferm a kirk-fetfions.

Thefe meet once a week, the minifter being their moderator, but without a negative voice. It regulates matters relating to public worflip, elections, catechifing, vifitations, \&c. It judges in matters of lefs fcandal; but greater, as adultery, are left to the preflytery; and in all cales an appeal lies from it to the prefbytery.

KIRKSTAl, L, in Geography, a village in Yorkfhire, was formerly a place of note, and adorned with a moft fplendid and richly endowed abbey, of which the ruins of the church prefent a grand and interefting mafs of ancient ecclefintical architecture. It was founded in the reign of king Stephen fur Ciltercian monks. Parts of the original bulding itill remain: the columns of the nave are madive, and fupport heavy, pointed arches. The fide aifles are nearly perfect, as are alfo the nave, tranfepts, and clooir. At the welt front issa fine door-way with a femicircular arch, and above it two handfome windows, curioully ornamented. On the fouth lide are feveral ruinous apariments, among which the dormitory and fome other rooms are ftill covered in. "\$irkttall will be found highty interefting to the picturefque travelier, as it affords a variety of fubjects for the pencil, both architectural, and where the ruins will unite finely with the landfcape." This place is three miles from Leeds, and 191 from London. Dayes' Excurfions in Yorkfhire, 8 ro. 1805, in which work is a neatly engraved view of Kirkftall, and an interefting account of the picturefque features of the country around that grand pile of ruius.

KIRKULETI, a river of Alia, which rifes in the mountains of Armenia, and traverfing the principality of Guriel, runs into the Black fea. N. lat. $41^{\prime} 55^{\prime}$. E. long. $41^{\circ} 25^{\prime}$.

KIRKUR, a town of Hindoottan, in Rohilcund; 35 miles $S$. of Bereilly:

KIRKWALL, the chief or principal town of the Orkney illands, Scotland, is feated on the northern coalt of the Main-land, in the latitude of $59^{\prime} 9^{\prime} \mathrm{N}$. and in the longitude of $z^{\circ} 30^{\prime} \mathrm{W}$. of Greenwich, towards the S.E. fide of the bay of the fame name; and is divided into the old town 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 flreet, ncarly a mile long, with many excellent houfes ranged on each fide, which, tor the Atyle of their building, and the manner in which they are finifhed and furnifhed, may bear a comparifon with thofe of any fmall town in the kingdom. Several gentlemen of property refide here, and alfo a confiderable number of fhopkeepers; but the bulk of the people is compofed of tradefmen, boatmen, fervants, and day-labourers: and when the population of the country parifh, which makes a fourth of the whole, is confidered, the united parihes of Kirkwall and

St. Ola, in which are two eftablifhed clergymen, contair, the former about two thoufand, the latter five hundred inhabitants. The town was ereeted into a royal borough by charters from the Scottifh fovereigns, confirming all its ancient privileges : and all its rights and advantages were at lalt folemnly ratified by act of parliament. The government is vefted in a provoft, four magittrates, a dean of guild, a treafurer, and fifteen other members, who together ${ }^{\text {c }}$ compofe a council. In this town, the fheriff, the admiral, the commiffary, and the juftice of peace courts, are alfo occafionally convened for the adminitration of law ; and for the cognizance and regulation of ecclefiaitical matters : the three prefbyteries, of which the provincial fynod is compofed, and Cometimes the fynod itfelf, meet at lealt once a year, or oftener, according to circumftances. Here are alfo a cuftomhoufe, a polt-office, and a tore-houfe, into which are collected the rents, that are moltly paid in kind, of both the bihopric and earidom, which are generally let on leafe to merchants, who fometimes difpofe of them here, and fometimes ferd them out of the country. Kirkwall, with the four northern burghs, Wick, Dornock, Tain, and Ding wall, choofe a burgefs to reprefent them in the Britifh parliament. The principal modern building is a town-houfe, divided into apartments refpectively appropriated to a prifon, an affembly'hall, a court of jultice, and a lodge of freemafons. At a Cmall diftance are fchool-houfes for the feveral branches of education. Thefe ftructures, however, are but trifing, compared with the relics of the bihop and earl's palaces, the caltle, once a place of great flrength, 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 hlups of a large fize, and in great numbers. Towards the fouth-eall fide, are ttill vifible the veltiges of a rude temporary fort, thrown up on an emergency by Oliver Cromwell; and on the oppofite fide another of the fame kind has been evidently marked out for co-operal:on in either annoying or protecting the harbour. Mott of the lands in the parifh of St. Ola, which furround Kirkwall, formerly made part of the temporalty of the bifhopric of Orkney, and were feparated at the Reformation, or on the profpect of the abolition of epifcopacy. Some additional particulars reiatung 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 interefting volume publifhed ia xio8, entitled "Hittory of the Orkney Iflands," \&c. by the Rev. Dr. Barry: fecond edition, with corrections and additions, by the Rev. James Headrick.

KIRLAK, an ifland of a triangular form in the Frozen fea, about 240 miles in circumference. N. lat. $71^{\circ} 30^{\prime}$ to $725^{-1}$. E. long. $121^{\circ}$ to $126^{\prime}$,
Kirimansha, or Kirmoncia, a town of Perfia, in the province of Irak; 145 miles N.E. of Bagdad. N. lat. $34^{\circ} 35^{\prime}$. E. long. $46^{\prime} 30^{\prime}$.
KIRN, a town of France, in the department of the Rhine and Mofelle, and chicf place of a canton, in the diftrict of Simmern; 17 miles W. of Creutznach. The place contains 1240 , and the canton 4084 inhabitants, in 18 communes. N. lat $49^{\circ} 47^{\prime}$. E. long. $7^{\circ} 26^{\prime}$.

KIRNBERGER, John Phlip, in Biography, a German mulician, much refpected as a learned contrapuntilt, was born in 172 I , at Saalfeld, in Thuringia, a province of Saxony; at the age of eighteen he went to Leipfic, where he fludied under Sebaftian Bach till 1741 , when he went into Poland, where he was admitted into the fervice of feveral Polih Erinces ; and afteswards appointed director
reftor of the mufic at a convent. In 175 F , he werit to Drefden, where he ftudied the violin under Fickler, and fome time after entered into the fervice of the king of Pruffia, as a performer on that inttrument. Aboat the year 1756, he was appointed court mulician to her roval highnel's princefs Amelia of I'ruffia. The harpfichord, which was his firt, was likewife his beft inftrument, and his com. pofitions for that and the organ were very numerous, as well as his polemical and theoretical writings. Befides thefe publications, he was editor of four coilections of harpfichord pieces, which included feveral of his own; and of all thefe he marked the fingering according to the rules of Emanuel Bach.

During the laft years of his life, his knowledge in the laws of harmony made him regarded as the Pepufch of Berlin; but being gifted with lefs temper than the venerable organilt of the Charter-houfe, his cr tical quarrels kept his mind in perpetual perturbation. Naturally grave and auftere, he was faid to be rendered more four by oppofition and difappointment.

His fugues and church mufic are models of correct counterpoint, but too elaborate and dry for the public. He never feems to have afpired at, or thought of, facility, grace, and elegance. His ambition feems to have been to dhew what could be done by labour and ftudy, which had never been attempted before, and which, when achieved, amufed the eye much more than the ear. He feems to have created giants which none could vanquifh but himfelf. His mufical inftitutes manifeft great meditation and fcience; but will be intelligible to none but thofe who have already advanced far into the myfteries of counterpoint.

This profound mufician, whofe knowledge in all the laws and fubtleties of canon, fugue, and modulation, were indif-- putable, but who, in his latter days, appeared to be more ambitious of the character of an algebraif than a mulician of genius, now and then fuffered fine paffages, and even whole movements, to efcape him ; which proves that, like his great mafter Scbattim Bach, if he had condefcended to be lefs artificial, he was poffeffed of the means of exciting, by his abilities, delight as well az wonder. See his Inttitutes, pp. $24^{2}$ and 243 , where the compoftion is admirable, clear, neat, and plealing. This able profeffor died at Berling in 1773, at the age of fixty-two years.

KIRNEE, in Geography, a town of Hindooftan, in Bahar; 4 S miles S.W. of Arrah.

KIROLL, a town of Hindooftan, in Dooab; aS miles N. of Etaya.

KIROO, a town of Bengal; 24 miles N. of Tomar.
KIRRIEMUIR, commonly pronounced Killamoor, a town and parifh of Angus-hire, Scotland, is built on the S.W. fide of a hill near a romantic glen, through which flows the fmall 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 fome confiderable manufactories for Ofnaburghs and coarfe linens. In the year 1792, the value of thefe goods, manufactured here, and in the immediate neighbourhood, was about 30,000 . fterling. 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 houfes, and $442 x$ inhabitants; but it is prefumed this total mult include the whole parifh, as in a previous cenfus for 1793 , the town is faid to have comprifed only 1584 inhabitants. The parificonfifts of an area meafuring about eight miles in length by fix in breadth, and is beautifully diverfified by hills, dales, woods, and plains.

At Kinnordy, Mr. Lyall has a handfume fat, with fine plantations; and at Clova, the feat of Mr. Ugilvie, the woods are abundant, and ferve to beautify the afpect of the country. At Invercanty is a large caltle formenly belonging to the Ogilvies. Sinclair's Statiftical Account of Scot. land.

KIRSANAIF, a town of Ruffid, 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 diftrict; formerly a conliderable city, and called "Diocxfaria." In the vicinity falt is manufactured; $8_{+}$miles N. E. of Cogni. N. lat. $39^{\circ} 12^{\prime}$ E. long. $3413^{\prime}$.

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

KIRSOVA, a town of European Turkey, in Bulgaria, on the Danube; 30 miles S. of Galatz. N. lat. $44^{\circ} 50^{\prime}$. E. long. $27^{\circ} 30^{\prime}$.

KIRSTENIUS, Peter, in Biograply, a learned phyfician, was born at Brenau, in Silelia, on the 25 th 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 profeffion. He early evinced, however, a paffion for letters, which they did not think proper to control, and left him to indulge it to the utmoft. He learned the Greek and Latin languages, and paid confiderable attention alfo to the He brew and Syriac ; at the fame time, as he now began to looki to medicine as his object, he cultivated natural philofophy, anatomy, and botany, with the greateft alfiduity. He afterwards Itudied at the univerfities of Leipfic, Wittenberg, and Jena, where he was much diftinguifhed among his fel-low-ftudents, and determined upon farther improving himfelf by travelling. He had been told, that no perfon could obtain a high rank in the practice of phylic, unlefs he underltood Avicenna; and knowing the tranflation of that phyfician's work to be bad, he had a ltrong inclination to learn Arabic. To this he was urged by Jofeph Scaliger and Iface 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 alfo Mefue, Rhafes, Avenzoar, Albukafis, and Averröes. This paflion, however, did not prevent him from gratifying the inclination which he had to travel, and he accordingly fpent feven years from home. He firlt went through the Low Countries into France, and thence to Siwitzerland, where he received the degree of M. D. from the univerfity of Balle, at the age of twenty-four. He then continued his travels, vifiting Italy, England, and Spain, and reaching even Greece and Afia.

Soon after his return to Silefia, he was appointed by the magiftrates of Breflau to be director of the college and fchools of that city. But he afterwards religned that difficuit employment, and applied himfelf entirely to the practice of phyfic and to the ftudy of Arabic, with which he became fo enamoured, that he refolved to promote the know ledge of it by eftablifhing an Arabic prefs, and employed. all the money he could \{pare in accomplifhing that object : refufing, at the fame time, the moft honourable offers from. courts and univerfities, which would have interfered with his projec. He afterwards retired into Pruffia, fill. with the intention of fulfilling his defigns, and purfuing his favouriteftudies; but obtaining the friendihip of chancellor Oxen ftiern, he was induced to accompany him in a journey to Germany. While at Erfurth, Kinfenius received the offer

## K I R

of a profeffornip, which he accepted. But his patron in. duced him, neverthelefs, to quit this univerfity, and to accompany him to Sweden, where he was appointed profeflor of medicine, in 1636, and foon afterwards phyfician to the queen. His conftitution, however, was confiderably impaired, and he did not enjoy thefe advantages above four ycars; for he died on the eighth of April, 1640, in the fixty-third year of his age. The epitaph, infcribed by Schröcr to his memory, eulogizes his extraordinary knowledge of languages, of which, it is there faid, he was acquainted with twenty-fix.

He publiflied feveral works, for which divines are as much indebted to him as thofe of his faculty. Thefe are, 1. "Grammatica Arabica."-2. "Trià Specimina Characterum Arabicorum."-3. "Decas facra Canticorum et Carminum Arabicorum ex aliquot MSS. cum Latina ad verbum interpretatione." 4. "Vitæ quatuor Evangeliftarum ex Antiquifimo Codice MS. Arabico eruter." 5. "Liber fecundus Canonis Avicemne, typis Arabicis ex MSS. editus, et ad verbun in Latinum tranflatus, Sce." 6. "Liber de vero Ufu et Abufu Medicinz."-7. "Hypotypofic, five, Informatio Medicæ Artis ftudiofo perutilis, aliquandiu in Pharmacopolio verfaturo."-8. "Nota in Evangelium S. Matthxiex collatione Textuum Arabicorum, Syriacorum, Egyptiacorum, Græcorum, et Latinorum." 9. "Epiftola S. Judx ex MSS. Heidehergenfi Arabico ad verbum tranflata, \&c." Hutchinfon Biog. Med. Eloy. Diet. Hitt.

Kirstenius, George, alfo a phyfician, was born at Stettin, in January, 1613. He purfued his ftudies, during feveral years, at Jena and Strafburg, and afterwards travelled through Germany and the Low Countries. He was invited to profeffional chairs in the univerfities of Gripfwald 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 profefforthip in the Royal College of Stettin. He died on the 4th of March, 1660. The greater part of his life was paffed in uffeful refearch, and he obtained a high reputation in his profeffion. He left feveral learned effays, 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 publifhed alfo the following works: "Oratio de Medicinæ dignitate et proflantia," 1647.-"Adverfaria et Animadverliones in Joannis Agricolx Commentarium in Poppium et Chirurgiam parvam," 1648.-"Difquifitiones Phytologice," ${ }_{1651}$. Eloy. Dict. Hift.

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

KIRTLE, a term ufed for a fhort jacket; alfo for a quantity of flax, about a hundred weight.

KIRTON, or Kirktown, in Geography, a large village and parifh in the divifion of Holland, and county of Lincoln, England, has been a place of confiderable fize and importance, but from having lolt 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 houfes, 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, bifhop of Lincoln, in the time of king Henry I. This ftatement is, however, evidently erroneous, for the ftyle of architecture marks it to be as late as the early part of the $15^{\text {h }}$ century. Being much injured by neglect, and larger than neceflary for the population of the parifh, the chancel, tower, and ranfepts were taken down in the year 1806. A new tower was, however, erected at the welt end
of the charch with the original materials. At the weftern end of the nave is a femicircular arch, probably of the age of the bifhop above named. In the church is a handfome vetangular font, on the pedeftal of which is an infcription, ftating, that it was made for Alauni Burton, in the year 1405. Beauties of England, vol. ix. 1807.

Kirton Lindfay, a market town and parifh in the wapentake of Corringham, in Lindfay divifion of the county of Lincoln, England, is fituated 20 miles from Lincolis, and 147 from London. The inhabitants were returned under the population act as 1092, the houfes as 243. Dr. Stukeley itates, that John of Gaunt had a palace here. At this place Mr. Pegge places the Sidnacetter of the Romans. See Gough's edition of Camden's Britannia, vol, ii. p. 266. ed. 1789 .

KIRWANI, a town of Africa, in the country of Dentela, in which Mr. Park faw fome iron fmelting-furnaces; 20 miles W. of Baniferile. N. lat. $12^{\circ} 30^{\prime}$. W. long. $11^{\circ}$.

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 Ruffia, in the government of Vladimir ; 48 miles W.S.W. of Vladimir.

KIS, in Natural Hiffory, a name given by fome 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 ifland near the S.W. coaft of Eaft Greenland. N. lat. $59^{\circ} 51^{\prime}$. W. long. $45^{\circ}$.

KISERYA, a town of Hindooftan, in Bahar; 32 miles S.S.E. of Bettiah. N. lat. $26^{\prime} 20^{\prime}$. E. long. $85^{\circ} 6^{\prime}$.

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

Kisi, a land-bank in the Irifh fea, about lix miles long, and harely one wide; 7 miles from the coalt of the county of Dublin. N. lat. $53^{\circ} 15^{\prime}$. W. long. $5^{\circ} 54^{\prime}$.

IIISHCORRAN Mountains, a long ridge of mountains in the fouthern part of the county of Sligo, Connaught, Ireland, on the fummits of molt 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.-Allo, the capital of this circar ; 45 miles N. of Calcutta. N lat. $23^{\circ} 23^{\prime}$. E. long. $88^{\prime} 33^{\circ}$.-Alifo, a town of Hindooftan; 15 miles S. of $A_{4}$ imere.

KISHMA, Kisimisif, Kifmich, or Dsij/me, the largeit ifland in the Perian gulf, 30 miles long and from fix to eight broad. A narrow channel feparates it from the continent of Perfia, navigable, but dangerous, on account of pirates. This ifland contains three or four towns or villages, one of which, on the N. coalt, is called by the fame name. N. lat. $26^{\prime} 54^{\prime}$. E. long. $56^{\circ} 5^{\prime}$.

KISHNUKOOD, a town of Perfia, in the province of Segeftan ; 36 miles W. of Candahar.

KISHTAC, an ifland in the N. Pacific ocean, E. of Foggy Cape, oppointe to the mouth of Cook's river; about 100 miles long, and from 30 to 50 broad. N. lat. $57^{\circ}$ to $58^{\prime} 40^{\prime}$. W. long. $152^{\circ} 30^{\prime}$ to $154^{\circ} 50^{\prime}$.

K1SHTEWAR, a country of Afia, lying SE. of Cafhmere, near the banks of the river Chunaub. Its capital, called Muvdul, or Mundul-Muder, is fituated about three coffes E . of this river.

KIS1-HISAR, a town of European Turkey, in Bulgaria; 36 miles N.E. of Solia.

Kisile-daria. See Kiesil.
KISKEMANITAS, a river of America, which is a
branch
branch of the Alleghany, into which it difcharges itfelf. N. lat. $40^{\prime} 40^{\prime}$. W. long. $79^{\circ} 42^{\prime}$, in Weltmorcland county, Pennfylvania. Its headwaters are, Little Conemaugh and Stone creck, which after their junction affume the name of Conemaugh river. After receiving other waters it takes the name of Kikemanitas. 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 difcovered in the vicinity of thefer rivers.
KISKIN-Ostrog, a town of Ruffia, in the peninfula of Kamtfchatka; 52 miles W. of Verchnei-KamtfchatRoi.
KISKO, a town of Sweden, in the province of Nyland; 32 miles N . of Eknas.
KISLAK, a town of Poland, in the palatinate of Braclaw ; zo miles E.S.E. of Braclaw.
kislar. See Kizurar.
KISMA, a town of Perfia, in the province of Ghilan; 21 miles W.N.W. of Rehd.
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. $23^{\circ} z^{\prime}$ '. E. long. 88 ' is'.

KISSAMOS, a fmall town, formerly the harbour of "Aptera," which gives name to a diltrict or province in the north-weftern part of the ifland of Crete. This town would be of fome importance, if the pachas had not prohibited the exportation of the commodities of the ifland, except from the chief place of their government. This province is one of the beft cultivated and molt productive of the ifland ; it furnifhes a tolerably large quantity of oil and wine; it produces honey, wax, and filk; but little barley and wheat. Its mountains are for the moft part wooded; and.among the trees are fcattered many common and holm oaks, the acorns of which allow the Greeks to breed a large number of hogs. Here are alfo many carob-trees, whofe 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 Kiffamos 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 "Grabufa," fifuated ort a fteep iflet, at the molt weftern and northern part of Crete, is comprifed in the diftrict of Kif. famos. The junction of thefe fmall iflands and an advanced cape form a natural harbour, in which the largelt flips anchor in fafety. The population of the Turks of Kiifamos is eftimated at upwards of a third of the inhabitants. See Caspia.
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 direet dittance, about $\bar{\xi} 6$ geographical miles to the N.E. by E. of Sierra Leona.

XISSEL, Jonn. VAN, in Biography, a painter of portraits and !till life. He was born at Antwerp in 1626. Nature was his gride in the practice of the art he profeffed, and it was his conflant cultom to make fketches of all his various productions at the different feafons of the year; merely fletching fome, and colouring and even modelling others; by thefe means he poffeifed a large itock of things ready to his hand for comporition, and he executed them with great tafte and delicacy.

He demanded fo high a price for his productions, that few could purchafe them. Among thore who did was the king of Spain, who, after having obtained many of his
work3, at laft gained poffefion of the painter allo. 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 elteemed, being executed with a light free touch, and a tone of colour that very much refembles Vandyke's. He died in $1 ; 08$, at the age
of 82 .
KISSELPOUR, in Geography, a town of Bengal; 35 miles S.S.W. of Doefa. N. lat. $22^{\circ} 32^{2}$. E. long. $8+4$ '
KISSER, a town of Africa, in Tunis; 18 miles S.E. of Sbeah.
KISSI, Sr., a fmallifinand in the Grecian Arclipelago. N. lat: $33^{\circ} 43^{\prime}$. E. long. $24^{\circ} 10^{\prime}$.

KISSIMA, a town of Japan; 45 miles N. of Nan. garaki.
KISSINGEN, a town of the duchy of Wurzburg, on the Saal, in the environs of which are fome medicinat: and falt fprings ; ${ }_{2}+$ miles N . of Wurzburg. N. lat. $50^{\circ} 34^{\prime}$. E. long. $10^{\circ} 5^{\prime \prime}$.
KISSOREGUNGE, a town of Hindooftan, in Bundelcund; IS miles S.E. of Chatterpour.
KISSUNPOUR, a town of Hindooflan, in Bahar ; 11 miles N. W. of Bahar.
KIST, a word ufed by Paracelfus as the name of a weight, equal to 14 grains.
IISTNA, in Ccography, a town of Hindooftan, in the Carnatic.
KISTNABARAM, a town of Hindooltan, in Myfore; 13 miles S. of Tademeri.

KISTNAGHERI, a town and fortrefs of Hindooflan, in the Myfore country; 90 miles E. of Seringapatam. N. lat. $12^{\circ} 30^{\circ}$. E. long. $78^{\circ} 22^{\prime}$.

KISTNAGUR, a town of Bengal ; 24 miles N. of Goragot.-Alfo, a town of Bengal; rô miles S. of Nagore. N. lat. $22^{\circ} 52^{\prime}$. E. long. $87^{\circ} 21^{\prime}$.

KISTNAH, a river of Hindooftan, which rifes in the mountains of Vifiapour, about 20 miles from Sattarah, and after obliqucly travering almoft the whole extent of Hindooftan, from W. to E., difcharges itfelf, by feveral mouths, into the gulf of Bengal, between Mafulipatam and Nizapatam, in the circar of Guntoor. The Godavery and Kinnah, approaching one another in their defcent towards the fea, inclofe a tract of country, for an account of which, (fee Delta.) The inands, formed by the mouths of the Kiitnah, are very fertile, and produce grain, excellent timber, and fome of the beft tobacco in India; and befides, the low grounds, which at fpring tides are overfown, produce a fhrub of great ufe in dyeing chintzes and callicoes.
KISTNAPORAM, a town of Hindooftan, in the Carnatic; 25 niles W.N.J.
KIS'TNAPORUM, a town of Hindooftan, in Golconda; $4^{8}$ 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 ${ }^{\prime} 16^{\prime}$. E. long. $80^{\circ} 11^{\prime}$.
KISTVAEN, or Cist-Vaen, in Britifo Antiquities, a flone cheit, coffin, or cavity for the interment of the human body, after its deceafe. Many antiquarians have confounded this fubject with the Cromlech, and have thws confufed their readers, and irdeed bave bewildered themfelves. Some even call the perpendicular, or ftanding ftones of the Cromlech, by the appeliation of Kiftvan, and the horizontal, or covering.flone, the Cromlech. This is multiplying terms without meaning or utility. Kiltvzen is a compound word from the Britinh language, and literally figgities a cheft of ftone ; i. .c. Cijf, a chell'or coffer, and

Vacn,

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Iraen, from Mrian, a fone: the $m$ in Britifh being commonly changed to $v$ in compufition. The Kiftvaen decidedly differs from the Cromlech, the firt being always immerfed, or covered over with many fones, when the whole is called cairn, or by a heap or mound of earth, which is called baro row. Mr. Owen defrribes the Ciltvaen "as a kind of cell formed by placing four flat ilones together in a fquare, with another laid on the top for a cover. ${ }^{\text {. }}$ In fome inflances, however, the cift is formed by five, fix, or feven ftones, raifed on their edges, and covered by two or three flat flones. In Berkihire, near the track of the ancient Ridge-way, on the downs, in the vicinity of the White-horfe Hill, are fome remains of a monument of this clafs. The upper part of a barrow being removed, feveral large fones were difcovered, foine of which were fet up edge-ways, and others placed flat, or horizontally. Three of large dimentions formed the fides and end of a cell, which was nine feet from eaft to welt, by about fix feet from north to fouth. At the mouth, or entrance towards the 'welt, were two upright ftones, forming jambs, between which was a paffage to the cilt. Several other flones were placed near the entrance, and the barrow appeared to have been furrounded with a circle of Itones. (See Beauties of Eagland, vol. i.) "In the various practice of the Britons, the Ciftvaen fometimes contained the urn which preferved the precious afhes of the deceafed; but it often contained the afhes and bones without any urn." (Caledonia, by Chalmers, vol. i. p. 84.) Toland thinks that Kiftvaens were altars for facrifice: and fome writers have conjectured that they were intended for cells, or dungeons to contine prifoners. "In Cornwall, and elfewhere, we find Kilvaens (of an area equal to the fize of the human body) confifting of fide ytones pitched on end, without any covering fone: thefe certainly once inclofed hones of the dead, though now generally dug up to fearch for money." Borlafe's "Antiquities of Cornwall," p. 228: fee alfo p. 225. Gough, in his "Sepulchral Monuments of Great Britain," vol: i. p. 16, \&c. has given accounts of the contents of feveral Kiftvaens. See alfo 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. 394. "Archrologia," vol. ii. pp. 256. 362.-iii. 116. -iv. 114.-xii. 328.-xiv. 227. Jamiefon's Etymological Dietionary, Douglafs's "Nenia Britannica," folio.

KISWA RDA, in Geography, a town of Hungary ; I7 miles E. of Tokay.

KISZENAU, or Kitznu, a town of European Turkey, in Moldavia; 72 miles E. of Jaffi. N. lat. $47^{\circ} 13^{\prime}$. E. long. $29^{\circ} .30^{\prime}$.

KIT, in Muffc, the name of a fmall violin of fuch form and dimenfion as to be capable of being carried in a cafe cr Theath in the pocket. Its length, meafuring from the extremities, is about fixteen inches, and that of the bow about feventeen. Small as this inftrument is, its powers are coextenfive with thofe of the violin.

Krr, in Laboratory Works, a compofition made of refin glb., pitch 6 lb ., bees-wax 6 lb ., and tallow Ilb ., ufed for the latt covering of carcaffes. This is ufed, when previounly pounded and rendered completely liquid.

Kır is likewife ufed, among dragoons, to denote their lot of neceffaries, collected and packed up in a fmall compafs. The term is alfo applied, among the infantry, to the contents of a foldier's knapfack.

Kit, in Rural Econony, in fome places, a name given to a milking-pail or veffel in the form of a churn, with two ears and a cover, ufed to convey milk in by horfes 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 I'lanta Rariores Hungaria, which was publifhed in imitation of Jacquin's Flora Auffriaca. and intended as a continuation or fequel of that book. Willd. Nov. Act. Soc. Nat. Scrut. Berol. v. 2. 107.-Curt. Mag. t. 821. Clafs and order, Moxadelphia Polyandria. Nat. Ord. Columnifera, Linn. Malvacea, Juff.
Eff. Ch. Calyx double; the outer one feven, or ninecleft. Capfules fingle-feeded, forming a roundifh, fivelobed head.

1. K. vitifolia. Willd. Sp. Pl. v. 3. 800. Waldt, et Kitaib. Pl. Rar. Hung. v. I. 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 vifcid glanduliferous hairs. Stem round, even, not ftriated. Leaves alternate, on footfalks, fxe-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 heat-fhaped, bifid. Floruers axillary, generally about three, pedunculated. Inner calyx villofe, fmaller than the outer one. Petals white, wedgefhaped, truncate, a little fimaller than the fegments of the outer calyx.

KITANESJO, in Gengraphy, a town of Japan, on the N.W. coart of the ifland of Niphon. N. lat. $36^{\circ} 40^{\circ}$. E. long. $137^{\circ} 30^{\prime}$.

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

KITCHEN, a room appropriated to the dreffing of meat, and furnifhed with fuitable accommodations and utenfils for that purpole. See Building.

The kitchen in the king's houfhold is under the direction and management of a clerk-comptroller, who has a falary of 500 l . a-year, fubordinate clerk at 250 l . a-year, firft clerk at $150 \%$ a-year, junior clerks, two matter-conks, the falary of the firlt being 237\%. 10s. a-year, and of the fecond $217 \%$ los. a-year, yeomen, grooms, \&c.

Kitchen-Gardin, that fort of garden which is principally deftined to the growth of different forts of culinary vegetables and roots.
The land defigned for this fort of garden fhould be fufficiently fpacious, of a good depth and quality of mould, dry, and at the fame time well fituated for warmth, and the influence of the furi.

The foils and fituations which are the moft adapted for this purpofe, as well as the furms 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 neceffary that they fhould be fo contrived, as to have the principal part of the work executed in other ways, as by the ufe of fmall 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 fituations. See Garden.

Kitcuen-Garden Plants, the common name of all fuch plants as are cultivated for the purpofe of food, in gardens of this kind.

## Names and Sorts of Plants, with Modes of Culture respectively.

Agaricus campgltris, the field agaric or mufhroom. Cultivated by the fpawn of the root, or invifible feed, running in lumps of earth or dung, in the autumn feafon.

Allium, garlick, onion, leek, \&c., of the firtt kind, large
white garlick and red garlick-By the cloves of the root when feparated.

In the fecond, or rocambole fort-By the root and bulbs from the ftalk.

In the third, or onion kind, as the common oval Stralburg onion, great oval Portugal onion, Alat white Spanifh onion, flatted Spanifh onion, filver-fkinned onion, bulblefs rooted Welch onion-3y feed annually, which flould be fown at different times in the early (pring months.

In the fourth fort, as chives or cives-By dividing the roots, and planting them out in the fpring.

In the fifth kind, the efcalot or fhallot-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 ortpring.

In the feventh, or the leek kind, as the broad-leaved London leek, narrow-leaved leek-By feed annually, which fhould be fown in the early fpring.

Anethum, dill, \&c. ; common dill——By feed annually, fown in the fpring.

Fentel, light-green leaved, dark-green fennel, fweetfecaed fennel-By feed fown in fpring; allo by flipping the old roots, and planting them out in the autumnal feafon.

Italian fennel——By feed annually, fown in the fpring.
Angelita favita, common angelica-By feed annually, fown ill fering.

Apium, parfley, celery, \&c.; parीey, common planeleaved parfley, curled leaved common parfley, broad-leaved, or large rooted parley_—By feed fown in fpring.

Celery, common upright celery, upright celery with folid ftalks, turnip-rooted fpreading celery-By feed fown in the fpring, for traniplantiug in fummer and autumn.

Afparagus officinalis, common alparagus-By feed fown in the autumn, and when once railed, the roots abide for fome years.

Atriplex bortenfis, garden orach, white-leaved garden orach, green orach, purple orach-By feed annually fown in the fpring feafon.

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 months.

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 fring.

Brafica, the cabbage, cauliflower, broccoli, turnip, \&c. The cabbage fort, fmall early fummer cabbage, dwarf early fugar-loaf-haped cabbage, large hollow fugar-loaf-cabbage, carly Ruffia cabbage, common round white cabbage, longfided hollow cabbage, oval hollow cabbage, flat-topped cabbage, mulk-fcented cabbage, giant cabbage, red cabbage -By feed annually fown at different times, in fpring and autumn, for ufe all the year, by having the plants fet 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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planc-leaved green colewort-By feed annually fown its fpring and fummer, for plants for autumn and winter ufe.
Turnip cabbage, turnip cabbage with the turnip abuve ground, with the turnip under ground-By feed fown annually in fpring and fummer.

The caulifower forts, early cauliflower, late caulifower - By feed fown annualiy in fpring and autumn, for plants for fummer and autumn ufe.

Italian braflica, or broccoli, early purple broccoli, late large purple broccoli, comprehending varities, with blue, brown, green, and yellowifh heads, dwarf purple broccoli, white or cauliflower broccoli, black broccol-By feed fown in fpring and beginning of fummer, for plants for autumn, winter, and fpring ufe.

The turnip, early Dutch turnip, white round turnip, green-topped turnip, red-topped turnip, yellow turnip, oblong white turnip, long white-reoted French turnip, round purple French turnip- By feed fown in fpring and fummer, for plants for ufe moft part of the year.

Calendula offrinalis, common marigold-By feed fown annually in foring, fummer, or autumn.

Cichorium cndivia, 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, horfe radifh - By pieces of the roots planted out in fpring, for ufe for moft part of the year.

Crambe, fea-cabbage or colewort, the different varieties -By feed fown in fpring; but when once raifed, the ro ts remain for years, fending up floots for ufe in fpring and fummer.

Cusumis, cucumber and melon, the cucumber, carly fhort prickly cucumber, early clufter cucumber, long green prick. ly 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 fowr 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 ufe molt part of the year.

Helianthus tuberofus, tuberous fun-flower, or Jerufalem artichoke--By pieces of the root planted annually in the fpring feafun.
Hyyfopus officinalis, common hyflop, the feveral different varieties - By feed fown in furing, and by planting flips
and cuttings of its branches.

Laifuca, lettuce, early green cabbage-lettuce, white cab. bage-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-

Jettuce-By feed fown annually, at differeat times, in fpring, fummer and autumn, for plants for fetting out for ufe molt part of the year.

Lavandula, lavender, fpike-flowered common lavender, common marrow-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.

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

AIclifh offuinalis, balm, common balm- By dividing and planting the roots in fpring or autumn, which are of many yoars duration.

Acubha, mint, penny-royal, \&ic., green common fpearmint, curleci-leaved fpearmint, variegated fpearmintDy dividing the roots, by young plants, and by cuttings of the flalks, planted out in fpring, and which continue many years.

Peppermint-By roots and plants, \&c. like the former.

Penny-royal_By dividing and flipping the plants, as for the mint, and planting them out.

Ocynuian bafficum, bafil, common fweet bafil, feveral va-rieties-By feed fown in spring on a hot-bed, the plants being afterwards planted out.

Origanum marjoram, common, wild, perennial pot marjoram, winter perennial fiweet marjoram, marjorana; or annual fweet marjoram - By fowing feeds in fpring, and the two former alfo, by nipping the roots, and planting them.

Pafinaca fativa, parfnip, common garden parinipBy feed fown annually for winter ufe.

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

Running kinds, fcarlet runner, white variety, large Dutch runner, Batterfea white runner, negro runner, variable run-ner-By fowing the feed like the former, but principally in the fummer months.

Pifium, the pea, Charlton pea, golden Charlton, earlieft golden Charlton, long Reading hotpur, Maiter's hotfpur, Spanih morotto, green nonparcil, 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, \&\&. .—By feed fown annually, at different times, from October till June, hut principally in the early fpring months.

Por:ulaca olevacia, purflane, green purflane, golden pur-flane-By feed fown different times in April and May. .

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

Raphanus fahivus, the radifh, thort-topped early radih, Jong-topped radifh, deep-red radifh, paic-red, tranfparent, mild radifh, falmon-coloured radifh, finall white turnip-rooted sadilh, fmall red turuip radifh, large white turnip-rooted Spanith radifh, large black turnip-rooted Spanifh radifh -By feed fown at different times, from Chriftmas till . July or Augult ; but the latter forts fown principally in June and July, for autumn and winter ufe.

## K I T

Rofimarints, rofemary, fome varieties-By planting layers, hips, and cuttings in fpring.

Rumax acto fa, ferrel, common long-leaved forrel, roundleaved French forrel, barren forrel - By parting the roots and the firtt fort alfo plentifully by feed.

Ruta graveolens, rue; feveral varieties-By planting. flips and cuttings; alfo by feed.

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

Clary -- By feed fown amnually in the foring.
Satureja, favory, winter peremial favory, fummer annual favory - Both by feed fown in the fpring feafon, and the former alfo by planting :llips.

Scandive cerefolium, "chervil, annual garden chervil--By feed annually, in Augult, for winter and fpring ufe, or fown alfo in foring and tummer, for fucceffion crops.

Scorzonera, fcorzonera, Spanifh fcorzoncra-An eatable root, raifed from feed fown in fpring.

Sinapis, multard, white muitard, black muftard, field or wild multard; the former to ufe young in fallad, and the two laft for their feeds, to make the table fauce called multard - By feed in spring ; or, if for fallads, at any time of the year.

Sium fijariun, fifariun or fkirret-An eatable root raifed by planting offsets commonly of the root; alfo by feeds.

Smyrnium olufatrum, Alifanders, or common Alexanders - By feed amnually in fpring.

Solanum, night-fhade, furnifhing the potatoe and tomatoe, tuberous-rooted folanum or potatoe, the common found red potatoc, early round red, oblong red, deep red, pale red, rough red, white kidney-fhaped, large red-ended kidney, white round, white clufter, prolific American -By planting pieces of the roots or the roots whole in fpring ; alfo by fowing feed occafionally to obtain new varieties.
Tomatoe or love-apple ; varieties -By fowing the feed annually, on a hot-bed, in the fpring.
Spinacia, fpinach, round thick-leaved or fmooth-feeded, triangular leaved or prickly feeded; the former for fpring and fummer crops, the latter to ftand the winter-By fowing annually in fpring, fummer, and autumn, for ufe moft part of the year.
Tanactum vulsare, 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; alfo by planting flips 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.
Tropcolum, Indian crefs, or nafturtium, nafturtium minus, nafturtium majus; their fowers for garnifh and fallads, and their feeds to pickle-Raifed annually from feeds fown at different times in fpring.

Valeriana locyfa, corn fallad or lamb's lettuce-By feed fown in foring and autumn.

Vicia faba, the bean, early Mazagan, early Libon, longpod, Turkey long-pod, toker bean, Sandwich bean, Wind-for-bean, white bloffomed, red-bloffomed, Spanith bean, nonpareil bean, dwarffan bean, very low-By feed fown an-
nually, at different times from October until June, but prin. cipally in the early fpring months.

More full explanations of the nature of the culture, application, and ufe 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 Ifbartel.

KITCHWARA, a circar of Hindooftan, in Malwa, bounded on the N. by the circar of Cotta, on the L. 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 diftinguifhes it from all other birds; being fo fmooth and even as to be farcely perceptible : fometimes it will remain quite motionlefs for a long while: at other times, glide through the 贮, without the leaft apparent action of its wings, from whence it derived the old name glead, of the Saxon glida. Lord Bacon obferves, that when kites fly luigh it portends fair and dry weather. Pliny thinks that the invention of the rudder arofe from the obfervation made of the various motions of the tail, when the kite was fteering through the air. Lib. x. c. ro.

The kite is 3 deftructive bird to farmers, \&cc. on which account it is neceffary to guard againft its depredations as much as poffible. This laft purpofe may fometimes be effected by laying fuch animal fubftances as have been infufed in fome fort of liquid with nux vomica, in the places where they come in order to feed.

Kite, in Electricity. See Conductor.
KITLOLL, in Geograply, 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 Ruffia, in the government of Irkutfk, fituated on the Kitoi, which runs into the Angara: 68 miles N.N.W. of Irkutik.

KITORAH, a town of Hindooftan, in Boggilcund; 25 miles N.N.E. of Rewah.
KITRIANI, a town on the S. coalt of the illand of Siphanto. N. lat. $36^{\circ} 55^{\prime}$. E. long. $24^{\circ} 49^{\prime}$.

KITTATINNY Mountains, a ridge of the Alleg. hany mountains, which runs through the northern parts of New Jerfey and Pennfylvania.

KITTEN Island, a fmall ifland in the Mergui Archipelago, near the S.E. coalt of Cat illand.

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

KITTERY, a townfhip of York county, in the fate of Maine, incorporated in 1653 , and confifting of three parifhes, which contain 3114 inhabitants. It is fituated between Pifcataqua and York rivers, 67 miles N. of Bofton.

KITTILA, a town of Swedifh Lapland; 103 miles N. of Kemi.

KITTIWAKE, in Ornithology, a Species of the gull kind, being the larus riffa of Limmeus: the head, neck, belly, and tail are of a fnowy whitenefs; behind each ear is fometimes a duiky fpot; the back and wings are grey; the bill is yellow, tinged with green; the legs are dulky, and have a fmall knob inftead of the back toe. This bird inhabits the romantic cliffs of Flamborough-head, the Bafs illc, the rocks near the caftle of Slains, in the county of Aberdeen, and Prieftholm-ifle. The young of thefe birds are a favourite dith before dinner, for whetting the appetite, in North Britain, but they have a rank tafte and frmell. Pennant. See Larus.

KITT's, St., in Georaphy. Sce St. Cnerstapmene':
KI'TVADA, a town of Japan, in the illand of Nupinon; 45 miles N.W. of Meaco.

KITZBUHEL, a town of the county of 'Iyrol, on the Acha; 36 miles E. of Infpruck. N. lat. $47^{\circ} 25^{\prime}$. E. long. $127^{\prime}$.

KI'Z INGEN, a town of the duchy of Wuraburg, on the Maine ; it is a large, handfome town, owing its rife to a convent of Benedictmes, founded in $7+5$ by duke Pepine Mott of the imhabitants are Lutherans; 10 miles E.s.E. of Wurzburg. N. lat. $49^{\prime} 4^{\prime}$ '. E, long. 10 12'.

KIU, a city of Chira, of the lirlt clals, in the provinee of Tche-kiang' ; pleafantly litwated near a fine river, and between two others that run into it. It borders on Kiang-fi and Fo.kien; but to the laft province the paflage is dificult on account of the intervening mountains. N. lat. $292^{\prime}$. E. long. $118^{\circ} 39^{\prime}$.

KIVA. See Knirs'a.
KIVAK, a town of Perfia, in the province of Khorafan; 300 miles $N$. of Herat.

KIVALORE, a town of Hindoofan, in the Carnatic ; S miles W. of Negapatam.

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

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 firft clafs, and capital of the ifland of Hainan, which fee. It flands on a promontory, and fhips often anchor at the bottom of its walls. Two different kinds of Mandarins command here, as in all the other provinces of Chind; the firlt are called literati ; the fecond, mandarins of arms, or military officers. Its jurifdiction extends over three cities of the fecond clafs, and ten of the third. N. lat. 20 . E. long. $109{ }^{\prime} 3 j^{\prime}$.

KIURAWASI, town of Sweden, in the government of Kuopio; 15 miles N.N.W. of Kuopio.

KIUSIU, an ifland of Japan, alfo termed Saikokf, or the weftern country, fituated on the S.W. The length of Kiufiu from N. to S. is about two degrees, or 140 Britifh miles, and the greateft 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 mofques, and three Armenian churches. The foil is fertile, and the air healthy. Near it are fome warm bathis, in high eftimation for feveral diforders; 136 miles E. of Conftantinople. N. lat. $39^{\circ} 14^{\prime}$. E. lons. $30^{\circ} 30^{\prime}$.

KIWVACZE, a town of Poland, in the palatinate of Brzefk; 20 miles E. of Brzefl.

KIZ, a town of Kharafn; 290 miles N.W. of Samarcand.

KI'ZELGICK, a town of Natolia, on or near the fcite of the ancient Euromus; 9 miles N.iv.TV. of Melatio.

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

KIZILBASCH, or Kezelbascif, a Turkih term fig. nifying rad-bead: applied by way of obloquy to the Perlians, ever fince Ifhmael Sophi, founder of the family laft reigning in Perfia, who ordered his foldiers 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 defcend.

Viginere writes the word kezeilbafs, and adds, that according

## K L A

to the vulgar interpretation among the Perfians, the twelve plaits fignify the twelve facraments of their law. Bat not contented with this, he looks out for another original, and tells us there is a myttery in it, derived from the ancient paganifm, when the Perfians adored fire, whole heat is denoted by the red colour, which in fome meafure fy mbolizes with the fun, held by them in the higheft veneration. Ho adds, that the twelve plaits fhew the twelve months of the year, and twelve figns in which that luminary performs his courfe.

KiZilermak, or Kizil-irmak, the celcbratel Halys of antiquity, in Geography, a river of Afiatic T'urkey, which rifes in mount Taurus, a few miles S. of Kaifarieh, in Caramania, and runs into the Black fea, N. lat. $41^{\circ} 40^{\circ}$. E. long. $3^{6^{\circ}}$, on the coalt of the gulf of Sanfoun.

KIZIL-KHAN, a town of Afiatic Turkey, in Diarbekir ; 12 miles IV. of Merdin.

KIZILAGADJE, a town of Perfia, in the province of Ghilan ; 25 miles N. of Altara.

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

KIZIL-OZAN, or Sefin Bud, called by Hanway Sffil trood, 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 courfe to the Cafpian fea, its length doubles what is ailigned 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 fupplies numerous pike, carp, and other kinds of fihh, efteemed by the Perlians. Gmelin fays that it abounds in flurgeon.

KTZILRABAT, a town of the Arabian Irak; 10 miles iv 1.5 of Shemban.
 the no-f func: bewen :........ and the fea of Azepin; intudoted by Coffacts Tartars. N. Lat. 45 . E. Lon5 37.

KIZIZAN N , a town of Moravia, in the circle of Bramn ; 15 miles S.E. of Brumn. N. lat. 49 8'. E. long. $1652^{\prime}$.
Kizliar, or Kislar, a Ruffian town, fortrefs, and port, in the government of Caucafus, eflablified in the year 1735, near the eattern coait of the Cafpian, and covering the frontiers towards the limits of Perfia. Veffels 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 fmell bay, at the diftance of 34 miles. Kiflar draws from $A^{\prime}$ 'achan the European commudities neceflary for the Perfian traffic, together with corn and provilion for the Ruflian colonies on the Tcrek, and for the neighbouring dittrict of mount Caucafus. Befides the goods which are difpofed of at Kinar, and fent to the Perfian ports, the inhabitants carry on a contraband trade to Shamakee, Derbent, and even Teflis, in Georgia, which is exccedingly precarious from the numerous banditi who pillage the caravans. The environs of Kiflar are very fertile in corn and fruit, with plents of game; 160 miles S.S.W. of Aftrachan. N. lat. $44^{\circ} 50^{\prime}$. E. lon's $46^{\circ} 44^{\prime}$.

KIZLUK, a town of Ruffia, latcly in the palatinate of Braclaw ; 16 miles E. of Braclaw.

KLACKS, a furall ifland on the W. fide of the gulf of Bothnia. N lat. Gr 21'. E. long. $174^{\prime}$.

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

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

## K L E

KLANG Pornt, a cape on the S. coall of the inland of Java. S. lat. $7^{\circ} 40^{\prime}$. E. long. $109^{\circ} .32^{\prime}$.

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. $49^{\prime} 24^{\prime}$. E. long. $13^{\circ} 15^{\prime}$.

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 Straburgh in 1759, and was bred an architect. Accident led him to enter humfelf into the Auftrian fervice, in which he continued eight years, and then returning to his native country, became infpector of the public buildings in Upper Alface. The revolution of France rekindled his military ardour, and he obtained a commiffion in the fervice. He difplajed great bravery and jadgment at the fiege of Maycnce, after which he was employed in La Vendée; but the fanguinary fcenes there fo difgufted him, that he obtained his recall, and was afterwards engaged in the north, where he defeated the Auftrians, took Mons, and drove the enemy from Louvain. He captured Maeltricht, and contributed to the taking of feveral other fltong 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, chofe 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 Egypts left Kleber in the chief command. In a fhort time he figned the treaty of El-Arifh with fir Sidney Smith, by which the French agreed to lea ve Egypt ; but it was annulled by the Britifh government, and hoftilities were renewed. Kleber, though reduced, did not bend under his misfortunes, but defeated the Turks at the obelifk of Heliopolis. He next took Cairo by florm, and formed an alliance with Murat Bey; but he was affaffinated by a Turk, named Solyman, who gave him four flabs withia dagger, in the year 1800 .

KLECK, in Geograply, 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 Landfperg.

KLEINENBERG, a town of Weftphalia, in the bihhopric of Paderborn; 8 miles N.W. of Warburg.

KLEINHOVIA, in Botany, was fo defignated by Linnxus, in honour of Mr. Kleinhoff, a fedulons and ingenious cultivator of the botanic garden eftablihed in the illand of Java. Linn. Gen 468. Schreb. 324. Willd. Sp. PI. v. 2. 878. Cavan. Diff. v. 2. 288. Mart. Mill. Dict. v. 3 Juff. 27 S. Lamarck. Dict. vo 3. 367. Gxrtn. t. $137^{\circ}$ Clafs and order, Dodecandria Mongegynia. Nat. Ord. Columaifere, Linn. Molvacea, Juff.

Gen. Ch. Cal. Perianth deciduous, of five, oblong, nearly equal leaves; the lower one rather fhorter than the reft. Cor. Petals five, lanceolate, feffile, a little longer than the calyx; the upper one fhorter, broader, curved and truncated; nectary central, fupported by a column the length of the calyx, furrounded with glandules at the bafe, afcending at the top, bell-fhaped, very fmall, divided half way down into five recurved fegments. Stam. Filaments is, very fmall, three placed on each fegment of the nectary; two of them are terminal, the ather rather lower; anthers of two lobes. Pijf. Germen fuperior, ovate, five-fided; placed in the hollow of the nectary ; ilgle fimple; itigma
filghtly
filightly notched. Peric. Capfule five-lobed, five-fided, inflated. Seeds folitary, roundifh, fotnewhat muricated.

Obf. 'Ihis genus is, according to Linareus, who places it in Gynandria, allied to Ayenia, but perfectly diltinet from it.

Eff. Ch. Calyx of five leaves. Petals five. Nectary bellfhaped, five lobed, bearing the flamens, and affixed to the column of the germen. Capfule five-iided, inflated, confiting of five tingle-iceded cells.

1. K. Hojpila. Linn. Sp. Pl. 1365. Cavan. Diff. v. 2. t. I 1 6.-(Catti-marus; Rumph. Amboin. v. 3. 177. t. 113.) A native of Java, Amboina, and the Ptilippine iffands, Howering throughout the year, and bearing fruit in October.-Sten like that of a common apple-tree, thick, incurved, and knotty. Branches finooth. Leaves alternately fcattered, fomewhat heart-fhaped, broad, ovate, acute, feven-ribbed, with arched veins. Stipulas lanceolate. Florvers bright purple. Fruit at firlt greenifh purple, afterwards reddifh. Rumphius has remarked, that the younger leaves, when bruifed, emit an odour like violets, on which account the natives of Amboina wafh their heads with an infufion of them. 'This handfome tree is univerfally admired among the Malays for the beauty of its foliage as well as for the firmmefs and exceilence of its wood, of which their quivers are generally formed.

KLEINIA, named in honour of the celebrated German zoologit, James Thecdore Klein, F.R.S. well known for his critical oppofition to Limnzus in that department of natural hitory. His claim to botarical diltinction is founded chiefly on a treatife concerning the plant now called Cacalia Kkeinia; nor would this perhaps have excited much attention, but for the abfurdity of the phrafe by which he diltinguihes it, Nec Cacalia, nec Cacalingtrum, an Tithymaloides. This is cited in the Criticn Botanica of Linnæus, as an inflance of the confufion that mult enfue from botanits not beltowing new names upon new plants.-Klein flourihed in the firlt 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.-Clafs and order, Spngenefia Polysamia AEqualis. Nat. Ord. Compofita Difcoidee, Linn. Corymbifere, Juff.

Obf. For an account of the feparation of this genus from Cacalia, fee that article.

Gen. Ch. Common Calyx perfectly fimple, oblong, cylindrical, compofed of five, linear, lanceolate, pointed, equal leaves. Cor. compound, uniform, tubular. Florets all fertile, numerous, equal, a little longer than the calyx, funnelfhaped; tube flender, very long; limb fomewat bell-fhaped, five-cleft Stan. Filaments five, capiliary, very fhort; anthers cylindrical, cubular. Pif. Germen fuperior, linear, half as long as the calyx; Atyle thread-fhaped, the length of the ftamens; ftigma bilid, revolute. Pcric. none. The whole calyx is bent back wards when in fruit. Seeds folitary, linear; feed-down capillary. Recept. naked, flattifh.

Eff. Ch. Receptacle naked. Down limpie. Calyx fimple, equal, of five leaves.
I. K. ruderalis. Willd. n. 1. Jacq. Amer.t. 12-. (Cacelia ruderalis; Swartz. Prod. 110.)-Leaves oblong-lanceolate, acute at each end, nearly entire.-Found in gravelly watte ground and on walls, in Jamaica, St. Domingo, and Martinico.-Root annual. Stcm erect, about three feet high, very fmooth. Leaves moflly alternate, fometimes nscivided, fometimes waved or cut, of a glaucous green. Flowers greenifh-yellow, inodorous.
2. K. Porophyllum. Willd. n. 2. (Cacalia Porophyllum; Linn. Sp. Pl. 116 . Cavan. Ic. v. 3.11.t. 222 )-Leaves elliptical, obtule, befprinkled with tranlparent dots.-A
native of l'cru. It flowered in the royal garden of the Licurial during the month of November.-Stem flraight, fimple, fnooth, flightly ttriated, about a foot and half high. Leazes numerous, fcattered, on footitalks, oval or riliptical, crenate, and doted with finall draphanons fputs. Fluvers terminal, cyiindrical.
3. K. angulaza. Willd. n. 3. (Cacalia angulata; Vahb. Symb. v. 3. 92. C fonchifolia; Forfk. My gypt-Arab. n. $4^{85}$.) - "LDwer leaves on fontfalks, oblong, wotherd, angulated; upper oncs lanceolate, entinc." - is native of Arabia Felix - Scom herbactous, divided at the upper part, Atriated. The fowering lirancles elongated and naked upwards. Leazes very fmooth, about an inch and half long. Flowers corymbere.
4. K. Jujruticofa. Willd. n. 4. (Cacalia fuffruticofa; Linn. Mant. 109. C. Linaria; Cavan. Ic.v. 3. 29. t. 257.). -" Leaves linear, entire, with pellucid dots. Stem rather Thrubby."-A native of New Spain, and fent by Arduino to Linnæus from Brafil.-Sterns about fix inches high, threadfhaped. Leaves fcattered, entire, finall, flefly. Flowerfalks terminal, lingle-flowered, erect. Flowers numerous, of a purple-colour, and very fimilar to thofe of K. PoroFhyllum, but the lierbage is totally unlike that fpecies.

Kleist, Christian Ewald Vox, in Biograply, was born at Zueblin, in Pomerania, in 175 . His parents, who were of the order of nobility, fer.t him to the Jefuits' college in Upper Poland, whence he was fent to the academy of Dantzic, and afterwards to the maiserfity of Konigfores. At the age of twenty-one he entered the Danifi military fervice, but having an attachment to literature he did not forget the Mufes amidit his other avocations. Once he was fo intent on reading Milton, that he forgot to relieve guard. He did not remain long in the Danilh fervice, but entered into that of Prufia. Frederic the Geat gave hima commiffion 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 requelted and obtained leave to take an active part in the campaign of the year 1759, but this initance of military ardour proved fatal to him, and deprived Germany of one of its belt poets. He was prefent at the battle of Kunnerfdorff, and after the moft heroic difplays of valour in the fucceffive 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 firlt publifhed in $1 / 49$. On account of this poem he was called the imitator of Thomfon: be is reckoned to excel in painting the fweet and beautiful fcenes of nature, in a ftyle fingularly elegant and harmonious. The Spring was tranllated into feveral languages. He wrote Idylis in the manner of Gefner, which poffefs great fimplicity and neatnefs. He was author, likewife, of fome moral treatifes, and "Reflections on the Art of War." He publifhed an edition of his works in 1756 , with additions, among which is a defcription 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.

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

KLEPOT, a town of Tranfylvania; 14 miles S. of Hunyad.

KLEPS, a town of Norway ; II miles S. of Stavanger.

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

KLETTGAU ${ }_{2}$

## K L I

KLET'TGAU, a landgravate of Germany, calted alio " "The county of Sulz," fituated near the Rhine as it leaves the lake of Conttance.

KLEWAH, a town of Ruffian Poland, in Volhynia; 24 miles E.N.E. of Lucko.

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

KLIMAT'ZSFOI, an intand of Ruffia, in the lake of Onetzkoi : 48 miles N.N.E. of Petrovadik.

KLIMI.t, or Climin, in the MFatria Mfedica, the name given by the Arabian writers to the lapis calaminaris. Avicenna and Serapion never call it by any orther mane. Some pronounce the word calimia. Hence the modern Greeks have formed their culimici, which is the name of the fanse fubllance; and our calaminaris is evidently deduced from the fane original.

KLIMOVA, in Gcograply, a town of Ruflia, in the government of Tobolfk, on the 'Tungufta; 200 miles E. of Enifeik.-Alfo, a town of Ruffia, in the grovernment of Tobolik, on the Mura; 232 miles E.S. E. of Enifeilk.

KLimOVIGI, or Klimovitciif, a town of Ruffia, and diftrict of the government of Mogilev, or Mohilef, on the river Ofteg, which falls into the Sofh; So miles E. of Mogiley.

KLIN, a town of Ruffia, and diftrict of the government of Mofcow, on the river Seften, 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. coalt of Kamt Tchatka.

KLINGENFEL, a town of the duchy of Carniola; nines miles S. VV, of Landfrafs.

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

ILLINGERSKOI, a town of Ruffa, in the government of Irkutk; 76 miles S.S.E. of Nertchindk.

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

KLINGSTEIN, in Mineralogy, Pierre Sonante, Broch. Its colour is dark greenifl-grey, paffing into yellowifh and afhgrey, a light olive-green or liver-brown. It occurs in mafs. The crofs fracture is almof dull, the longitudinal fracture is glifening. The former is fplintery, pafling into conchoidal, the latter is more or lefs flaty. It branches into indeterminate tharp-edged, fometimes tabular fragments. Ufually tranflucent on the edges, confiderably hard, and not eafily frangible. When ftruck 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, almoft colourlefs glafs. According to Klaproth's analytis, it confifts of

| Silex | 57.25 |
| :---: | :---: |
| Alumine | 23.5 |
| Lime | 2.75 |
| Oxyd of Iron | 3.25 |
| - Manganefe | e 0.25 |
| - Soda | 8.1 |
| Water | 3.0 |
|  | 98.1 |

Werner refers it to the floctz-trap formation, refting upon bafat, into which it frequently paffes. It often contains crytals of feldfrar, and then forms flate porphery. Reufs reckons it to belong to the primitive rocks. It occurs in tbe middle mountains of Bohemia, particularly the Don-
nerfberge, near Milbfchau, a conical mountain above 2500 fect high, which confilts entirely of this mineral. It has alfo been obferved by Jamiefon in the ifland of Landafh, in the Frith of Clyde. Very beautiful varieties of it alfo occur in rock maffes between Llanberris and Caernarvon in North Wales. Aikin's Dict. of Chem, and Mincr.

KLINKETS, in Fortification, a fort of fmall 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 Dnicfter ; eight miles $S$. of Kaminiec.

KLIP Fisif, in Iclithyolosy, a name by fome authors fuppofed to mean the lupus pilcis, or wolf-lifh; and by others, the comtnon cod-fif.

Of the former opinion is Fabricius, who fuppofes the lupus fo called, becaufe it is able to climb up rocks, or generally lies hid among rocks: the word klip, in the German, figniifying a rock. Of the other is Schonefeldt, who fuppofes the cod has its name of klip-fifh, or rock-fifh, from its being ufually dried upon the rocks.

Klir-fifb is allo a name by which the Dutch in the Eaft Indies call a fat fifh, caught frequently on thofe fhores, and fometimes called alfo foldaten vifch, or the foldier's fifh. It fomewhat refembles the bream in fhape. 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 fineft fifh of the Eaft Indies. Its flefh is very firm, and falls into large pieces, when dreffed, like that of the cod, and is very weil tafted. See Chėtodos teira, cornutus, and friatus.

KLIPPEN, in Geography, a fmall ifland in the Atlantic, near the coalt of Africa. S. lat. $32^{\circ} 1^{\circ}$.

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

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

KLOETZEN, a town of Weftphalia, in the principality of Lunebury-Zelle; 45 miles E. of Zelle. N. lat. $52^{3} 4 \mathrm{I}^{\prime}$. E. long. 1 I ${ }^{\circ} 8^{\prime}$.

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

KLOKOTZ, a town of Croatia; 24 miles S. of Carlftadt.

KLOPSTOCK, Frederic Theophilus, in Biograpby, a Gcrman poet, was korn at Quedlinburg in 1724 . He was the eldelt of eleven children, and diftinguifhed himfelf in his youth among his companions in bodily and mental exercifes. 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 tatte for the beauties of the beit claffical authors. He made attempts in compofition both in profe and verfe. In the latter lie wrote fome paftorals, but not contented with thefe humbler efforts, he formed the refolution of compofing an epic poem, and fixed upon the "Meffiah" as his fubject. In I $7+5$, he went to the univerfity of Jena, where he commenced the ftudy of theology, but in the midit of his academical purfuits he was planning his projected work, and fietched out his three firft cantos. In $17 \not f^{6}$, 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 excrcifed his genius in lyric compofitions. Several of his odes, together with the thre firt cantos of his Mefliah,

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Meflith, appeared in a periodical paper, entitled "Bremen Contributions." The publication of ten books of his Merfish made his name known throughout Germany, and raifed his reputation very high. This work was extremely popular among thofe who had hearts to feel the beauties of poetry and the warmth of devotion. '1he Meffiah was quoted again and again from the pulpit by the younger divines, white thofe more advanced cenfured the fictions in which the poet had indulged himfelf on facred topics, and rigid grammarians made fevere ftrictures on the ftyle and verfification. He travelled into Switzerlarid in 1750, to pay a vifit to Bodmer of Zurich, in confequence of an invitation, where he was received with every token of refpect. The fublime fcenery of that country, the fimplicity of the inhabitants, and the freedom they enjoyed, were much fuited to the talte of Klopitock. Here he intended to have fpent the remainder of his life, buc baron Bernttorff caufed an invitation to be fent to him to relide at Copenbagen, with affurances of fuch a penfion as would make him independent. Klopitock acceded to the propofal, and fet out in 1751 , by the way of Brunfwick and Hamburgh, at which latter place he became acquainted with Mifs Muller, a lady perfectly adapted to his own mind, whom he foon after narried. They feemed by Prosidence deltined to be one of the happielt couples upon earth, but he was foon deprived of her, for fle died in clitdbed: her memory, however, was facred to Klopituck to the laft moment of his exiftence. He lived chiefly at Copenhagen, till the year 177 I , after which he refided at Hamburgh as Danifh legate, and counfellor of the margrave of Baden, who gave him a pention. The latter part of his life was little variad by incidente, and after he had brought the Meffiah to a conclufion, he continued to employ himfelf in compofition, and in the correction and revilion of his worts. He died at Hamburgh, in March 1803 , being 79 jears of age. By thole who were intimate with him, he is reprefented as a truly amiable man, happielt in a fmall circle of private friends, and paricularly fond of the fociety of young perions. The character of Klopltock, as a poet, is that of exuberance of imarination and fentiment. His fublimity is almolt unparalleled, he is apt to lofe himfelf in myltical abltraction, and his excefs of feeling fometimes betrays him into rant and extravagance. An able critic claims for the author of the Mefliah a rank among the firit poets. His odes and lyric poems have likewife been much admired by his countrymen, and his dramas difplay great force and dignity, but they are better adapted to the clofet than the 隹age. To his talents as a profe writer, his "Grammatical Dialogues" will bear witnefs : they abound with judicious remarks, and the object of them is worthy of a true patriot, vir. an attempt to prove that the German tongue is capable of ail the ftrength and noblenefs of a claffical language.

- KLOTEN, in Geograpby, a town of Switzerland, in the canton of Zurich; 5 miles N. of Zurich.

KLOTZ, Cirmistian Adolpules, in Biograpby, an eminent German critic, was born in the year 1738 at Bifchofswerden, near Dreiden, where his father was fettled as a clergyman. He difplayed, at an early period, fuch an attachment to letters, that his parents fpared no expence to gratify his tafte, and to enable him to cultivate his talents to the bett advantage. He employed thofe leifure hours, which other lads devote to amufement, in compofing and reciting German verfes. At Gerlitz, he ftudied under Baumgarten the Greek and Roman claflics, and gave a fpecimen of his powers in verfification, by a poem compofed on the "Deltruction of Zistau," which was laid watte in the year 1757. In 1758, he proceeded to Leipfic to ftudy
jurifprudence, and while here, he publihned feveral papers in the "Acta Eruditorum," and fome feparate pieces. In 1-68, he publifhed his "Opufcula loctica," containing twenty-three odes, threc fatirec, and as many clewins. From Heeipfic he repaired to Jena, where he opeard a fohoul, which was well attended. Having accepted of an insitation to a profefforhip at the univerfity of Gottingen in : $-1,2$, he fue off for that place, and almott immediately after his arrivai lee was attacked by a fevere illnefs, from which, however, he recovered, and immediately publifted a treatife, "De Verecundia Virgilii," to which were added three difiertations re. lative to the eclogues of the poct. He alfo publiffert "Mifcellanea Critica," and applied himfelf to the thedy of ancient gems and paiutings, with which he tocame well ace quainted. His celebrity had now increafed fo much, that he received two offers in the fane day, one from the prince of Hefle Darmitadt, to be profeffor of the Oriental languages at Gieffen, and the other from his Pruffan majefy, to tue profeflor of eloquence at Halle. While he was dediberatiner refpecting the choice he fhould make, he was nominated by his Britaunic majelty to be profeflor of philofuphy at Cottingen, with an increafed falary, which induced him to remain in that city, till fome attempts were made to rain his reputation. He then quitted Guttingen, and accepted an offer made him by his Pruffian majelty, of being profeflor of philofophy and eloquence at Halle, with the rank and title of aulic counfellor. While preparing for his departure, he publithed "Hiltoria Nummorum Contumelioforum et Satgricorum," containing a hiftory of thefe coins ; and on his removal to Halle he gave the public another work of the fame kind, and at the fame time he effected, what had been often attempted before without fuccefs, the inftitution 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 Polifh majefty to Warfaw to fuperintend the education of the children of the Polifh 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-counfellor, and accompanied this mark of honour with a confiderable addition to his falary. He died in 1771, leaving behind him many other works befides thofe to which we have referred. Before his death, he revifed every thing which he had written oa coins, and pablifhed "Opufcula, nummaria quibus Juris Antiqui Hitoriæque nonnulla Capita explicantur." Gen. Biog.

KLUMP-FISH, in Ichibjologs'. See Tetrodon Mola. KLYDAU, Lill, in Geography, a fmall ifland on the E. Tide of the gulf of Buthnia. N. lat. $60^{\prime} 37^{\prime}$. E. long. $20^{\prime} 54^{\prime \prime}$.

Klydau, Stor, a fmall ifland on the E. fide of the gulf of Bothnia. N. lat. $60^{\circ} 39^{\prime}$. E. long. $20^{\circ} 4^{\prime \prime}$.

KLYSSA, a town of Pruffia, in Pomerelia; 33 miles S.S.W. of Dantzic.

KMIDOMOUKA, a town of Poland, in the palatinate of Kiev; $\hat{j}^{2}$ miles S.S.E. of Bialacerkiev.

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

KNAP's BAy, in Geography, a bay in Hudfon's bay. N. lat. $61^{\circ} 15^{\prime}$. W. long. $94^{\prime} 54^{\prime}$.

KNAPPIA, in Boiany, fo named by the writer of the prefent article, in honour of John Leonard Knapp, efq. F. L. S. and A. S. author of "Gramina Britannica, or Reprefentations of the Britilh Grafles, with Remarks and occalional Defcriptions," an elaborate work in quarto, with

## K N A

Irg coloured plates, drawn by the author, publifhed in 1 SOt.-Sm. Fi. Bfit. 1387. Engl. Bot. v. 16. 1127. (Chamagroftis; Sclirad. Germ. v. 1. 158.)-Clafs and order, Triandria Digymiz. 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, clofed, confifting of innumerable, fimple or branched, parallel fibres, denfelv matted together, united at their bafe, without awns. Stam. Filaments three, capillary, twice as long as the corolla; anthers of two elliptical pointed lobes, feparate at the bafe and fummit. Pif. Germen fuperior, ovate, fimoth; ftyles two, very flort ; Atigmas 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 awnlefs valves, fingleflowered. Córolla compofed of denfely-compaEted fibres, clofed, permanent. Seed unconnected.
3. K. agrofidea. Engl. Bot. t. 1127. Knapp Gram. t. I10. Hull. ed. 2. 23. (Chamagroftis minima; Schrad. Germ. ${ }^{5} 5$ S. Agroftis minima ; Limn. Sp. Pl. 93. Willd. Sp. Pl. v. 1. 372. Sm. Fl. Brit. 82. Hudf. 32. With. 134. Gramen minimum, paniculis elegantiffimis; Bauh. Titeatr. 26. G. minimum, Anglo-Britannicuns; Raii Syn. Indic. Pl. Dub. G. fparteum, capillaceo folio minimum ; Dill. Gift. 172. t. I6. excellent.) -A native of fandy paftures, efpecially near the fea, in various parts of Europe; as Germany, the fouth of France, and the fouth-welt coalt of Anglefea, at which latt place it has been obferved in plenty by the Rev. H. Davies. It is a fmall, delicate, annual grafs, flowering in the early fpring, after which it foon withers and difappears. The root confifts of a few long fimple fibres. Siems from one to three inches liigh, fimple, flender, ftraight, fmooth, naked, except at the bottom. Leaves almoft entirely radical, fhort, linear, channelled, blunt, with very broad fheathing membranous bafes. Spike fimple, ferminal, hadly an inch long, of eight or ten little purplifh or green flowers, placed alternately, each on a fhort ftalk, on a flender, zig-zag, common ftalk, to which, when in feed, they become clofery preffed.

The name of Knappia cannot be fuperfeded by Chamagrofis, the latter being untenable, as compofed of another eitablifhed generic name Agrofis, and contrary to the rule of Linneus, Phil. Bot. fect. 225, "a generic name, with one or two fyllables prefixed, fo as to make it apply to a totally diferent genus from what it originally defignated, is to be rejected." " We cannot but wonder, therefore, that the excellent Schrader fhould have been led, by any of his lefs learned countrymen, to adopt fuch a uame, when another was already before him, liable to no objection. S.

KNAPSACK, in Military Langruage, is a rough leather or canvas bag, which a foldier carries on his back, containing all his neceffaries. Square kuapfacks are moft convevient, and fhould be made with a divifion to hold the fhoes, black-balls, and brufhes, feparate from the linen. White goat-ikins are fometimes ufed. Soldiers are put under foppages for the payment of their knapfacks, which, after fix years, become their property.

KNAPIVEED, in Botany. See JAcEA.
Knapweed, a common name given to a kind of weed, which is fometimes called blue-bottle. It infelts arable land greatly in many cafes.

KNARED, in Geography, a town of Sweden, in the province of Halland; ${ }_{1}+$ miles E.S.E. of Halmiltad.

KNARESBOROUGH, a borough, market-town, and garih in the wapentake of Claro, Well-Riding of Yorkfhire,

## $\mathrm{K} N \mathrm{~N}$

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 ti:le of Terra Regia, in Domefday Book, and other records. The fcite of Knarefborough corre fponds with the defcription given of the towns of the Britons; beirg placed on the bank of a river for the fupply of water, and on the fliirt of a foreft, for conveniency of hunting and palture. The remains of a ditch and rampart, which may yet be traced, include an area of 900 feet in length, and 600 in breadth. Soon after the Norman conquelt, a frong caitle 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 caftle, having fallen to the crown, was granted by Henry III. to his brother Richard, earl of Cornwail, in the year 1257. In 1327, it was taken by John de Iolburn, an officer belonging to the earl of Lancatier: but, being befieged by the king's order, and Lilburn finding no profpect of relief, he furrendered, having firtt deltroyed all the records, and every memorial of the liberties and privileges of the burgh. In 1371, the callle and manor were granted by Edward III. to his fon, John of Gaunt, duke of Lancafter: from whofe time it has been an appendage to the duchy of Lancalter. The town and caflie had a conliderable fhare in the civil war of the 17 th century: after a brave reliitance, the caftle furrendered to lord Fairfax; and was ordered by the houfe of commons to be rendered untenable. The walls and towers have ever fince been mouldering away. This cafte 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 garrifon. Part of the principal tower is ftill remaining, and appears to have been built about the time of Edward III. It confilts of three ftories above the keep or dungeon. The firft room on the ground-floor has been, from time immemorial, the repolitory of the ancient records. On the fecond ftory is a flate-room, called the king's-chamber, in which Ri chard II. was imprifoned after his depofition. Beneath this tower is the dungeon, to which there is a defcent by twelve fteps: the roof is arched with fone, and fupported by one round pillar, nine feet in circumference. In a part of the ruins are the remains of a fecret cell, or hiding place, conftructed 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 caftle-yard is the entrance to an arched fubterraneous paffage leading to the moat. Leland, fpeaking of this caftle, fays, "It ftandeth magnificently and flrongly on a rock, having a deep ditch hewn out of the rock, where it was not defended by the river Nid."

The church of Knarefborough, dedicated to St. John the Baptitt, was a grant from the crown at the beginning of the I2th century. On the north fide of the choir is a chapel belonging to the Slinglby family: on an altar-tomb are whole length figures of fir Francis Slingfby and his lady; the knight in complete armour ; the lady in a long robe, with folding plaits down to the feet : here are alfo figures of fir William Slingfoy and Henry Slingfoy, efq. and various other monuments and inferiptions. 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 ftained on glafs in the window. The feats on either fide of the choir, and a pulpit facing the ealt window, appear to be ancient.

Knarefborough was fummoned to fend members to parliament in the firlt year of queen Mary ; from which

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time it has returned two reprefentatives: the right of election is vefted in the holders of burgage tenures, $8_{4}$ in number. In the diary of fir Henry Slingfly, who was elected in 1640, is the following note:"There is an evil cuftom at fuch elections, to beftow wine on all the town, which cont me fixteen pounds at leaft." The practice of purchafing the burgage-houfes began about the year 1714; fince which a majority of the votes have been in the poffeffion of the dukes of Devoufhire, who have nominated the two members. The town, though a borough, is not incorporated; but is governed only by a bailiff and conftable. Here are a fpacious market-place, and a neat market-crofs, which was erected in the year 1719. Over the river is a good thone bridge. On the eaft fide of the church is a frec-fchool, endowed, in 1616, by the Rev. Robert Challoner, a native of Goldboroagh, and rector of Amermam, in Buckinghamfhire. The prefent building was erected by fubfeription 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-flreet is a Quaker's meetinghoufe, erected in 1701. A confiderable marnfacture of linen has been carried on here for many ages, and is ftill in a flourilhing condition; upwards of 1000 pieces, each 20 yards in length, being often woven in a week. In the year : 764, an act of parliament was obtained for the better fupply of river water, of which the conveyance before was, from the elevated fituation of the town, rendered difficult and expenfive. In the Long walk, clofe by the river Nid, is the Dropping ruell, or Petrifying fpring, which iflues from a lime-ftone rock, about 40 yards from the bank of the river; and, after running about 20 yards, divides, and fpreads itfelf 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 fuppofed to fend forth 20 gallons in a minute. This rock, which is about so yards high, 16 long, and from io to 16 broad, about the year 1704, ftarted from the common bank, and left a chafm between them. Tradition ftates, that near this rock the famous Yorkfhire fybil, Mother Slipton, was burn, 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 compofed of the fame objects, is furprifingly variegated. From fome parts of this walk are feen the venerable ruins of the cafte, the hermi. tage, \&c. with an intermixture of rocks and trees, over which part of the tower of Knarefborough church makes its appearance. On the other fide of the river, at the foot of a perpendicular rock, is St. Robert's chapel, fuppofed 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, fuppofed to have beer the dwelling of the hermit above-mentioned. This cave has been rendered remarkable by a circumitance, which, in the year $175^{8}$, led to the difcovery of the murder of Daniel Clarke, committed 14 years before, by Eugene Aram, a fchool-mafter of this town, a man of extraordinary learning, who pleaded his own caufe in the moft able manner. He was, however, convicted and executed. About half a mile from St. Robert's chapel, ftood the priory, founded by the great carl 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 eard of

Vod.. XX.

Shrewbury. It foon after became the property of the Slingftys, in which family it has cver fince renaided. ' $1 \mathrm{l},-$ chapel, priory, and other buildings, are now entirely de molified; the ruins lying fattered in " many a mouldenings heap." "The remains of the fifh-ponds thew them to be: of a fingular coniltruction, fo that the water might be dramb off at pleafure. On the oppolite bank of the river tlands a high rock, called Grimbald-cratg; from the tup of which is a fine profpect of the fubjacent vale, the river, Birkham-wood, and the lofty fummit of Almias-cliff. On the fide of the rock is a cavern, which, by its rude remams. appears to have been the refidence of a hermit, of the name of Grimbald.

Knareflorough is 17 miles dittant from York, and $20:$ north of London. The population, as returned to parluament in the year 1800 , was 3388 , inhabiting 766 houte. A market is held on Wedneliday, which is plentifully fupplied with all kinds of provilions: the quantity of corn fold here weekly, is fuppofed to excced that of any other mark : in the county. In the year 1708, queen Anne granted on the burgeffes five annual farrs, with a court of Pe-poudre : a court held in fairs to redrefs diforders committed in the:rn.

On the eaft fide of the town is Hay-park, containing about 1200 acres, granted by the crown to an anceftor of the late lord Bingley; and afterwards in the polfetion of fir John Hewley, whofe widow appropriated the rents to charitable ufes.

Knarefborough foreft extends from calt to weit upwards of twenty miles, and in fome places eight miles in breadth. By the Domefday furvey, there were then only four towno fhips in this foreft; Birltwith, Fulton, Beckwith, Rolfert. But in the year 1369 , there appear to have been three principal towns and fixteen hamlets.

At a fhort dittance from Knarefborough is Bilton park, formerly in the poffeffion of the Slingtby family, afterwards in that of Stockdale for above an hundred years, from whom it paffed by fale to the Wations ; John Farlide Watfon, efq. is the prefent poffeffor.

On a fmall elevation above the river Nid, flands Conyngham houfe, formerly called Coghill hall: which for feveral centuries belonged to the Coghill family; but was purchafed of fir Thomas Coghill, bart. with 5 I acres of land, by the countefs of Conyngham in the year $17960^{\circ}$ Hargrove's Hiftory of the Cattle, 'Town, and Foreft of Knarefbrough, $1 ヶ 98$, 12 mo .

KNAVE, ail old appe'lation for a man fervant, and fo ufed in if Edw. M1. flat. 1. cap. 3.

The word is formed from the Saxon cnapa, or Flemifh knape, which fignify the fame.

KNave alfo fignifies a male-child, or boy, in which fenfe knave-cbild has been frequently ufed in contradiltinction to a girl; and in this fenfe Wickliffe ufes the word in his tranflation of Exod. i. 16. and other places of the B3ble. In the old Saxon tranflation of Mat. viii. 6. "Puer meus jacet in domo paralyticus," was termed $M y^{\prime n}$ knapa.

Kxave has fometimes allo been ufed as an addition; as Willielmus Cowper de Denbigh, knave, \&c.

It is a common opinion, that Rom. i. 1 . was tranflated, Paul, a knave of defus Cbrijl. This miltake was occalioned by a Bible in the duke of Lauderdale's library, where the word kneaze' is inferted in !efs charakters than the others. and a rafure might ealily be difcerned.

Knave-Line, in a Ship, a rope fattened 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 fo is brought to the fhip's fide, and there bauled up taught to the rails.

KNAUTIS,

## K N A

## K N E

KNA UTIA, in Botany, reccived its appelation in honour of two botanifs, Chriftopher Knaut, the father, and Chriltian Knaut, the fon, who lived at Hatle, in Saxony, about the end of the $15^{\text {th }}$, and beginning of the 18 th centurics, and who diftinguifhed themeiles by fome paradoxical opinions refpecting the methodical arraugement of plants. The method of the former is an alteration of that of Ray, without any inprovement.-The latter was abfurd enough to fuppofe that the effence of a flower confited in its co-rolla.-Linn. Gen. 49. Schreb. 65. Willd. Sp. Pl. v. I. 561. Mart. Mill. Dict. y. 3. Sm. Prod. Fi. Grec. p. Y. S5. Ait. Hort. Kew. eủ. 2. vo 1. 23r. Juff. 195. Lamarck Dict. v. 3. 367. Illuitr. t. 58. Gertn. t. 86.Clafs and order, Lictrandria Monogynia. Nat. Ord. Aggregratr, Linn. Dipfacke, Jufl.

Gen. Ch. Cal. Common perianth, containing the florets difpofed in a fimple 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/f. Germen inferior; ityle threadfhaped, as lorg as the ftamens; tligma thickifh, bitid. Perico, none. Seeds folitary, fquare witha woolly tip. Reaept. common, very fmall, flat, naked.

Obf. This genus is diltinguihed from Scaliofin in having a tubulated caly x , and the floftets arranged in a timple orb.

Eff. Ch. Common calyx oblong, fimple, containing, about five flowers: proper calyx fimple, fuperior. Florets irregular. Receptacle naked.
I. K. orientalis. Linn. Sp. Pl. 146. Till. Pif. t. 4S."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. Stens branched, about four feet high. Brancbes terminated by fingle peduncles, each fupporting a floweer. Florets of a bright-red colour. Leaves on the middle of the them pinmated; the reit are ferrated. Seeds compreffed, hairy, many-toothed at top. Down a concave crown, with many brittle-fhaped, unequal teeth.
2. K. propontica. Linn. Sp. Pl. 1666. Willd. n. 2. (Scabiofa orientalis villofa, fore fuaverutente, fructu pulchro oblongo; Tourn. Cor. 35.) -" Upper lates lanceolate, entire. Florets ten, equal with the calyx." - A native of the Eaft, from whence Forkal fent feeds of it to Limureus, who raifed plants from them in his garden, from one of which he made the following defcription. - "Stem biennial, the thicknefs of a finger, two feet in height, villofe, refembling Clsirantbus incanus. Leaves roughinh, ferrated; the upper ones a fpan long. Caly.x oblong, cylindrical, compoled of eight or ten leaves, awl-fhaped at the point. Corolla four-cleft, purplinh; anthers of the fame colour ; filaments and piftils white. It differs from the latt fpecies in having the upper leaves undivided; florets about ten, inttead of five, whilt the feed-crown is fifteen-toothed and fringed." -It appears to us, neverthelefs, to be a mere variety.
K. palafiting and plumofa of Linnæus are referred by Dr. Smith, in his Prodromus Flora Grace, to the genus Scabiofa, to which they mot indubitably belong.
Krautia, in Gardening, contains plants of the herbaceons, annual, and bennial kinds; of which the fpecies cultivated are, the oriental knautia (K. orientalis) ; and the Levant knautia (K. propontica).
Method of Cufturc. - Plants of this kind may be eafly increafed by feeds, which, when permitted to fatter in the
nutumnal fealon, 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 fivon as they become fully ripe.
Thefe plants are capable of affording variety among other hardy flowering plants which are of limilar growths.

KNAWEL, in Botany, faid to be a word of German origin, but of its fignification Dillenins confeffes himfelf, " though a German," to be ignorant. He adopts it, in his Nowa Plantarum Genera, 94. t. 3, for what Liunzus more happily called Sclerantjus, of which we fhall treat in its place.
KNECK, in the Sea Language, the twifting of a rope or cable, as it is veering out.

KNEE, Gexu, in Anatomy. See Extremities.
Kxee, Preternatural Cartilaginous Subfances in, in Surgery. Sce Jonsts, Difeafes of.

Knee, Dropfy of. See Junts, Dijeafes of.
Kxee, Ithite Szeeling of. See White Swelding.
Kxee, Diflucation of. See Luxatiox.
Kxee-Cup; a fort of bandage employed for keeping up a theady, equal, and eflectual preffure on the kinee, when the nature of the cafe requires fuch treatment, as for inttance, when there are preternatural cartilaginous futftances in the joint, and it is not judged proper to fubmit to the operation of excifion. See Junsts, Dijeafes of.

Kxee- $P_{a n}$, in Anatomy. Sce Extremities.
Kxee-Pan, Diflocations of, in Surgery. See Luxation.
Kxee-Pan, Frafures of. See Fracture.
Knee, in the Manege, is the joint of the fore-quarters, that joins the fore-thigh to the fhank.

Kxees, in a Ship, are the crooked parts of oak timber which fecure the beams to the fides of the fhip, and are diltinguilhed by the terms hanging-knees and lodging-knees; the former are thofe whofe arms fay to the fide 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 thofe articles has compeiled the fhip-builder to introduce knees of iron; but being inferior in point of contact with the Thip's fides, and as the bolts cannot be drove tight in the iren-knces if the flip flains, they confequently mult work loofe, thefe, therefore, fhould only be reckoned as an inferior fubftitute.

Kxam 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 breadih: it extends from the fore-part of the flern to the figure-bead, which it fupports, as likewife the rails and all other comeparments of the head, and is fecured to the bows by large knees, called cheeks of the head, and through the itern, \&c. by bolting.

Knee Holm, or Knee Holly, in Botany; See Ruscus. aculeatus.

Kxer Lake, in Geography, a lake of North America. N. lat. $55^{\circ}$ W. long. $95^{\circ}$

KNEELING. See Genvflemion.
Kneep Head, in Geography, a cape on the E. coalt of the ifland of Lewis. N. lat. $58^{\circ} 19^{\prime \prime}$. W. long. $6^{\circ} 9^{\prime}$.

KNEKINIEC, a town of Auftrian 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 with

## K N E

Fith the fume portion of real power in the art of painting. A rapid pencil and a ready talent of taking likenefles were the foundation of his reputation ; and a mon fortunate ignorance of the art among the bett informed even of the public, by whom he was employed, aided his progreds. Not but that he was equal to the production of good works if he had been more carefully trained, and had lived amonglt thofe who knew how to value works of art upon jult principles ; but he was amongft the mont vain of mankind, and had no regard whatfoever for that pofthumous fame which leads men to facrilice prefent enjoyments to future glory. His niutto was, "to live whilit 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 loit 20,000 \% by the South-fea fpeculation, he left, at his death, an eflate of $2000 /$. a-year. His prices, whillt he painted here, were 15 guineas for a head; 20 if with one hand; 30 for a lalf, and 60 for a whole length.

He was born at Lubec about the year ro4i. His father was furveyor-general of the mines, and infpector of count Mansfelde's revenues. At firlt Godfrey was dettined for a military life, but painting was his paffon. His father acquiefced in his wifhes, and placed him under Bol, at Amfterdam. He had even fome initructions from Rembrandt. He vilited Italy in 1672, and remained fome time at Venice, where he painted fome of the firlt families, and amonglt them the cardinal Baffadonna. It is probatwe that le here learnt that free, loofe tyle of execution in which he delighted, but by no means excelled; with him it fell to negligence and clumbinefs, particularly in his draperies, whift fometimes his heads exhibit a perfect mafter of the pencil.

Kneller did not ftay long in Italy, as in 1674, he came to England with his brother, John Zachary, who affited 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 Monmoush, faw them, and fat to Kneller; and perfuaded the duke alfo to fit. His grace was delighted, and engaged the king his father to have his picture by the new artilt, at a time when the duke of York had been promifed the king's picture by Lely. Charles, unwiling to have double trouble, propofed that both artifts fhould paint him at the fame time. Lely, as the eftablifhed artift, chofe his light and fation: Kneller took the next belt he could, and performed his talk with fo much expedition and $1 k i l l$, that he had nearly finifhed his piece when Lely's asas only dead-coloured. The circumftance gained Kneller great credit; and Lely obtained no lefs honour, for he had the candour to acknowledge and admire the abilities of his rival. This fuccels fixed Kineller here, and the immenfe number of portraits he executed, prove the continuance of his reputation.

He was equally encouraged by Charles, James, and William; and had the honotr of painting the portraits of ten fovereigns (riz. 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 belt 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 3 col. In his reign, he alfo painted feveral of the admirals for Hampton Court, and the Kit-Cat club. He lived to paint George I. and was made a baronet by him. In 1722, fir Godfrey was feized with a violent fever, from the immediate danger cf which he was refcued by Dr. Meade. He languifhed,

However, fome time, and died in OCvober 9,729 . His indy lay in itate, and was buried at his coumtry-leat called Whton; but a montument was crected to lum in Weftminter Abbey, for which he left $300 \%$ and grave particular inftructions for the execution of it to Rytbrach.

During the latter part of his time, that is, after the death of 1 ely, in 1580 , Kneller thood at the head of the profefions of hisart in this cotentry, and that mont confpicuoully. It is not therefore furprimg that he experinnced the encouragement he did. He has lefe fome few good pictures behind him as proofs of the natural powers he poffefted; b:tt lus mott fincere admirers, who are judges, mutt acknowledge that the fur greater portion of thofe he allowed to pats into the world under his same, are a difgrace to ham and his patrons. His pieture of the converted Chinefe at Windfor, he is faid to be mott froud of, as jufly he might be. This, however, flews his profligacy in principle, as it exlibits that he really knew what was gnod, and coul. 1 produce it if he chofe. According to his own doctrine, he did as much and no more than was neceflary to pafs current among his employers. "Hiftory 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 live."

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

All that Kneller can be juflly praifed, or defervedly efteemed for, generally fpeaking, is, that his heads, or rather his faces, have a grod deal of livelinefs and gentility. It feldom amounts to character in the general run of his portraits. Now and then the mafter-hand appears, when the fubject or the moment were favourable. There is, at Pet. worth, a head of fir Ifaac Newton that would be an hononr to any man to have produced; and portraits of branches of the Seymour family, which are a difgrace to the name they bear.
The artilts who fucceeded him, dazzled by his fuccefs, and allured by the profefled admiration of his tafte, moit unaccountably luft jight of the infinitely greater beauties of Vandyke's manner, and folluwed his alone. In confequence, the art funk to the lowelt ebb, till it was fomewhat redeemed by Richardfon's writings, and Hudfon's and Ramfay's talents in painting. But true tafte was not reftored till Reynolds took up the pencil; and now, happily, the weakneffes as well as the merits of Kneller are duly appreciated, and hundreds of his works cenfigned to the oblivion he probably wifhed they might experience. Wher the mafs may be thus difpofed of, and the feleet only remain, then he will obtain, unalloyed, the praife his talents, when carefully exerted, fully deferved.

KNEMA, in Botany, a genus named by Loureiro, is derived from xurun, the fpole of a wheel, on account of the anthers being difpofed into a ftar-like, or wheel-fhaperd form. - Loureir. Cochinch. 6o4-Clafs and order, Diacig Monadeiphia. Nat. Ord.

Gen. Ch. Male, Cal. none. Cor. of one petal, fleny ; tube thick, fhort ; limb in three, acute, fegments, woolly un: the outlide. Sifoni, a fingle filament, fhort, turbinatid;
anthers 10 or 12, ovate, two-celled, expanded horizontally about the top of the filament. Female, (flowers on a diftinct plant.) Cal. Perianth inferior, very fhort, fomewhat truncated, permanent. Cor. as in the malc. Pi/t. Germen fuperior, roundifh, hairy; ftyle none; ttyle laciniated, erect. Peric. Berry ovate, fucculent. Seed folitary, ovate, tunicated.
Eff. Ch. Male, Calyx none. Corolla three cleft. Anthers formed into a itar, about the filament. Female; Calyx rather truncated. Corolla threc-cleft. Stigma onc. Berry fuperior, fingle-feeded.

1. K. corticofia. Loureir.-A native of the woods of Cochinchina.-This is a large tree, with a thick brown, or reddifh bark. Branches afcending. Leaves lanceolate, entire, fmooth, alternate, on foot-ltalks. Both male and female fowers nearly terminal, on many-flowered Italks. Corolla brown on the outfide, yellowifh red within. Berry imall, pulpy, red.

It feems to us that Loureiro refers this genus to the order AIcmandria rather inadvertently, becaufe he defrribes 10 or 12 anthers as pertaining to the generic character.
KNEVELS, in a Ship. See Kevels.
KNIAGININ, in Geograply, 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.

KNLASE, a town of Poland, in Volhynia; 50 miles S.W. of Lucko.

KNIFA, in Botany, one of Adanfon's whimfical names, of whofe origin or meaning no account is given. He ufes it to defignate a genus of his own, compofed of the Linnæan Hypericum mutilum and fetofum, whofe flowers have but two ityles, and their capfules two cells.

KNIFE is a well known inftrument made for cutting, and adapted in form to the ufes for which it is defigned.

Knives are faid to have been firlt made in England in 1563, by one Matthews, on Fleet-bridge, Loudon. Anderf. Hilt. Com. vol. i. p. 402.

Surgeons have various forts of knives. See Bistoury, \&c.

KNIFVEN, in Geography, a fmall ifland on the W. fide of the gulf of Bothnia. N. lat. $60^{\circ} 3^{3} 8^{\prime}$. E. long. $17^{\circ} 30^{\prime}$.

KNIGHT, Eques, among the Romans, was the fecond degree of nobility; following immediately that of the fenators.

At the time of building the city of Rome, the whole army of Romulus confifted of 3000 foot and 300 horfe, which 300 horfe were the original of the Roman equites or knights.- Thefe made the fecond order that had places in the fenate.

Manutius and Sigonius are of opinion, that befide the equeftrian order, and thofe knights immediately below the fenators, Romulus inllituted a military order, whereof the Ruman cavalry was compofed. But no ancient author takes notice of any order of knighthood initituted on purpofe for the war, nor any other knights but thofe 300, which, as we have oblerved, were the firit foundation of the equeftrian order.

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 neceflary they fhould have a certain revenue, that their poverty might not difgrace the order; and when they failed of the preicribed revenue, they were expunged out of the lifts of knights, and thrult down among the plebeians. Ten thoufand crowns are computed to have been the revenue required.
The knights grew fo very powerful, that they became a
balance between the power of the fenate and the people. They neglected the exercifes of war, and betook themfelves principally to civil employments in Rome; infomuch that Pliny obferves, in his tume, they had no longer a horfe kept at the public expence.

Some fay that the order of knights, as diftinet from the people, did not begin before the time of the Gracchi; others fay, the privilege was then firlt granted them, that no jedge fhould be chofen, but out of their order: fome time after which they admitted them into the fenate. This, however, is certain, it was only from that time that a certain revenue was neceflary, and that this entuled them to the knighthood, without being defcended from ancient knights.

Knicut, in a more modern fenfe, properly fignifies a perfon, who, for his virtue and martial prowefs, is, by the king, raifed above the rank of gentlemen, into a higher clafs of dignity and honour.
The word knight, in its original German, knecht, fignifies a fervant; and has fince been ufed for a foldier or man of war. We have but one initance among us where knight is ufed in the firit fenfe, and that is in knigbt of the fiere, who properly ferves in parliament for fuch a county. In the Latin, French, Spanih, Italian, and Dutch languages, knight is expreffed by a word (equites) which properly lig. nifies a borfeman, as being ufually employed on horfeback. Indeed our common law calls them milites, foldiers, becaufe 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 ferve the king as foldiers in his wars, in which fenfe the word miles was ufed pro vaffalo: 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 ftatute 16 Car. 1. c. 16. abolifhed: and this kind of knighthood has, fince that time, fallen into great difregard.

Knighthood was the firt degree of honour in the ancient. armies, and was ufually conferred with a great deal of ceremony on thofe who had diftinguifhed themfelves by fome notable exploit in arms. They were originally faid to be adopted, adoptabantur in militem, which we now call dubbed; as being fuppofed, in fome meafure, the fons of him who knighted them.
The cuftom of the ancient Germans was to give their young men a fhield 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 houfehold; after it, as part of the community. (Tacit. de Mor. Germ. § 13.) Hence fome derive the ufage of knighting, which has prevailed all over the weftern world, lince its reduction by colonies from thofe northern heroes. See Knigitiood, Military, infra.
The ceremonies at the creation of a knight have been various. The principal were a box on the ear, and a flroke with a fword on the fhoulder. Then they put on him a fhoulder-belt, gilt fword, fpurs, 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 defcribed by Camden in a few words: "Qui equeltrem dignitatem fufcipit, flexis genibus leviter in humero percutitur : princeps his verbis Gallice affatur: fus vel fois chevalier au nom de Dieu, furge vel fis eques in nomine Dei." This is meant
of knights-bachelors, which are the lowen, though the molt ancient order of knighthood among us; for we have an in. fance of king Alfred's conferring this order on his fon Athelitan. Wiall. Malmob lib. ij.

Knights grew fo very mumerous, that the dignity became of much lefs repute. Charles V. is faid to have made five hundred in a fingle day: on which account, thercfore, now orders of knighthood were inflituted, in order to diltinguifn the more deferving from the crowd. For the feveral kinds of knights amorg us, fee Bacuelon, Baxyeret, Bahonet, Batif, Garter, \&c.

Knigut is alfo undertood of a perfon admitted into any order either purely military, or military and religiour, inftituted by forne king or prince, with certain marks and tokens of honour and diftinction.

Such are the knights of the Garter, of the Elephant, of the Holy Gbof, of Molta, \&e. All which fee under Garter, Elephint, \&s.

Kxigit Mar/ball. See Marsimall.
Kwichis of St. Ampulla. See Ampulla.
Kxights of Annunciala. See Axiexciade.
Kxigurs of St. Anthony. See Astiony.
Kvights of St. Bridget. See Bricianto.
Kniguts of St. Catharine of Mount Sinai. See Catuarise.

Kxiguts of the Chapel. See Chiaper..
Kxiguts of Chrif. See Curist.
Kxichits of the Gollar. Sce Collar.
Ksiguts of the Dragor. See Dragon.
Knights of the Eleplanto See Elephinst.
Knigits of the Ermin. See Eimin.
Kviguts-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 occafions of fignalizing their prowers. This romantic bravery of the old knights was heret fore the chimera of the Spaniards; among!t whom there was no cavaler but had his nuiftrefs, whofe etteem he was to gain by fome heroic action. The duke of Alva, notwithttanding his age azd gravity, is faid to have vowed the conquelt of Portugal to a young lady.

Kmigits of St. George. See Geonge.
Kxigits Hoppialers. See Hospitalers and Malta.
Kxiguts of St. Louis. See Louls.
Kinguts of Malta. See Malta.
Knigits of Sto Mark. See St. Mark.
Knights of Mary. See Mary.
Kingeits of the Mine. See Mine.
Kxigits of Mount Carmel. See Carmel.
Ksigits, Rad. See Rad.
Kxigits of the Round Table. See Table.
Kivauts of the Temple. See Templars.
Kxients Teutonic See Teutoxic.
Kxiguts of the Thiflle. See Tuistle.
Kxiguts of the Shire, or Kxigits of Parliament, are two gentlemen of worth, chofen on the king's writ in pleno comitatu, by fuch of the freeholders of every county as have the value of fos. per ann, within the county, clear of all taxes and deductions except parliamentary and parochial taxes, to reprefent fuch county in parliament.

This qualification of electors for knights of the fhire or county members, is fettled by ftat. 8 Hen. VT. c. 7 . and 10 Hen. VI. c. 2. amended by $1+$ Geo. III. c. 58. According to the eflimate of bifhop Fleetwood in his "Chronicon Preciofum," 40s. in the reign of Henry VI. was equal to 32l. per annum in the reign of queen Anne; and as the value
of money has been towered fince, judge Black fore concludes that $12 \%$ in the bihop's day murt have been equivalert to 20\% in his own time; and the depretiation of money in later times muft have made the difference much greater. (Sice De-Lxpensts.) The other qualifications of the electors for counties in England and Wales, collected from fatutes are; the: ro perfon under twenty-one years of age thall be capable of voting; nor any perfon convicted of perjury or fubornation of perjury: that no perfon frall vote in ri ht of any frechold granted to him frauculently to qualify him to vote: that every voter fhal! have been in the actual poffeflon or secipt of the profits of his freehold to his own ufe for twelve calendar monthis before, except it came to him by defcent, marriage, marriage fettlement, will, or promotion to a benclice or office : that no perfon fhall sote in refpect of an annuity or rent-charge, unlefs regiftered with the clerk of the peace twelve calendar months before: that in mortgaged or trult eftates, the perfon in poffeffion fhall have the vote: that only one perfon fhall be admitted to vote for any one houfe or tenement, to prevent the fplitting of freeholds: that no eftate fhall qualify a voter, unlefs the eflate has been affefied to fome landotax aid, at leaft twelve months before the election: and that no tenant by copy of court-roll fhall 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. 1I. c. 18. 31 G. II. c. 14. 3 G. III. c. 24 .) By ftatute 22 G. III. c. 41 . no commiffioner, or officer, employed in managing the duties of excife, cultoms, flamps, falt, windows or houfes, or revenue of the poftoffice, fhall be capable of voting in the election of a member of parliament.

Thefe knights, when every man who had a knight's-fee was cuftomarily conftrained to be a knight, were of niecefity to be milites gladio cindi, for fo the writ runs to this day; but now cultom admits efquires to te chofe to this office.

It is required by 23 Hen. VI. c. 15 . that all knights of the fhire fhall be actual knights, or fuch notable efquires and gentlemen as have eftates fufficient to be knights; and by nomeans of the degree of yeomen: and more precifely by 9 Ann. c. 5. that every knight of the thire fhall have a clear eftate of freehold or copyhold to the value of 6 col . per athnum, except the eldeft fons of peers and of perfons qualified to be knights of fhires. For other qualifications, fee Par. hiament.

The expences of knights of the fhire, are to be defrajed by the county, during their fitting in parliament, at the rate of four frillings a day. This rate of wages was eftablifhed in the reign of Edw. III. (Seealfo 35 Hen. VIII. c. I1.) It is hardly neceflary to add, that thefe are never now reaquired.

Knight's Crofs, in Botany. See Campiox.
Kvigur-Heads, or Bollard Timbers, are oak timberswith large upperparts or heads, which are faved and bolted together, one on each fide the ftern, or with a filling between, as they mult open at the heads fufficient to admit the bowfrit between them, and running high enough to fupport the fame above the ftern.

Kxigurs Fre, an ancient laze-term, figrifying fo mi:ch land of inheritance as was efteemed fufficient to maintain a knight with fuitable retinue ; which, in the days of H. III., was reckoned at 15\% per ann. And by ftat. I Edw. II. fuch as had $20 \%$. per ann. in fee, or for life, might be compelled to be knights. But this flatute is repealed by 16 Car . I. Sir T. Smith rates a kuight's fee at $+0 \%$, yearly. According to Coke, a knight's fee contained twelve carucates, or plougholands. Stow fays, that there were found in England, as the time of the Conqueror, $60,21 \mathrm{~s}$ knight's fees; ac.
cording to others there were 60,215 ; wheresf the religions houfes, before their fuppreffion, were poffeffed of 28,015 . Sue Fee.

In confequence of the introduction of the feodal fyftem upon the Nerman conqueft, all the lands in the kingdum were divided into knight's fees, in number, as Stow fays, above 60,000 ; and for every kright's fee, a kniglit or foldier, miles, was bound to attend the king in his wars, for 40 days in a year ; in which fpace of time, before war was reduced to a feience, the campaign was generally finified, and a kingdom either conquered or victorious. By this means, the king lad, without any expence, an army of ( 10,000 men always ready at his command. Accordingly we tind among the laws of William the Conqueror, one, (c. 58.) which in the king's name commands, and frmly cujoins, the perfonal attendance of all kuights and others; " quod habeant et teneant fe femper in armis et equis, ut decet et oportet : et quod femper fint prompti et paratiad fervitium fum integrum nobis explendum et peragendum, cum opus adfuerit fecundum quod debent de feodis et tenementis fuis de jure nobis facere." This perfonal fervice in time degenerated into pecuniary commutarions or aids, and at latt the military part of the feodal fyltem was abolifhed at the reltoration, by .ftat. I2 Car. II. c. 24.

Kaigurs ferzice, fervitium militare, a tenure whereby feveral lands in this nation were anciently held of the king. This was the firit, mult univerfal, and eftecmed the molt honourable feccies of tenure, called in Latin "Fervitium mlitare," and in law-French "chivalry" or "fervice de chivaler," anfwering to the "fief d'haubert" of the Norvians; a name that frequently cecurs in the Mirror. It differed in few refpects from a pure and proper feud, being entirely military, and the genuine effect of the feodal eltablifhment in Englund. In order to make this tenure, a quantity of land, calied a knight's fee "feudum militare," was neceflary; 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 ferrice for the lund he claimed to hold. If he held only half a knight's fee, he was unly bound to attend 20 days, and fo in proportion. This tenure had all the marks of a ftriet and regular feud; it was granted by words of pure donation, dedi et con$\operatorname{cel} / \sqrt{1}$ (Co. Litt. 9.) ; was transferred by invelliture or delivering corporal poffefion of the land, ufually cailed livery ef feilin; and was perfected by homage and fealty: It alfo drew after it thefe feven fruits and confequences, as infeparably minident to the tenure in chivalry; vizz. aids, relief, primer feilin, wardfhip, marriage, fines for alienation, and efclieat; which fee refipectively. It was by this tenure of knight-lervice that the greatet part of the lands in this kandom was holden, and that rincipally of the king in capitc, till the middle of the $1{ }^{7}$ th century; and which was created, as tir Euward Coke exprefsty teltifies ( 4 Inlt. 192.), for a military purpoie; ciz. fur difence of the realn by the king's own principal fubjects, which was judged to be much better than to hirelings or Enreigners. The defcription above given relates to knight-fervice proper; which was to attend the king in his wars. There were alfo fome other Ipecies of knight-fervice; fo called, though improperly, becaufe the fervice or render was of a free alid honourable naturc, and equally uncertain as to the time of rendering it, as that of knight fervice proper, and becaufe they were attended with fimilar points and confequences. Such was the tenure by grand ferjeanty, which fee; and of this tenure that by sornuge (which fee) was a fpecies.

Finght's Canal, in Geography, an inlet of the Paci-
fic ocean, on the W. coalt of Nurth America, extending in an E. and N.E. direction about 50 miles. Its entrance from an arm of the fea lies in N. lat. $50^{\circ} 45^{\prime \prime}$. E long. $233^{\circ}$ 16 .
Kxigut's Ifland, a fmall inand in Becring's bay, N.W. of Eleanor's found, feparated from the Amerrican continent by a narrow chatinel, which is navigable. N. lat. $59^{-4} 45^{-1}$. E. long. $220^{\circ}+7^{\prime}$ - Alfo, an illand in Prince Walliam's found, about 30 miles in length from N. to S., and from two to five broad. N. lat. $60^{\circ} 2^{\prime}$. E. long. $212^{\circ} 52^{\prime}$ - Alfo, a fmall ifland in Hudfon's bay. N. lat. $6 \mathrm{t}^{\circ} 50^{\circ}$. W. long. 93 30'.-Alfo, an iffand in the I'acific cccan, at: the largeft of thofe called by Capt. Vancouver the "Snares;" difcovered by Broughton, commander of the Chatham under Vancouser, in Norember 1791. Some parts of the ifland prefented a very barren appearance, not unlike the W. fide of Portland, compofed of whitifh rocky cliffs. 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 fitmated in S. lat. $48^{\circ} 15^{\prime}$. E. long. $166^{\circ} 44^{\prime}$.

Kxicurs, Poor, a group of fmall iflands, fo called by lientenant Cook, who difcovered them in November 1760, on the coatt of New Zealand, when he was in S. lat. $3^{6}{ }^{\circ}$ 36, at the ditance of three leagues N.E. by N.

KNIGHTEN-GILD, in our Ohl Hriltrs, a gild or company in London, confiltiang of nineteen knights, which king Edgar founded, giving them a portion of void ground lying wihin the walls of the city, now called Portfokenward.

KNIGHTHOOD, a miiitary order, or honour ; or a mark or degree of ancient nobility, or reward of perfonal virtue and merit.

There are four kinds of knighthood ; military, regular, hoonorary, and focinl.

Kincurnood, Miliary, is that of the ancient knights, who acquired it by high feats of arms.
Thefe are called -nilites, in ancient charters and titles, by which they ware dillinguihned from mere backelors, \&c. Thefe 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 themfelves, with all other fovereigns, heretufore had knighthood conferred on them as a mark of honour. They were ufually knighted at their baptifn or marriage, at their coronation, before or after a battle, Scc.

Between the age of Charlemagne and that of the Crufades, the fervice of the infantry was degraded to the Plebeians; the cavalry formed the ftrength of the armises, and the honourable name of niles, or foldier, was conlined to the gentlemen who ferved on horfeback, and were invelted with the charater of knighthood. The dukes and counts, who had ufurped the rights of fovereignty, divided the provinces among their faithful barons; the barons ditributed among their vaffals the fiefs or benefices of their jurifdiction; and thefe military tenants, the peers of each order, and of their lord, compofed the noble or equeltrian order, which difdained to conceive the peafant or burgher as of the fame fpecies 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 anceltry, without fput 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 reccived ; and the warlike fovereigns of Eu-
rope derived more glory from this perfonal didinetion than from the luttre of their diadem. 'This ceremony, of which fone traces may be found in Thacitus and the woods of Germany, was, in its oriцin, fimple and profane; the candidate, after fome previous trial, was invelted with the fivord and fpurs; and lis cheek or fhoulder was touched with a fight blow, as an emblem of the lalt affront, which it was lawful for him to endure. But fupertition mingled in every public and private action of life; in the holy wars, it fanctified the profeflion of arms; and the order of chivalry was allimilated in its rights and privileges to the facred orders of priethood. I'he bath and white garment of the novice were an indecent copy of the regeneration of baptifm; his fivord, which he offered on the alcar, was bleffed by the minitters of religion; his folemn reception was preceded by fetts and vigils; and he was created a knight in the name of God, of St. George, and of St. Michael the archangel. Ho fivore to accomplinh the duties of his profeffion; 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 himfelf to fpeak the truth; to maintain the right; to protect the diftrefted; to practife court $/ j$, a virtue lefs familiar to the ancients; to purfue the inlidels; to defpife the allurements of eafe and fafety; and to vindicate in every perilous adventure the honour of his character. T'he abuife of the fame firit provoked the illiterate knight to difdain the acts of indultry and peace; to etteem himfolf the fole judge and avenger of his own injuries; and proudly to neglect the laws of civil fociety and military difcipline. Yet the benefits of this inltitution, to refine the temper of barbarians, and to infufe fome principles of faith, jultice, and humanity, were ftrongly felt, and have been often obferved. The alperity of mational prejudice was foftened; and the community of religion and arms fpread a fimilar co'our and generous emulation over the face of Chrittendom. Abroad, in enterprize and pilgrimage, at home in martial esercife, the barriers of every country were perpetually affociated; and impartial talte muft prefer a Gothic tournament to the Olympic gamez of claffic antiquity.

The lance was the proper and peculiar weapon of the knight ; his horfe was of a large and heavy breed ; but this charger, till he was roufed by the approaching danger, was ufually led by an attendant, and he quietly rode a pad or palfrey of a more ealy pace. His helmet and fword, his greaves and buckler, it is needlefs to defcribe in this place; but at the period of the crufades the armour was lefs ponderous than in later times; and inteat of a malfy cuirafs, his brealt was defended by an hauberk or coat of mail. Each knight was attended to the field by his faitbful 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 fubfilted; the voluntary fervice of the knights and their followers was prompted by zeal or attachment, or purchafed with rewards and promifes; and the number of each fquadron were meafured by the power, the wealth, and the fame of each independent chieftain. They were diftinguifhed by his banner, his armorial coat, and his cry of war; and the molt ancient families of Europe mult feek in thefe achievements the origin and proof of their nobility. Gibbon'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 Crolsades.

Thefe fervices, both of chivaly ated of grand-fricanty, were all perfonal, and as to their quantity or duration unertan. But periond attendance in knight-fervice being found menavenient and troublefome, the terants fourd incans of compounding for it; firlt, by finding others to ferve in their Itead, and in procefs of time by making a pecturiary fatisfaction to the lords in lien of it. (Suee Fectiace.) When knight-fervice, or perfonal military duty degenerated into efouage, or pecuniary affefiments, all the indvantages (promifed or real) of the foedal confatution were deflroved, and nothing but the hardfhips remained. Thefe hardflips, which were numerous and gresous, were from time to time palliated by fuccellive acts of parliament, till at length the humanity of king James I. conicuted, $(4$ Intl. 202.) , in contideration of a proper equivalent, to abolifh them all, upon a plan fimilar to that, which he had formed and began to put in execution, for removing the feodal grievance of heritable juridiction, in Scotland, which has fince been purfued and effected by the Itatute 20 Gco. II. c. 43. By another itatate of the fame year (20 Geo. II. c. 50.) the tenure of "ward-holding" (equivalent to the knight-fervice of England) is for ever abolifhed in Scotland. At length the military tenures, with all their heavy appendages, (having during the ufurpation been difcortinued) were totally deltroyed by the llatute 12 Car. II. c. 24 . Blackf. Com. b. ii. See Texure.

Kxightnood, Regular, is applied to all military order:, which profefs to wear fome particular halbit, to bear arms againt the infidels, to fuccour and affitt pilgrims in their paflage to the Holy Land, and to ferve in hofpitals where they fhould be received; fuch were the knights l'emplars, and fuch fill are the knights of Malta, \&c.
Kxicntnood, 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.
Kvigutuood, Social, is that which is not fixed, nor confirmed by any formal inftitution, nor regulated by any lafting flatutes; of which kind there have many orders been crected on occalion of factions, of tilts and tournaments, mafquerades, and the like.
The abbot Bernardo Juftiniani, at the beginning of his hitory 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 publifhed Delicix Equeftrium Ordinum, and Audr. Mendo has written De Ordiribus Militaribus. Beloi has traced the original, and Geliot, in his Armorial Index, bas given us their inftitutions.

To thefe may be added, Father Meneftrier de la Chevalerie Ancienne \& Moderne, Michieli's Trefor Militaire, Caramul's Theologia Regolare, Mirxus's Origines Equeftrium five Militarium Ordinum: but above all, Juitiniani's Hiftorie Chronologiche del' Origine de gl' Ordine Militari, e di tutte le Religione Cavalerefche: the edition which is fullett, is that of Venice in 1692, in two vols. fol.

KNIGHTON, Henry, in Biograpby, who Gourihed at the clofe of the 14th century under Richard II is celebrated as an ancient chronicler. He was a canon-regular of Leicefter abbey, and wrote a hiftory of Englifh affairs in five books, from the conquelt to the year 1395: He wrote likewife an account of the depofition of Richard II. His works are printed with the ten Englifh hithorians publified ${ }^{\text {a }}$

## K N I

by the learned Selden. He is reckoned an exaet and faith. ful narrator of events within his own times.

Liswitton, or Tref-y-clacudd, in Geograpby, a marketrown and parish in the hundred of Knighton, and county of Radnor, Souti Wales; is feated in a valley, through which the river Teme meanders at the ditance of 17 tniles W. of L.udlow, and 33 S. of Shrewibury. The val'ey of Teme, in the vicinity of this town, is ki:ted by lofty hillis, the fides of which are well clothed with wood and verdure. The town contains fome good houfes, ranged on the fides of freets, which in parts are tteep. Here is a free grammar fchool. 'The church has rather a fingular appearance, from its irregular form, detached tower, with itrange fpire. Knighton has a weekly market, and an annual fair: and contained, in the year ISoo, 221 houles and 755 inhabitants.

On the weftern 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 Wellhman was found on the ealtern fide of this dyke, he flould lofe 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. $49^{\circ}+9^{\prime}$. E. long. $1+18^{\prime}$ - Alio, a fortified town of Delmatia, ftrengthened by a deep ditch, and dituated on a narrow neck where the river Kerka is joined by another Atream, called Butim-fchiza. This is fuppoled to be the ancient caftle called "Arduba," taken by Germanicus, 40 miles E. of Zara. N. lat. $43^{\circ} 55^{-1}$. E. long. $16^{\circ} 55^{\prime}$.

KNIP Bay, a bay on the W. coalt of the ifland of Curaçoa.

KNIPHAUSEN, a fea-port town of Germany, in the lordfhip of Jever, taking its name from an ancient caftle, where the tribunal of juftice is held; 5 miles E.S.E. of Jever. N. lat. $53^{\circ} 29^{\prime}$. E long. 8.

KNIS ГENEAUX, otherwife called Killifinons or Kifo tinons, the name of a people, who are fpread over a confiderable extent in the centre of the northern part of America. We are indebted to Mr. Mackenzic ( $e e$ Voyage from Monereal, \&cc. Introd. p. 9I, \&c.) for a particular account of thefe peop!e. Their language is the fame as that of the people who inhabit the coat of Britif America on the Atbantic, the Equimaux excepted, and continues along the coalt of Labrador, and the gulf and banks of St. Lawrence to Montreal. The lime then follows the Utawas river to its fource, and continues from thence nearly W. along the highla ds, which divide the waters that fark into Lake Superior and Hudfon's Bay. It then proceeds till it ilrikes the middle part of the river Winipic, following that water through the lake Winipie, to the difcharge of the Safkatchiwina into it; from thence it accompanies the latter to Fort George, when the line, Ariking by the lead 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 ifle a la Croffe, and fo on to Churchill, by the Miffifippi. The wbole of the tract between this line and Hudfon's bay and Araits, that of the Efquimaux in the latter excepted, may be faid to be cxclufively the country of the Krifteneaux. Some of them, indeed, have penetrated farther W. and S. to the Red river, to the S. of lak. Winipic, and the S. branch of the Sakatchiwina.

Thefe people are of a moderate ftature, 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 eut in various forms, according to the fancy of the feveral
tribes, and by fome it is left in the long, lank flow of nature. They very generally extract their beards, and both fexes manifeft a difpofition 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 perfoos. In the ufe of vermilion, to which they are much accu!tomed, they contraft it with their native blue, white, and brown earths, to which they frequently add charcoal. Their drels is fimple and commodious. It confits of tight leggins, reaching near the hip: a ftrip of cloth, or leather, called Affian, about a foot wide, and five feet long, whofe ends are drawn inwards and hang behind and before, covering a belttied round the wailt for that purpofe : a ciole veft or fhirt reaching down to the former garment, and cinctured with a broad Atrip of parchment faltened with thongs behind; and a cap for the liead, conlifting of a piece of fur, or fmall flsin. with the brufh of the animal as a fufpended ornament; a kind of robe is thrown occafionally over the whole of the drefs, and ferves both night and day. Thefe articles, with the addition of fhoes and mittens, condtitute the variety of their appart. The materials vary according to the feafor, and conlilt of dreffed moofe-fin, beaver prepared with the fur, or European woollens. The leather is neatly painted, and fancifully wrought in fome parts with porcupine quills, and moofe-deer hair; the fairts and leggins are alfo adorned with fringe and taffels; nor are the thoes and mittens without fomewhat of appropriate decoration, and worked with a confiderable degree of ckill and tate. Their head-drefles are compofed of the feathers of the fwan, the eagle, and other birds. The teeth, horns, and claws of different animals are allo the occafional ornaments of the lead 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, whilit they neglect no decoration of their own perfons; and their faces are painted with more care than thofe of the women.

The female drefs is formed of the fame materials with thole of the men, but they are differently made and arranged. Their fhoes are commonly plain, and their leggins gathered below the knee. The coat, or bcds-covering, falls down to the middle of the leg, as-d is faltened over the fhoulde:s with cords, a flap or cape turning down about eight inches, both before and behind, and agreably ornamented with quill-work and fringe; the bottom is alfo fringed, and fancifully painted as high as the knee. Being loofe, it is inclofed round the waitt with a ftiff belt, decorated with taffels, and fattened behind. The arms are covered to the wrilt, 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 wait. The cap, when a cap is ufed, confitts 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 faftened 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 faftened in large knots over the ears. They prefer European articles to their own commodities. Their ornaments, like thofe of favages in general, confift of bracelets, rings, and fimilar baubles. Some of the women tattoo three perpendicular lines, whichare 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 Kniftencaix women are the moft comely of any feen by Mr. Mackenzie on the American continent: they are well proportioned, and the regularity of their features
would be acknowled ged by the more civilized people of Europe; and their complexion is lefs darkly tinged than that of thofe farages who have lefs cleanly habits. Thefe people are in general fubject to few diforders. The lues venerea, however, is common, and is cured by the ufe of timples, with the virtue of which they are well acquainted. They are alfo fubject to fluxes, and pains in the brealt. They are naturally :nild and affable, as well as juft in their dualingz; they are generous and hofpitable, and extremely good nat:red, when not inflamed by fpirituous liquors; indulgent to their children to excefs; the father takes pains in qualifying them for the operations of war and hunting, and the mother is equally attentive to the inftruction of the daughters. Illegitimacy is only attached to thofe children who are born before their mothers have cohabited with any man by the title of humand. Chaftity does not feen to be a virtue among them, nor is fidelity thought to be effential to the happinefs of a wedded life. Sometimes, however, the infidelity of a wife is punifhed with the lofs of her hair, nofe, and perhaps life. A temporary interchange of wives is not uncommon; and the offer of their perfons is confidered as a neceflary part of the hofpitality due to ftrangers. When a man lofes his wife, it is confidered as a duty to marry her fifter, if the has one; or he may have both, if he pleafes, at the fame time. Notwithitanding the amiable traits of their character, they are not free from vices, even of the moft atrocious kind. They are addicted to incelt and beftiality. When a young man marries, he lives with the father and mother of his wife, and is confidered as a franger, till after the birth of his firft 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 chiid.
The profeffion of the men is war and hunting: they alfo fpear filh, but the management of the nets is committed to the women. The females are fubordinate, like thofe of favages 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 nedges drawn by dogs. They are fubject, however, to every kind of domeftic drudgery: they drefs 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 fucceffion of toil and pain. Under the impulfe of this feeling, they fometimes deftroy their female children. By the ufe of fimples they alfo procure abortion ; and this they do without any material injury to their own health.

Their funeral rites commence with fmoking, and terminate with a fealt : the body is drefied in the belt babiliments poffeffed by the deceafed, or his relations, and is then depofited in a grave, lined with branches: fome domeftic utenfils are placed in it, and a canopy erected over it. During the ceremony, they make great lamentations; and when the deceafed perfon is very much regretted, the near relations cut off their hair, pierce the flefhy part of their arms and thighs with arrows, knives, \&c. and blacken their faces with charcoal. If they have diitinguifhed themfelves in war, they are fometimes laid on a kind of fcaffolding; and it is faid, that women, as in the Eaft, have facrificed themfelves to the manes of their hufbands. The whole property of the deceafed perfon is deftroyed, and the relations take in exchange for the wearing apparel any rars that will cover their nakednefs. The featt which is given on this occafion, and which in fome cafes is repeated annually, is accomparied with eulogiums on the deceafed; and on the tomb are carved or painted the fymbols of his tribe, which are taken from the different animals of the country.

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Thefe people have frequent fealts ; and at nated verivise as in fprong and autumn, they practife leng and folemn cerco monies. Dogs, and particularly thofe that are fat and mik-white, are offered as facrifices. They alfo make lar se offerings of their property, of whatever kind it be. Tha\% ceremonies are performed on the batik of a river or lake: and if any ftranger, who is in want of any thing that is difplayed as an offering, chance to pala by, he has a right to take it, upon replacing fomething of anferior value; but to take or touch amy thing vantonly is confidered as a facrilegious act, and lifichly infulting to the great Matter of lifa, to adupt their expre flion, who is the facred object of their devotion. The foene of private facrince is the lodge of the perfon who prepares it, and it is conducted with a varicey of ceremonies. He begins by fpreading the contents of his medicinc-bas, containng various articles, on a piece of new cloth or well-dreffed monfe-fkin neatly painted. The prin. cipal of thefe artictes is a kind of houfethutd-god, which i, a fmall carved image about eight inches long, and is an object of the moft pious regard. The sest article is his war-cap, decorated with the feathers and plunics of rare birds, beavers, eagle's claws, \&c. From this is fufrended 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 Bralil to. bacco, feveral roots and timples in repute for their medicinal qualities, and a pips. After certain previots ceremonies, an affiltant lights the pipe, and prefents it to the ofictating perfon, who, turning to the eatt, draws a few whiffs, which he blows to that point. He practifes the fame ceremony towards the other three quarters, with his eyes conitantly directed upwards. After fome other ceremonies performed with this pipe, he makes a fpeech, explaining the defign of the attendants being called together, and concludes with an acknowledgment of palt mercies, and a prayer fur the continuance of them, from the Mater 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 laft letter. The Affitant or Michiniwais again takes up the pipe, and holds it to the mouth of the officiating perfon, who, after fmoking three whiffs out of it, utters a fhort prayer, and then goes round with it in a courfe from eaft to welt, to every perfon prefent; and thus the pipe is fmoked 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 attcndance, and wifhes them, as well as the whole tribe, health and long life. Thefe fmoking rites precede every matter of great importance, with more or lefs ceremony, but always with equal folemnity. The public fealts are condreted in a fimilar manner, but with fome additional ceremony. At thefe feveral chiefs officiate, and the guefts difrourfe upon public topics, repeat the heroic deeds of their forefathers, and excite the riling gencration to follow their cxample. From thefe fealts the women and children are excluded: but the women, who are forbidden to enter the places facred to thefe feltivals, darce and ling around thera, and fometimes beat time to the mufic within them; thus forming an agreeahle contraft.

As to their divitions of time, the Kinifeneaux compute the length of their journies by the number of nights paffed in performing them; and they divide the year by the fucceffion of moons, the names of whicit are defcriptive of the feveral feafons. Thefe people are acquainted with the medicinal virtues of many herbs and fimples, and apply the roois of plants and the bark of trees with fuccefs. But the conjurers, who monopolize the medical fcience, blend myikery with their art, and conceal their knowledge. Their materia

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medica they adminiter in the form of purges and clyters; but the remedies and furgical operations are fuppofed to derive much of their effect from magic and incantation. A fh arp flint ferves them as a lancet for letting blood, as well as for fcarification in bruifes and fwellings.

Among their various fuperititions, they believe that the vapour which is feen to hover over moilt and fwampy places is the fpirit of fome perfon lately dead. They alfo fancy another fpirit which appears in the flape of a man, upos the trees near the lodge of a perfon deceafed, whofe property has not been interred with him. He is reprefented as bearing a gun in his hand; and it is believed that he docs not return to his reft, till the property that has been withheld from the grave has been facrificed to it. Mr. Mackenzie has given examples (ubi fupra) of the Knilteneaux and Algonquin languages, between which there is a confiderable refemblance. See Algonquins.

KNITTERFELD'l', a town of the duchy of Stiria, on the river Muehr; 20 miles S.W. of Pruck. N. lat. $47^{\circ}$ $14^{\prime}$. E. long. $4^{\circ} 3^{\prime}{ }^{\prime}$.

KNITTLE, in Sea Languzge, a fmall line, which is either plaited or twifted, and ufed for various purpofes at fea; as to faften the fervice in the cable, to reef the fails by the bottom, and to kiang the hammocks between decks, $\& c$.

KNITTLINGEN, in Geography, a town of Wurtem. berg, the birth-place of Fault, one of the firl printers; 22 miles S. of Heidelberg.

KNOCK-HEAD, a cape of Scotland, on the north coait of Banffithire; 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 Ballycafte.

KNOCKMELEDOWN, a chain of mountains in Ireland, between the colnties of Waterford and Tipperary, and extending into both. Thefe are rated by Smith amongft the higheft mountains in Ireland. On the fummit 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 por-town of the county of Kilkenny; Ireland; $\sigma_{3}$ miles S.W. from Dublin.

KNOLL, a term ufed in many parts of the kingdom for the top of a fmall hill, or for the hill itfelf.

KNOLLES, Richard, in Biograpby, an Englifh hiftorian, a native of Northemptonflire, was entered at the univerfity of Oxford about the ycar 15 万0. He was afterwards chofen mafter of the free-fchool at Sandwich, and proved his fitnefs for this poft by publihing a compendium of Latin, Greek, and Hebrew grammar. In 1610 he publifhed, in folio, "A Hiftory of the Turks," which had been the labour of twelve years, and was executed in a manner highly creditable to his reputation. It has paffed 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 Difcourfe of the Greatnefs of the Turkih Empire." He died at Sandwich, in 1610 .

KNOLLIS, Francis, an Englifh ftatefman, was born at Grays, in Oxfordhire ; and after receiving an univerfity education, he went to court, and became a zealous friend to the reformation, in the reign of Edward V1., at whofe death he went abroad. On the accefion of queen Elizabeth he returned, and was made privy counfellur, and vice chamberlain of the hourehold. He was employed in feveral
important matters of flate: was one of the commiffioners who fat in judgment on Mary queen of Scots; was appointed trealurer of the royal houfchold, and knight of the Garter. He died in 1596. Sir Francis wrote a treatife againtt the ufurpations of papal bifhops, printed after his death in 1608 ; and a general furvey of the Ine of Wight, which has not been printed.

KNOLLS, in Agriculture, a provincial term ufed in fome counties to fignify turnips.
IKNONAU, in Geograply, a bailiwick of Switzerland, in the canton of Zurich.

KNOPPERS, a fuperior kind of Gall-nuts; which fee.
KNORR à Russenhoth, Christian, in Biograpby, a learned German orientalif, 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 chemitry and the cabaliftic art, of which he had been from his youth a great admirer. At Amitterdam he was introduced to the knowledge of the Oriental tongues, and Hebrew ; and made fuch progrefs in his favourite fludies, as to obtain the efteem and friendhip of Lightfoot, More, and Van Helmont. By the latter of thefe 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 dutics of thefe offices did not divert him from his literary, chemical, and myftical purfuits. He tranllated, 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 IIebreorum tranfcendentalis, et metaphyfica, atque theoiogica, \&c." in 3 vols. 4to. This work abounds in wild reveries, fanciful chimeras, and myttical abfurdities; but it contains, at the fame time, very learned and valuable refearches relative to the philofophy of the Hebrews.

KNOTS, in Gardening, a term ufed to exprefs the rudiments of the firft branches of plants, as they grow up from the feed. Thus, in the melon, the two firlt leaves or feedleaves are called the ears, and the branches that grow from them are called, according to the order of their growth, the firlt, fecond, and third knots. Mr. Quintiny's famous method of raifing the beft melons, depended principally on the cutting off every thipd knot of the plant as they grew up. Philof. Tranf. N ${ }^{2} 45$.

In trees, the knot denotes that part from whence it fhoots out branches, roots, or even fruit.

The wood is harder and clofer in the knots than in any other part, but it is alfo more fubject to fplit there.

The ufe of the knots of plants is to ftrengthen the ftem: they ferve alto as fearces to filtrate, purify, and refine, the juice raifed up for the nourifinment of the plant.

Knot, in Ailitary Lanyuage, the wing or epaulette, com: monly made of wortted, of a non-commiffioned 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 prefence of the battalion, as a mark of infamy.

Knot on board a Sbip, is a large knob formed on the extremity of a rope, by untwifting the ends thereof, and interweaving them regularly amongit each other. Of this there are feveral forts: the chief of which are the zuale knot, which is fo made with the lays of a rope, that it canoot Пip, and ferves for fheats, tacks, and floppers; the bow-line knot is fo firmly made, and fattened to the crengles of the fails, that they mult break, or the fails fplit, before it will Лlip; the flecp-/bank knot, which ferves to fhorten a rope without cutting it, which may be prefently loofened; the diamond

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knot, the rofe knot, \&c. The knots are gencrally ufed to falten one rope to another, by means of a fmall cord attached to the neck of the knot, calted the laniard, which is firmly tied about both ropes. They are alfo defigned to prevent the end of a rope from fliding through an eye, which the knot is intended to confine in a particular fituation.

Knot-Berries. Sce Raseberries.
Kxot-Grafs, in Botany. See Polygonum.
Kxot-Grafs, in Rural Economy, a common name often given to couch-grafs. See Coucn-Grafs.

Kxot-Grafs. Mountain. See Whitlow-Grafs.
Knots of the Log-Line, at fea, are the divilions of it. See Log.

Knot is alfo ufed for the intrigue of a romance, or dramatic piece; being that part where the perfons are the moft embarraffed, by a conjuncture of affairs, whofe end it is not ealy to forefec.

Ariftotle, under this term, includes all the incidents of a tragedy, from its begrinuing to the place where it begins to unravel. The knot holds as long as the mind is kept fufpended about the event. The knot ought always to laft to the middle of the fifth act, otherwife the reft of the piece languifhes.

Knot, Order of the, was the name of a military order in the kingdom of Naples, inflituted in 1352, by queen Jane I. on occation of the peace eftablifhed between her and the king of Hungary, by means of her marriage with Louis prince of Tarentum. It was fo called becaufe the knights wore for their badge a knot, like a true-lover's knot, embroidered on the brealt of their coat in purple filk, intermixed with gold.

The order confifted of fixty knights. Clement VI. approved of this order, and gave it the rule of St. Bafil: it chofe St. Nicolas for its protector; but it dwindled away after the death of its foundrefs.

Knot, in Ornithology, the name of an Englifh bird of the fnipe kind, not known among authors by any particular Latin name, unlefs it be the calidrys nigra, or black calidrys of Bellonius, which is doubtful from his defeription; and faid to have obtained its Englifh name from Canute, one of the Danifh kings of this ifland, who was particularly fond of it: it is the tringa Canutus of Linnæus, which fee.

Knot, or Bofs, in Pointed Arsbitedure, the key flone of the groin, where all its fpringers or ribs meet together.

KNOULTON Lake, in Geography, a lake of America, in the ftate of Vermont. N. lat. $44^{\circ} 4^{\circ}$. W. long. $71^{\circ} 50^{\prime}$.

KNOUT, or $\mathrm{K}_{\text {noot, }}$, is the name of a punihment infieted in Ruffia, with a kind of whip called knout, and made of a long Itrap of leather prepared for this purpofe. This inflrument is a hard thong, about the thicknefs of a crown piece, and $\frac{3}{4}$ of an inch broad, and tied to a thick plaited whip, which is connected, by means of an iron ring, with a fmall piece of leather faftened to a fhort wooden handle. With this whip the executioners dextroufly carry off a dip of fin from the neck to the bottom of the back laid bare to the waitt, and repeating their blows, in a little while rend away all the fkin off the back in parallel ftrips. In the common knout, the criminal receives the lafhes fuffended on the back of one of the executioners: but in the great knout, which is generally ufed on the fame occafions 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 faftened to the two writts tied together; a piece of wood is placed between his two legs allo tied together; and another of a crucial form under his breaft. Sometimes his hands are tied behind over his back, and when he is pulled up in this
pofition, his fhoulders are diflocated. The executioners can make this punifhment more or lefs cruel : and, it is fuid, are fo dextrous, that when a criminal is condemned to die, they can make him expire at pleafure, either by one or feveral lafhes.

KNOWING, Principles and Rules of. See Princifle, and Rule.

KNOWLEDGE may be confidered cither as an opera. tion of the mind, or as the refult of that operation. In the former fenfe, it denotes the clear perception of truth; and in the latter, it fignifics the treafure of affociated ideas, that are laid up in the mind, in confequence of clear perceptions; 'thus, mathematics, aftronomy, ethics, hiftory, \&c. are bramehes of knowledge.
K.sowledge, according to Mr. Locke, confifs in the perception of the connection and agreement, or difagreement and repugnancy, of our ideas. See Idea.

In which fenfe, knowledge ftands oppofed to ignorance.
To know that white is not black, is only to perceive that thefe two ideas do not agree. So, in knowing that the three angles of a triangle are equal to two right oites; what do we more than perceive, that equality to two right ones neceffarily agrees to, and is infeparable from, the three angles of a triangle ?

Knowledge, Kinds of. As to what relates to the agrecment or difagreement of ideas, we may reduce the whole doctrine, and confequently the whole ftock of our knowledge, to four heads, viz. identity or diverfity, relation, co. exilfence, and real exifence.
With refpect to the identity or diverfity of our ideas, we may obferve, that it is the firit act of the mind to perceive its own ideas; and, fo 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 itfelf, and to be what it is: and all diftinct ideas to difagree. This it does without any pains, or deduction, by its natural power of perception and diftinction; and, for doing this, men of art have eftablifhed certain general rules or principles; as that, what is, is; and that it is impoffible for the fame thing to be, and not to be But no maxim can make a man know clearer, that round is not fquare, than the bare perception of the two ideas, which the mind, at firlt fight, perceives to difagree.
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 dif. agreement, one with another, in the feveral ways, or refpects, the maind takes of comparing them.

The third fort of agreement, or difagreement, to be found in our ideas, is coeriflence, or non-coexiflence, in the fame fub. ject; and this belongs particularly to fubftances. Thus when we pronounce concerning gold, that it is fixed, it amounts to no more but this, that fixednefs, or a power to remain in the fire unconfumed, is an idea which always accompanies that particular fort of yellownefs, weight, fufibility, \&c. which make our complex idea fignified by the word gold.

The fourth fort is that of aitual and real exiflence, agreeing to any idea.

Within thefe four forts of agreement, or difagreement, feems contained all the knowledge we have, indeed all we are capable of; for all that we know, or can affirm, concerning any idea, is, that it is, or is not, the fame with fome other; as, that blue is not yellow: that it does, or does not, coexift with another in the fame fubject; as, that iron is fufceptible of magnetical impreffions: that it hath that or
shis relation to fome other ideas; as, that two triangles upon equal bafes, between the fame parallels, are equal: or, that it has a real exittence without the mind; as, that Gud is.

The mind becomes poffefled of truth in feveral manners, which conltitute fo many different fpecies of knowledge. Thus, when the mind has a prefent view of the agreement or difagreement of any of its ideds, or of the relation they have one with another, it is called aftual knowledge.

Secondly, a man is faid to know any propolition, when, having once evidently perceived the agreement or difagreement of the ideas whereof it confits, and fo lodged it in his memory, that whenever it comes to be reflected on again, the mind affents to it without doubt or helitation, and is certain of the truth of it: this may be called babitual knowlalge. And thus a man may be faid to know all thofe truths which are lodged in his memory, by a foregoing, chear, and full perception.

OF bolitun! knowledge, there are two forts: the one conGilts of fich truths, had 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 thofe truths where the ideas themfelves, by an immediate view, difcover their agreement or difagreement one with another. The other is of fuch truths, whereof the mind having been convaced, it retains the memory of the conviction, without the proofs. Thus a man that remembers certainly, that he once perceived the demonftration, that the three angles of a triangle are equal to two right ones, knows it to be true, when that demonftation is gone out of his mind, and cannot puffibly be recollected; but he knows it in a different way from what he did before: namely, not by the intervention of thofe intermediate ideas; whercby the agreement, or difagreement, of thofe in the propofition was at firft perceived; but by remembering, that is, knowing, that he was once certain of tise truth of this propofition, 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 fhews 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 alfo may be ufefully diftinguifhed into three kinds; bijforical, philofopbical, and matbematical.

Knowledse, Iliforical, is merely the knowlesge of faits, 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, wiil, scc. are inftances of hiftorical knowledge.

Knowledge, Philofophical, is the knowledge of the reafons of things, or of what is or happens. Thus he has a philofophical knowledge of the motion of rivers, who can explain how it arifes from the declivity of the bottom, and from the preffure which the lower part of the water futtains som the upper. So likewife the hewing how, and by what reafon, defire or appetite arifes from the perception or 1 magination of its object, wou'd be philofophical knowledge.

Knowledge, Mathematical, is the knowledge of the quantity of things, that is, of their proportions or ratios to fome given meafure. Thus he who knows the proportion of the meridian heat of the fun at the fummer folltice to its meridian heat at the winter folitice, might fo far be faid to iave a mathematical knowledge of the fun's heat. So likewife he kas a mathematical knowledge of the motion of a planct in its orbit, who can diftinctly fhew how, from the
quantity of the impreffed 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 arifes.

Thefe three kinds of knowledge differ evidently, it being one thing to know that a thing is ; another, the reafon why it is ; and a third, to know its quantity or meafure.

It is alfo evident, that biforical knowledge, though extenfively ufeful, and the foundation of the relt, is the lowelt d:gree of human knowledge. Thofe who aim at the greateft certainty ought to join mathematical with philofophical knowledge. Nothing can more evidently fhew that an effect arifes from a cortain caufe, than the knowledge that the quantity of the effect is proportional to the force of the caufe. Belides, there are many things in nature, the reafons of which depending on certain figures or quantities, are not affignable but from mathematical princiules.

Knowledge, Degrees of. As to the different degrees, or clearnels of our knowledge, it feems to lie in the different way which the mind has of perceiving the agreement or difagreement of any of its ideas. Whaen the mind perceives this agreement or difagreement of two ideas immediately by themfelves, without the intervention of any other, we may call it intuiltive knowledge ; in which cafe 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 funfhine, forces itfelf 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 degrec of knowledge is, where the mind perceives not this agreement, or difagreement, immediately, or by the juxtapofition, as it were, of the ideas ; becaufe thofe ideas, concerning whofe agreement, or difagreement, the inquiry is made, cannut, by the mind, be fo put together as to thew it. In this cafe, the mind is obliged to difcover the agreement, or difagreement, which it fearches for, by the intervention of other ideas: and this is that which we call reafoning.

Thus, if we would know the agreement, or difagree. ment, in bignefs, between the three angles of a triangle and two right angles, we cannot do it by an immediate view and comparifon of them, becaufe the three angles of a triangle cannot be brought together at once, and compared with any other one or two angles; and fo of this the mind has no immediate or intuitive knowledge. But we mult find out fome other angles, to which the three angles of a triangle have equality; and, linding thofe equal to two right cnes, we come to know the equality of thefe three angles to two right ones.

Thofe intervening ideas, which ferve to fhew the agreement of any two others, are called proofs; and where the agreement, or difagreement, is by this means plainly and clearly perceived, it is called dcmonffration; and a quicknefs in the mind to find thofe proofs, and to apply them right, is that which is called fogacity.

This knowledge, though it be certain, is not fo clear and evident as intuitive knowledge; it requires pains and attention, and ftcady application of mind, to difcover the agrecment, or difagreement, of the ideas it confiders; and there mult be a progrefion by fteps and degrees, before the mind can, in this way, arrive at any certanty. Before demonftration, there was a doubt, which, in intuitive knowledge, cannot happen to the mind, that has its faculty of per-
ception left in a degree capable of diftinct ideas, no more than it can be a doubt to the eye (that can ditincily fee white and black), whether this ink and paper be all of a colour. Now, in every fep that reafon- makes in demonftrative knowledge, there is an intuitive knowledge of that agreement, or difagrement, it feeks, with the next intermediate idea, which it ufes as a proof; for, if it were not fo, that yet would need a proof, fince, without the perception of fuch agrcement, or difagreement, there is no knowledge produced.

By which it is evident, that every flep in reafoung, 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, vifible and certain. This intuitive perception of the agreement, or difagreement, of the intermediate ideas in each $\mathfrak{R e p}$ and progreffion of the demonitation, mult alfo be exactly carried in the mind; and a man mult 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 falfehoods for demonftrations.

It has been generally taken for granted, that mathematics alone are capable of demonltrative certainty : but to have fuch an agreement, or difagreement, as may be intuitively perceived, being, as we imagine, not the privilege of the ideas of number, extenfion, and figure atone, it may poffibly be the want of due method and application in us, and not of fufficient evidence in things, that demonftration 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, immediatcly, there it is capable of intuitive knowledge, and, where it can perceive the agreement, or difagrement, of any two ideas, by the inturtive perception of the agreement, or difagreement, they have with any intermediate ideas, there the mind is capable of demonlitration, which is not limited to the ideas of figure, number, extenfion, or their modes.

The reafon why it has been generally fuppofed to belong to thefe only, is, becaufe, in comparing their equality or excefs, the modes of numbers have every the leaft difference very clear and perceivable: and, in extenfion, though every the leaft excefs is not fo perceptible, yet the mind has found out ways to difcover the juit equality of two angles, extenfions, or figures; and both numbers and figures can be fet down by vifible and lafting marks. Bur, in other fimple ideas, whofe modes and differences are made and counted by degrees, and not quantity, we have not fo nice and accurate a diftinction of their differences, as to perceive or find ways to meafure their juft equality, or the leaft differences. For thofe other limple ideas being appearances, or fenfations produced in us, by the fize, figure, motion, \&c. of minute corpufcles, fingly infenfible, their different degrees alfo depend on the variation of fome or all of thofe caufes; which, fince it cannot be obferved by us in particles of matter, whereof each is too fubtile to be perceived, it is impoffible for us to have any exact meafures of the different degrees of thefe fimple ideas.

Thus, not knowing what number of particles, nor what motion of them, is fit to produce any precife degree of whitenefs, becaufe we have no certain ftandard to meafure them by, nor means to diftinguifh every the leaft difference ; the only help we have is from our fenfes, which in this point fail us. But where the difference is fo great as to prodice
in the mind ideas clearly dininct, there ideas, as we fee in colours of diferent kinds, blue and red for inftance, are as capable of demonitration as ideas of number and extention; and what is here faid of colours, holds true in all fecondary qualities.
'Thefe two then, intuition and demonflration, are the degrees of our knowledge; and whatever comes fhort of one of thefe, is only faith, or opinion, not knowledge, at leaft in all general truths.

There is, indeed, another perception of the mind, employed about the particular exintence of finite beings without us, which going beyond probability, but not reaching to either of the foreroing degrees of certainty, paffes under the name of knowledge.

Nothing can be more certain, than that the idea we re. ceive from an external object is in our minds : this is intuitive knowledge; but whether we can thence certainly infer the exittence of any thing without us, correlponding to that idea, is that whereof fone men think there may be a queftion made; becaufe men may have fuch an idea in their minds, when no fuch thing exifts, nor any fuch object affects their fenfes.

But it is erident, that we are invincibly confcious to ourfelves of a different percoption, when we look on the fun in the day, and when we think on it by night; when we actually taite wormwood, or fmell a rofe, or only think on that favour or odour; fo that we may add, to the two furmer forts of knowledge, this alfo of the exitence of particular external objects, by that perception and conicioufnefs we have of the actual entrance of ideas from them; and allow thefe three degrees of knowledge, viz. intuilive, demonfratize, and forfitize.

But, fince our knowledge is founded on, and employed about, our ideas oniy, will it follow thence, that it mult be conformable to our ideas, and that where our ideas are clear and diltinct, obfcure and confufed, there our knowledge will be fo too? We anfwer, No; for our knowledge confinting in the perception of the agreement, or difagreement, of any two ideas; its clearnefs or obfcurity conliils in the clearnefs or obfcurity of that perception, and not in the clearnefs or obfcurity of the ideas themfelves. A man (for initance), who has a clear idea of the angles of a triang!e, and of equality to two right ones, may yet have but an obfcure perception of their agreement, and fo have but a very obfcure knowledge of it : but obfcure and confufed ideas can never produce any clear or diftinct knowledge; becaufe, as far as any ideas are obfcure or confufed, fo far the mind can never perceive clearly, whether they agree or difagree ; or, to exprefs the fame thing in other words, he that has not determined ideas to the words he ufes, cannot make propofitions of them, of whofe truth he can be certain.

From all this it follows; I. 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, demonftration, or ferfation.
3. We cannot have an intuitive knowledge, that thall extend itfelf to all our ideas, and all that we would know about them ; becaufe we cannot examine and perceise all the relations they have one to another by juxtapofition, or in immediate comparifon one with another. Thus, we canno: intuitively perceive the equality of two extenfions, the difference of whofe figures makes their parts incapable of an exact immediate application.
4. Our rational knowledge cannot reach to the whole extent of our ideas ; becaufe, between two diferent ideas which

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we would examine, we cannot always find fuch proofs, whercby we can conmect one to another with an intuitive knowledge in all the parts of the deduction.
5. Senfitive knowledge, reaching no farther than the exiftence of things actually prefent to our fenfes, 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 lave the ideas of a fquare, a circle, and equality; and yet, perhaps, fhall never be able to find a circle equal to a fquare. Sce 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, coexiftence, relation, and real exiftence, let us inquire hoiv 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 difagreement of our ideas of co-exittence, our knowledge herein is very defective, though it is in this that the greatelt and moft material part of our knowledge, concerning fubftances, confilts: for our ideas of fubftances being nothing but certain collections of fimple ideas co-exifting in one fubject (our idea of flame, for inftance, is a body, hot, luminous, and moving upwards); when we would know any thing farther concerning this, or any other fort of fubftance, 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 exift with thofe which make up fuch complex ideas. The reafon of this is, that the fimple ideas, which make up our complex ideas of fubitances, have no vifible neceffary connection, or inconfiftence, with other fimple ideas, whofe co-exiltence with them we would inform ©urfelves about. Thefe ideas being likewife, for the moft part, fecondary qualities, which depend upon the primary qualities of their minute or infenfible parts, or on fome thing yet more remote than the fe from our comprehenfion, it is impoffible we fhould know which have a neceffary union, or inconfiftence, 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 difcoverable connection between any fecondary quality, and thofe primary qualities that it depends on. We are fo far from knowing what figure, fize, or motion, produces (for inftance) a yellow colour, or fweet tafte, or fharp found, that we can by no means conceive how any fize, figure, or motion, can poffibly produce in us the idea of any colour, tatte, or found, whatfoever ; there being no conceivable connection between the one and the other.

Our knowledge, therefore, of co-exiftence reaches little farther than experience. Some few, indeed, of the primary qualities have a neceffary dependence, and viifble connection, one with another: as figure neceffarily fuppofes extenfion ; receiving or communicating motion by impulfe fuppofes folidity: but qualities co-exittent in any fubject, without this dependence and connection, cannot certainly be known to co-exift, any farther than experience, by our fenfes, informs us. Thus, though, upon trial, we find gold yellow, weighty, malleable, fufible, and fixed; yet, becaufe pone of thele have any evident dependence, or neceffary conaection, with the other, we cannot certainly know, that,
where any four of thefe are, the fifth will be there alfo, how highly probable foever it may be. But the highelt degree of probability amounts not to certainty, without which there can be no true knowledge; for this co-exiftence can be no true knowledge; for this co-exiltence can be no farther known than it is perceived; and it cannot be perceived, but either, in particular fubjects, by the obfervation of our fenfes, or, in general, by the neceflary connection of the ideas themielves.

As to incompatibility, or repugnancy to co-exiftence, we know, that no fubject can have of each fort of primary qualities more than one particular at once, as one extenfion, or one figure; and fo of fenfible ideas peculiar to each fenfe: for whatever, of each kind, is prefent in any fubject, excludes all other of that fort ; for inftance, one fubject camnot have two fmells, or two colours, at the fame time.

As to powers of fubttances, which make a great part of our enquiries about them, our knowledge reaches little farther than experience; becaufe they confilt in a texture and motion of parts, which we cannot by any means come to difcover; and I doubt, whether, with thofe faculties we have, we fhall cver be able to carry our gencral knowledge much fa:ther in this part. Experience is that, which, in this part, we mult depend on: and it were to be wifhed, that it were more improved. We find the advantages fome men's generous pains have this way brought to the ftock of natural knowledge; and if others, efpecially the philofophers by fire, had been fo *wary in their obfervations, and fincere in their reports, as thofe who call themfelves philofophers ought to have been, our acquaintance with the bodies here about $u s$, and our infight into their powers and operations, might have been yet much greater.

As to the third fort, the agrement, 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 fhew the habitudes and relations of ideas, it is a hard matter to tell when we are at an end of fuch difcoveries. 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 eafy to determine.

This, at leart, we may believe, that the ideas of quantity are not the only ones capable of demonftration and knowledge; and that other, and, perhaps, more ufeful parts of contemplation, would afford us certainty, if vices, paf. fions, and domineering interelt, did not oppofe or menace endeavours of this kind.

As to the fourth fort of knowledge, viz. of the real, afual exiflence of things, we have an intuitive knowledge of our own exiftence, a demontrative knowledge of the exiftence of God, and a fenfitive knowledge of the objects that prefent themfelves to our fenfes.

Hitherto we have examined the extent of our knowledge, in refpect of the feveral forts of beings that are: there is another extent of it, in refpect of univerfality, which will alfo deferve to be confidered; and this, in regard to our knowledge, follows the nature of our ideas. If the ideas, whofe agreement, or difagreement, we perceive are abftract, our knowledge is univerfal; for what is known of fuch general ideas, will be true of every particular thing, in which that effence, that is, that abftract idea, is found: and what is once known of fuch ideas, will be perpetually and for ever true; fo that, as to all general knowledge, we must fearch and find it only in our own

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minds; and it is only the examining our own ideas that furnihes us with it. Truth belonging to effences of things (that is, to abftract ideas) are eternal, and are to be found out by the contemplation only of thofe effences; as the exiftence of things is to be known only from experience.

Knowlenge, 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 fhall we know when our idcas agree with things themfelves? 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 itfelf, mult be the effect of things operating upon the mind in a natural way, and producing therein thofe perceptions, which, by the will of our Maker, they are ordained and adapted to. Hence it follows, that fimple 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 ftate requires, which is to reprefent things under thofe appearances they are fittelt to produce in us. Thus the idea of whitenefs, as it is in the mind, exactly anfwers that power which is in any body to produce it there; and this conformity between our fimple ideas, and the exittence of things, is fufficient for real knowledge.
2. All our complexi ideas, except only thofe of fubftances, being archetypes of the mind's own making, and not referred to the exiltence of things, as to their originals, cannot want any conformity neceffary to real knowledge; for that which is not defigned to reprefent any thing but itfelf, can never be capable of a wrong reprefentation. Here the ideas themfelves are conlidered 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 poflibly he never found exilting mathematically, that is, precifely true; yet his knowledge is not only certain, but real, becaufe real things are no farther concerned, nor, intended to be meant by any fuch propolitions, than as things really agree to thofe archetypes in the mind.
3. But the complex: ideas, which we refer to archetypes without us, may differ from them; and fo our knowledge about them may come fhort of being real : and fuch are our ideas of fubflances. Thefe mult be taken from fomething that does, or has exifted, and not be made up of ideas arbitrarily put together, without any real pattern. Herein, therefore, is founded the reality of our knowledge concerning fubltances, that all our complex ideas of them muft be fuch, and fuch only as are made up of fuch timple ones as have been difcovered to co-exitt in nature: and our ideas, being thus true, though not, perhaps, very exact copies, are the fubject of real knowledge of them. Whatever ideas we have, the agreement we find they have with others will be knowledge. If thofe ideas be abftract, it will be general knowledge ; but to make it real concerning fubAtances, the ideas mult be taken from the real exiftence of things. Wherever, therefore, we perceive the agreement, or difagreement, of our ideas, there is certain knowledge; and wherever we are fure thofe ideas agree with the reality of things, there is certain, real knowledge.

Knowledge, melbod of improving or cularging. It being the received opinion amongt men of letters, that maxims are the foundation of all knowledge, and that fciences are each of them built upon certain precognita, from whence
the underfanding is to take its rifc, and by which it is to conduct itfelf in its enquiries in the matters belonging to that fcience : the beaten road of the fchool has teen to lay down, in the beginning, one or more gencral propofitions, called principles, as foundations whereon to build the knowledge that was to be had of that fubject.

That which gave occafion to this way of proceeding wae, the good fuccefs it feemed to have in mathermatics, which of all the fciences have the greatelt certainty, clearnefs, and evidence in them. But, if we conlider it, we thall find, that the great advancement and certainty of real knowledge men arrive to in thefe fciences, was no: owing to the influence of thofe primciples, but to the clear, diftinct, and complete ideas their thoughts were employed about, and to the relation of equality and excefs, fo clear betweer fome of them, that they had an intuitive knowledge, and by that a way to difcover it in others, and this is without the help of thofe maxims. For is it not puffible 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 affured of it till he has learned that maxim? Let any one confider which is known firlt and clearett by mo't peopls, the particuiar intlance, or the general rule; and which it is that gives life and birth to the other: thefe general rules are but the comparing our more gencral and dbttract ideas, which ideas are made by the mind, and have names givea them, for the eafier difpatch in its reafonings: 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 thofe general notions, and make the proper ufe of them, which is to difburden the memory of the cumberfome load of particulars. 'The way to improve in knowledge is, not to fwallow principles with an implicit faith, and without examiuation, which would be apt to miflead men, inflead 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 conftant names; and thus, barely by confidering our ideas, and comparing them together, obferving their agreement or difagreement, their habitudes and relations, we thali 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 difpofal of others.

We mutt, therefore, if we would proceed as reafon advifes us, adapt our methods of enquiry to the nature of the ideas we examine, and the truth we fcarch after. General and certain truths are only founded on the habitudes and relations of abftract ideas; therefore, a fagacious, methodical. application of our thoughts for the finding out thefe rela. tions, is the only way to difcover all, that can with truth and certainty be put into general propofitions. By what fteps we are to procced in thefe, is to be learned in the fchools of the mathematicians, who from very plain and eafy begimnings, by gentle degrees, and a continued chain of reafonings, proceed to the difcovery and demonftration of truths, that, at firft fight, appeared beyond human capacity. This may reafonably be faid, that, if other ideas that are real, as well as nominal effences of their fpecies, were purfued in a way fimilar to that of mathematicians, they would carry our thoughts farther, and with. greater evidence and clearnefs, than poffibly we are apt to imagine. This is reafon fufficient to advance that conjecture above mentioned ; wiz. " That morality is capable of demonftration, as well as mathematics ;" fer moral ideas being real effences, which have a difcoverable connection and agreement one with another, fo far as we can find their habitudes and relations, fo far we fhall be poffeffed of real and general truths.

In our knowledge of fubtlances, we are to proceed after a quite different method; the bare contemplation of their abitract ileas (which are but nominal effiences) will carry us but a very little way in the fearch of truth and certainty. Here experience mult teach us what reafon cannot; and it is by trying alone, that we can certainly know what qualities co-exit, with thofe of our complex idea; for inflance, whether that ycllow, heavy, fufible body, we call gold, be mallcable, or not ; which experience (however it prove in that particular body we examine) makes us not certain that ${ }^{\text {t }}$ it is fo in all, or any other ycllow, heavy, fufible bodics, but that which we have tried; becaufe it is no confequence, one way or other, from our complex idea. The neceffity or anconfiftence of malleability has no vifible connection with the combination of that colour, weight, and fufibility, in any body. What is here faid of the nominal effence of gold, fuppofed to confift of a body of fuch a determinate colour, weight, and fulfibility, will hold true if other qualities be added to it. Our reafonings from thofe ideas will carry us but a little way in the certain difcovery of the other properties in thofe maffes of matter wherein all thofe 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, accuftomed to rational and regular experiments, fhall be able to fee farther into the nature of bodies, and their unknown properties, than one that is a ftranger to them: but this is but judgment and opinion, not knowledge and certainty:

This would make it fufpected, that natural philofophy is not capable of being made a fcience. From experiments, and hiftorical obfervations, we may draw advantages of eafe and health, and thereby increafe our flock 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. Sce Physics.

The ways to cenlarge our knowledge, as far as we are capable, fuem to be thele two : the firlt is, to get and fettle in our minds, as far as we can, clear, diftinct, and conltant jd ads of thole things we would contider and know; for it being evident that our knowledge cannot exceed our ideas, where they are either imperfect, confufed, or ohfcure, we camot expect to have certain, perfect, or clear knowledge. The other art is, of finding out the intermediate ideas, which may fhew us the agreement or repugnancy of other ideas, which cannot be inmediately compared.
That thefe two (and not relying on maxims, and drawing confequences from fome general propofitions) are the right method of improving our knowledge in the ideas of other modes, befides thofe of quantity, the confideration of mathematical knowledge will eafily inform us; where, fritt, we thall find, that he, who has not clcar and perfect ideas of thofe angles or figures, of which he defires to know any thing, is utterly thereby incapable of any knowledge about them. Suppofe a man not to have an exact idea of a right angle, fcaenum, or trapezium, and it is clear, that he will in vain feek any demonfiration 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 thofe wnoderful difcoveries they have made: let a man of good parts know all the maxims of mathematics ever fo well, and contemplate their extent and confequences as much as he pleafes, he will, by their affittance, fcarce ever come to know, that the fquare of the hypothenufe in a rightangled triangle, is equal to the fquares of the two other indes. This, and other mathematical truths, have been dif. co ered by the thoughts otherwife applied. The mind had uther objects, other views before it, far different from thofe
maxins, which men, well enough acquainted with thofe received axioms, but ignorant of ther method who firlt made thofe demonftrations, can never fufficiently admire.

Our knowledge, as in other things, fo in this alfo, has fo great a conformity with our fight, that it is neither wholly neceffary, nor wholly voluntary. Men, who have fenfes, cannot choofe but receive fome ideas by them; and, if they have memory, they cannot but retain fome of them; and if they have any diftinguifhing faculty, cannot but ferceive the agreement, or difagreement, of fome of them one with ancther. As he that has eyes, if he will open them by day, cannot but fec fome objects, and perceive a difference in them; yet he may choofe whether he will turn his eyes towards an object, curioufly furvey it, and obferve accurately all that is vifible in it. But what he doth fee he cannot fee otherwife than he doth; it depends not on his will to fee that black which appears yellow. Juft thus it is with our underltanding: 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 lefs accurate furvey of them; but, they being employed, our will hath no power to determine the knowledge of the mind one way or another; that is do:e only by the objects themfelves, as far as they are clearly difcovered. Thus, he that has got the ideas of numbers, and has taken the pains to compare one, two, or three, to fix, cannot choofe but know they are equal. He alfo, that hath the idea of an inteligent, 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 flines when he fees it. But yet, be thefe 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 thould, to inform himfelf about them.
KNOWLTON, in Geograpby, a townfhip of America, in Suflex county, New Jerfey, containing 1937 inhabitants.

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. 22. 775. (Anamenia; Venten. Malmair. 22.)-Clais and order, Polyandria Polygynia. Nat. Ord. Muftifiliqua, Linn. Ranunculacea, Juff.
Gen. Ch. Cal. none. Cor. Petals numerous, from ten to twenty, oblong, without any nectary, deciduous, the innermoft longeft and nearly linear; outermoft fomewhat ovate, externally hairy. Strm. Filaments numerous, thread-fhaped, much fhorter thin the petais; anthers vertical, two-lobed, roundifh, thick-edged, burfing at the edges. Pif. Germens fuperior, numerons, ovate, collected into a round head; Atyles lateral, awl-fhaped; ftigmas timple, flightly recurved. Peric. Berries numerous, diftinct, elliptical, pointed, of one cell. Sced folitary, large, fmooth, of the thape of the pericarp, and attached to its bafe. Receptacle glubofe.
Eff. Ch. Calyx none. Petals numerous, oblong, deftitute of a nectary: Receptacle of the fruit globofe. Berries numerous, of one cell. Seeds folitary.
Obf. Mr. Salifury feparated this very diftinet genus from. the Linnean Adonis, and publifhed it in 1796 , by the above unexceptionable name, which therefore takes place of Ventenat's Anamenia, publifhed feveral years after; the latter being moreover liable to objection, from frrict Linnean fcholars, as being formed of an Arabic word.

1. K. capenfis. Hairy Knowltonia. (K. velicatoria; Sims in Curt. Mag. t. 775. Adonis capenfis; Lim. Sp. Pl. 772.

Suppl.

Suppl. 272. Anamenia hirfuta; Venten. Malmaif. 22. n. 4. Chrilophoriana trifoliata, foliis feabris, flore fulphureorariore; Burm. Afr. 145.t.5\%.)-Hairy: Leaves twice ternate; leaflets elliptic-ovatc. Pctals linear. - Native of the Cape of Good Hope. With us it is a hasdy green-houfe plant, flowering in the fpring. Root peremial, and, as appears from Dr. Sims's delcription, of long daration, the plant from which his figure was taken, in 180 , having come out of Dr. Fothergill's collection near 25 years before. Lecaves feveral, radical, on long hairy falks, twice ternate ; their leafiets elliptical, or fomewhat ovate, ferrated, more or lefs hairy, the termimal ones ufually largeft. Stems taller than the leaves, branched nearly from their very bottom, hairy, almolt leaflefs; their branches elongated, fubdivided, fomewhat corymbofe; ultimatc ones umbellate, fingle-flowered, very hairy: Brabtazs leafy; the upper ones narrowelt, lanecolate and entire. Flowers an inch broad, fpreading, of a light ycllowith green.
2. K. veficatoriz. Blifering Rnowltonia. (Adonis veficatoria; Linu. Suppl. $27^{2}$ Willd. Sp. Pl. v. 2. 1307. Anamenia coriacea; Venten, Malmaif. 22. n. 1. t. 22. A. laferpitifolia; ibid. n. 2. Rarrunculus xethiopicus, fulis rigidis, floribus ex luteo vircfeentibus; Comm. Hort. v. I. t. I. Imperatoria ranunculoides africana enneaphyllos, laferpitii lobatis folis rigidis, margine fpinolis; Pluk. Phyt. t. 95. f. 2.) -Smooth, leaves twice ternate; leafers nearly heare-fhaped, coriaceous; the lateral ones unequal at their bafe. Petals elliptic-oblong. Umbels compound, many-fiowered.-Native of the Cape of Good Hope, and occafionally kept in green-houfes, like the preceding, from which we cannot but think it ipecifically different. The leaves are much larger, fmooth, very thick and rigid, with ftrong, almoft pungent, ferratures or teeth; fometimes they are thrice compounded. Stems more umbellate in all their fubdivifions, the ultimate umbels confilting of very numerons falks, which are but flightly hairy. Bradeas rather elliptical. Petals elliptic-oblong rather than linear. Berries purplifh black. Thunberg fays that the leases are ufed at the Cape to raife blifters, they having that property in common with fome fpecies of Ranunculus and Clematis, their near allies
3. K. gracilis. Slender Knowltonia. (Anamenia gracilis ; Venten. Malmaif. 22. n. 3. Adonis æethiopica; Thunb. Prodr. 94 ?)-" Leaffets 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 Juffieu'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 ftrongly fufpect, it is the fame as the following; but if fo, it by no means anfwers to the character given in Ventenat's work.
4. K. filia. Fine-leaved Knowltonia. (Adonis filia; Lion. Suppl. 271. A. æthiopica; Thunb. Prodr. 94? A. daucifolia; Lamarck. Dict. v. 1. 46. Anamenia dau. cifolia; Venten. Malmaif. 22. n. 5.)-Leaves twice ternate ; leaflets pinnatifid, deeply cut, fmooth, their fegments decurrent. Flower-ftalks hairy,-The only fecimen we have feen was given to Linnous, by Thunberg, who gathered it at the Cape. We prefume, therefure, it mult be his Adonis athiopiza, with the character of which, cited under our laft fpecies, it fufticiently tallies. The leaves are finely divided, but not fufficiently like a Daucus to warrant Lamarck's change of the original name, however unmeaning that may be. The fem is tall and flender, bearing two hairy-Italked umbels. Lower braiseas compound. Pctals nearly lincar. La. Vol. XX.
marek's aceount feems entirely taken from the Supplemertum: of Linnxus. S.

KNOX, Jous, in Biograply, the intrepid and fuccef fut promoter of the Reformation in Scotland, was defcentect from an ancient family, and born near Haddingtot, in E Lothian, in the year 150 . Having received the elementar; parts of a good cducation, he was, at a proper time, fent to the univerfity of St. Andrews, where he applied himicalf with uncommon diligence in the itudies of theoplace, made a very rapid proficiency, and was admitted to the degree of M.as at an early age. Having determined to embrace the cocl:fialtical profeffion, he was admitted to priett's orders before the period ufually allowed by the canons. He now commenced teacher, and acequired great applaufe in that capacity. But by intructing others, he difcovered the errors of the common fyitem in which he had been cducated, and which he had endeavoured to eltablith in the minds of the people. Feeling diffatisfied with what he was engaged in. he chofe rather to be a hearcr than a preacher, and frequented the difcourfes of Thomas Williams, a black-friar, who publicly preached againft the pope's authority, and who wais the firlt from whem Mr. Knox received any tatte for the truth. Absut the fame time, Mr. George Wifhart, another celebrated reformer, coming from England, with the commiffioners fent by king Henry VIII. Knox learned from him the principles of the reformed religion, and with thefrhe was fo well pleafed, that from this monent he renounced Popery and became a zealous Proteltant. Mr. Kinox had quitted St. Andrews a little before this entire change of hot opinions, having been appointed tutor to the fons of the lairds of Ormifton and Langnidry, who were both favourers of the Reformation. Knox inftilled into the minds of his pupils the principles of piety and the Proteltant religion, notice of which being given to David Beaton, cardinal and archbifhop of St. Andrews, that prelate profecuted him with fuch feserity that he was obliged to abficond, 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 fhelter with them in St. Andrews caftle, which was then in poffeflion of the Lellies, the determined friends of the Reformation. In this afylum he continted to inltruct his pupils, and he gave them public lectures in theology, which he delivered at a Itated hour in the chapel, within the walls of the caltle. Thefe were frequented by feveral perfons of note in the city, who entreated Mr. Knox to take upon himfelf the office of preacher, to which, though with great reluctance. he agreed to comply. He began his public miniftry at St. Andrews, in the year 1547, with that fuccefs which always accompanies a boid and popular eloquence. He without hefitation ftruck at the root of Popery, and attacked both the doctrine and difcipline of the eftablifhed church with a vehemence peculiar to himfelf, but well adapted to the temper and wihes of the age. In his firft fermon he proved, to the fatisfaction of his hearers, that the pope was antichritt, and that the doctrine of the R.oman church was contrary to the doctrine of Chritt and his apoltles. He fhortly made converts of all the people in the caftle, and of great numbers in the city, who even joined him in partaking of the Lord's fupper. In the month of July 1547, an interruption took place in the exercife of Mr. Knox's miniftry, in confequence of the furrender of the cafte 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 licenfed cither by Cranmer, or Somerfet, K

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thic proteitor, and appointed preacher, frif at Berwick, and afterwards at Newcaltle. In 1552, he was appointed one of Bix chapluns, 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 Proteftant religrion throurhout the kingdom; he lad alfo the grant of forty pounds a year till fome benefice fhould be procured for him. Shortly after he was offered the living of All-hallows, which he refufed, not choofing to conform to the liturgy. Soon after the acceftion of queen Mary, he thought it right to retice from the impending form ; he accordingly went to Geneva, where he had not refided long before he was invited by the Englith refurees at Frankfort io become their minifter: this invitution he accepted, though againit his will, through the interferesce of John Calvin, and he continued his fervices among them till fome internal difputes about ceremonies broke up their fociety. Some of the Englifh, particularly D\%. Cox, afterwards bifhop of Ely, wifhed for a liturgy according to king: Edward's form, but Knox and others preferred the Gerera fervice; at length the party of Cox, to get ril of the Scotch reformer, taking adrantage of cerrain unguarded expections in one of his former publications, tirestened to accule him of treafos unlefs he quited the place, which heertid, and went again to Geneva. In 1555 , he went to Scotland; upon his arrival, finding the profeflors of the Proeethant religion greatly increafed in number, he formed them in:o a fociety, affluciated with them, and commenced his preaching with the ufual vehemence. He had an opportunity, in the courfe of a few months, to preacl2 in various paris of Scotland, and in all the places the people flocked in great crowds to hear lim. The Popilh clergy began to be alarmed at the confequences of his difcourfes, which were daily making converts, and fummoned him to appear before them in the church of Black-friars in Edinburgh : he, having received afturances of fupport trom various perfons of rans and ellimation, 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 cuufe in the prefence of his opponents, he preached twice every day for ten days to the people, and had on thefe occafions more numerous audiences than he had before witneffed. Emboldened by fuccefs, he wrote a letter to the queen regent, urging her to hear the Proteftaut dofrine, which fhe declined, and Mr. Knox afterwards publifhed his letter with fome additions. In the furmmer of $1556, \mathrm{Mr}$. Knox fet out for Gencra, at the earnett entreaty of the Englifh congresation, and almott the moment in which he embarked, the Eifhops furrmoned him to appear before them, and upon his non-appearance, they paffed fentence of death upon him as a heretic, and burnt lim in effigy at Edinburgh. Againt this wicked fentence he appeeled, in a work which he printed at Geneva, and which contains a mafterly defence of rcligious independency, and is dittinguifhed for purity of thy le. In 1557 , he was invited back to Scotland, and having confulted Culvin and other perfons as to the prudence and neceflity of the thep, he fet out, and had proceeded as far as 13ieppe, when he was advifed that fone of his beff friends feemed, through timidity, to be abandoning their principles, and that theretore it would not be fafe for him to proceed. He innucdiately wrote letters to thofe who had invited him, complaining of their irrefolution, and even denouncing the "Fevere judgnients of God on all thofe who fhould betray the caufe of truth and of their country, by weaknefs or apoflacy. Thefe letters made fuch an imprefion on th te to whom they were immediately addreflcd,
that they all came to a written refolution, " that they would follow forth their purpofe, and commit themfelves, 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 Proteftant caufe, a common bond, or covenant, was entered into by them, dated at Edinburgh, December 3,1557 , and from this period they were difitinguifhed by the name of "The Congregation." In the mean time Mr. Knox returned to Geneva, where, in 1558 , he publifhed his treatife, entitled "The firlt Blatt of the Trumpet againt the mointrous Regiment of Women ;" which was written in deteftation of the cruel and infamous government of queen Mary, and of the endeavours of the queen-regent of scotland to eftabilih arbitrary government in that kingdom. He intended to have followed this with "The fecond Blafl," but the death of Mary prevented him going any farther. He e:.petcd much from the government of Elizabeth. She had, however, been fo difgulted by what he had written againit the government of women, that the embraced an early opportunity of difplaying her refentment againft hima. She refufed his requeft of preaching to his friends in England, in his way from the continent, and rendered his abode there fo uncomfortable, that he was glad to make the beft of his road to Scotland, where he arrived in the month of May 1559. At this time a public profecution was carried on againlt the Protellants, and their trial was juft roady to commence at Stirling: Knox inllantly hurried to ?hare with his brethren in the threatened danger, or to affit them in their common caufe. Dr. Robertion, in defcribing this bufinefs, fays, "While their minds were in that ferment which the qucen's perfidioufnefs and their own danger occafioned, Knox mounted the pulpit, and, by a vehement ha. rangue againt idolatry, inflamed the multitude with the utmolt rage. The indicretion of a prieft, who, immediately after Knox's-difcourfe, was feen preparing to celebrate mafs, and began to decorate the altar for that purpofe, precipitated them into immediate action. With tumultuous, but irrefirtible violence, they fell upon the churches in that city, overturned the altars, defaced the piftures, bruke in pieces the images, and proceeding next to the monafteries, laid thofe fumptuous fabrics almolt 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 molt power and credit with the party, it mult be rergarded merely as an accidental eruption of popular rage" From this time Mr. Knox continued to-promote the reformation by every means in his power, fparing no pains, nor fearing any danger. Mr. Knox, by his correfpondence with fecretary Cecil, was chiefly intrumental in eltablifhing thofe negociations between "The Congregation" and the Englih, which terminated in the march of an Englifh army into Scotland to affll the Proteftants, and to protect them againlt the perfecutions of the queen-regent. This army, being joined by almoft all the great men of Scotland, proceeded with fuch vigour and iuccefs, that they obliged the French forces, who had been the principal fupports of the tyranny of the regent, to quiit the kingdom, and reftored the parliament to its former independency. Of that body, a great majority had embraced the Proteftant 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 confelion of faith prefented to them by Knox, and the other reformed teachers: they abolifhed' the juridietion of the ecclefiatical courts, and transferred

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the caufes to the cognizance of the civil courts; and they prohibited the exercife of religious worflip, according to the rites of the Romifh church. In the year $\mathbf{1 5 6 1}$, Mary queen of Scots, the widow of Francis II. King of France, arrived in her native country, from which fle had been abfent more than twelve years, though the was then fcarcely nineteen. On the Sunday after her arrival the commanded mafs to be celebrated in the chapel of her palace: the Proteftants, from low murmurs, began to exclaim loudly againft the practice, and Knox, with liis ufual vehemence, declared from the pulpit, "that one mafs was more frightful to him than ten thoufand 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 unjuftiaable freedom. He avowed himfelf the author of "The Blaft," 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 wo. man, I fhall be wellcontent to live under your Grace, as Paul was under Nero. And my hope is that folong as ye defile not your hands with the blood of the faints of God, neither I nor the book flall either hurt you or your authority; for in very deed, madam, that book was written moft efpecially againtt the wicked Jezebel of England." In 1562, Mr. Knox was employed in bringing about a reconciliation between the earls of Bothweli and Arran, which fhews in what effimation he was held by perfons of the higheft rank in the ftate. In the fame year he was appointed, by the general affembly, commiffioner 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 difputation upon the mafs, which continued for the fpace of three days, and the fubitance of which was afterwards publifhed. In 1563, during the queen's abfence on a progrefs to the weft of Scotland, the Proteftants at Edinburgh excited a riot in the chapel royal while mafs was celebrating: of thefe fome of the molt active were feized in order to be brought to trial. Knox, determined to affirt and fuccour them, and being authorized by the lalt general affembly to give information to the whole body of Proteftants in Scotland, fhould any circumiftance arife that might threaten danger to the reformation; iffued circular letters, requiring all who profeffed the true religion, or were concerned in its prefervation, to affemble at Edinburgh on the day of trial, that they might comfort and affitt their diftreffed brethren. One of theie letters fell into the hands of the queen, and it was immediately conftrued into an act of treafon, for which he was indicted, brought to trial, and acquirted. His conduct was alfo 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, inftead of which he took occafion to declaim againft the government of wicked princes, who, for the fins of the people, are fent as tyrants and fcourges 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 eftablifh the churches in the fouth; and he was the bearer of a letter from the affembly to the bifhops of England, drawn up by himfelf; the purport of which was to complain of the fevere treatment of the Eng. lifh Puritans, and to folicit indulgence for them. In I $57{ }^{\circ}$,
he found it expedient to confult his own fafety by withdran ing from Edinburgh, and in the followng year, as lye $k n$ ww his enemies were plotting his deltrution, he went firit t. Abbot'shall, in Fife, and from thence to St. Andrews, where he remained till Augult $157^{2}$. When the troubk of the country were in fome meafure abated, the people of Edinburgh, who had been obliged to leave it, returned, and fent a deputation to St. Andrews, to invite Mr. Kncx to re"fume his miniflry among them. He accepted the invitation, on condition that they would allow him to freak to them according to the dictates of his confcience, as in furmer: times, and on the laft day of Augult he preached to them in the great kirk. His voice was, however, very weak, and his health was evidently declining. The news of the accurfed maflacre of Proteftants at Paris gave the finiflhing blow to his already fhattered conltitution: he, neverthelets, muftered fufficient ftrength to preach againt the bloody deed, and with muoh 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 finifhed his difcourfe, his approaching diffolution was obferved with the utmoft concern by his friends. During a long illnefs he difcovered the utmott fortitude, and met tho approaches of death with a magnanimity worthy of his high character. He anticipated with joy the profpects of immortality, and exulted in the expectation of being releafed 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 depofited in the ground, "there lies he, who never feared the face of man ; who hath often becn 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 efpecial 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. Robertion, "the prime inftrument of fpreading and eftablifhing the reformed religion in Scotland. Zeal, intrepidity, dilintereftednefs, were virtues which he poffeffed in an eminent degree. He was acquainted, too, with the learning cultivated among divines in that age, and excelled in that fpecies of eloquence, which is calculated to roufe and inflame. His maxims, however, were often too fevere, and the impetuofity of his temper exceflive. Rigid and uncomplying himfelf, he fhewed no indulgence to the infirmities of others. Regardlefs of the diftinctions 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 expreffions with refpect to the queen's perfon and conduct. Thofe very qualities, however, which now render his character lefs amiable, fitted him to be the inftrument of Providence for advancing the refurmation among a fierce people, and enabled him to face dangers, and to furmount oppofition, from which a perfon of a more gentle fpirit would have been apt to flrink back." After the death of this great man, his "Hiftory of the Reformation of Religion in the Realm of Scotland, \&c."' was publifhed in a folio volume. To the fourth edition of which, printed in 1732 , feveral of his other pieces were added. There ato, among the Harleian MSS. in the Britiih Mufenm, two pieces attributed to Mr. Iinox, onc is a letter to his wife, and the other a treatife addreffed to the faithful in London, Newcafte, and Berwick. Biog. Brit. Robertfon's Hift. of Scotland.

K゙vox, iA Chagriagion, a county of Kentucky, containing \$19 inhahitants.-- ilin, a county of Teneflec, in Hamilton dittrict, bounded on the S. by Blount comes and IV. by the Indiana terntory, and watered by the ravers Holltom and Clinch it contains a, $1,8 \mathrm{~g}$ inhabitants, of whom 1122 are flaves.--Alo, a comury in the Indiana territory, erected in Tunc, 1 igo, and containing 2517 inlabitents, of whom 2b are flaves. Fort Knox is in the fame territory. - Alfe, onice of the two illands difcovered by cantain Ingrahaun; the other being Hancock, called by captain Roberts, who foon after difeoverel them, Freeman and Langdon. 'Ihefe in unds had every appearance of fertility. Their latitude is from $8^{\prime} 3^{\prime}$ to $8^{\prime \prime} 5^{\circ}$, and their longitude very nearly ${ }^{3}+1^{\circ}$ W. from Crechmich.

KNOX1A, in Botunt, a gernus named by Linmeus, in hemour of Robert Knox, an Englifhman, who Cperit many Jears in examining the natural productions of Ceylon, and whu publifhed at London, in folio, an "Hituorical relation" of that illand in the year 168I. In this work, "the botanical defcriptions," fays Haller, "fhew him to have been well flkilled in the knowledge of plants." It was tranflated into German, and publithed in quarto at Leiplic in 1659. A French edition of it appeared, in two volumes octavo, at Amiterdam, in $1693 .-L i m n$. Gen. 51. Schreb. 68. Willd. Sp. Pl. v. 1. 582. Mart. Mill. Dict. v. 3 . Juff. 197. Lamarck. Dict. v. 3. 369. Illuttr. t. 59. Gxertn. t. 25.-Clafs and order, Tetrandria Monorynia. Nat. Ord. Stelluta, Linn. Ruliucea, Juff.

Gen. Ch. Cal. Perianth fuperior, fmall, deciduens, of four acuminated leaves; one lanceolate, triple the li\%e of the relt. Cior. of one petal, funnel-flaped; tube threadthaped, long; limb deeply divided into four, equal, rather ublong, rounded fegments. Stem. Filaments four, canillary, fituated within the throat of the corolla; arithers oblong, equal. Pif. Germen roundifh, inferior; thyle threadthaped, as long as the ftamens; ftigmas two, capitate. Peric. Fruit naked, fomewhat globular, pointed, furrowed. Sieds two, roundifh, pointed, outwardly convex, marked with three ftreaks; flat within, and affixed at the upper part to a thread-like receptacle.

Effi. Ch. Corolla of one petal, fumnel-fhaped. Seeds two, furrowed. One leaf of the call ${ }^{\prime \prime}$ x larger than the rell.

1. K. zeylanica. Linn. Sp. Pl. 151. F.. Zeylan. I8g: Burm. Ind. 34. t. I 3 . f. 2. (Vpronicæ affinis; Pluk. Phyt. t. 114. f. 2.)-"Flowers in (pikes. Leaves fmooth." Found in Ceylon, upon the trunks of rotten trees. - This plant in appearance is like a Plumbago or Lychris. Stenn erect, a foot high, fmooth, jointed. Leaves oppoite, lanceolate, nearly feffile. Syikts long, narrow, with fcattered, lefife flowers.
2. K. corymbofa. Pootumby of the Malabars. Willd. n. 2. (Planta Miaderafpatana; Pluk. Amalth. 172. to 454. f. 2. K. Atricta; Gxrtn. v. 1. 122. t. 25. f. 8 ?)-"Flwwers corymbofe. Leaves downy bencath."-A native of the Ealt Indies and found bear Velore.-Stem pubefcent. Leaves two together, peintect, on frothalks, lanceolate, limooth alove, covered on the under fide with flort thick tairs. The inforefocnce in fize and habit is like that of $V a-$ I.rina disica. Flosecrs co footitalks. Seeds Imall, Itrinted, difyofed in an umbel at the fummit of the item. We have Iitile doubt but that Wille now is perfectly correct in prefuming this to be the $K$. friza of Gertncr.

KNOXVILLE, in Gcography, a poil-town of Amcrica, the metropolis of the ftate of Teneflee, fituated in Knos county, on the N. fide of Hollton river, where it is 300 yards wide, on a beautiful fyot of ground, 22 miles above
the junction of the Hollon with the Teneffee, and four be luw the mouth of French Broad river. This town is flourifhing, and communicates by poft with every part of the Uuited States. It is regularly laid ont, and contains 518 inhabitants, a court-houfe, gaul, and barracks large enough to contain 700 men. The fupreme courts of law and equity for the diftict of Hamilton are held here every half year, and the courts of pleas and quarter-feffions for Knox county are alfo hetd here. At college has been eftablifted in this town by government, called "Blount college." N. lat. $35^{\circ}$ 48'. W. long. $83^{\circ} 44^{\prime}$.

LNNUCKLLE Ponst, a cape on the N.E. coall of New Zealand. S. lat. $34^{5} 51^{\prime}$. W. long. $186^{\circ} 21^{\prime}$.

Kinucke-Timbers, in a Ship, are the upper or top timbers next the beak-head, whofe heads ttanding perpendicular, and the heels or lower part partaking of the hollow of the top fide, form an angle or knuckle near the plankPheer.
KNUD's Hoved, in Gcography, a cape of Denmark, on the E. coalt of Slefwick, eiglit miles N.E. of Haterfleben. N. Iat. $55^{\circ} 20^{\prime}$. E. long. $9^{\circ} 4^{\prime}$-Alfo, a cape of Denmarl, on the E. coalt of the ifland of Fyen, projecting into the Creat Belt, and forming a bay on the S. of the town of Nyeborg. N. lat. $55^{\circ}{ }^{1} 7^{\prime}$. E. long. $30^{\circ} 52^{\prime}$. -Alfo, a cape of Denmark, on the S.W. coalt of the illa:d of Zealand. N. lat. $55^{\circ} 5^{\prime}$. E. lung. $x 1^{\circ} 37^{\prime}$.
KNUTSFORD, a couliderable market town in the hundred of Bucklow, and county of Chelter, England, is feated on the great road from London to Liverpool, being 1,3 miles from the former, 30 from the latter, 24 from Cheiter, and 1; from Manchefter. It was formerly a chapelry within the parifh of Rotherne, but was made a ditinct parifh, by aet of parliament, in the year $1 / 4 \mathrm{r}$, and comprizes the townhips of Over-Knutsford, NetherKnutsford, Bexton, Ollerton, and Toft.
Wullian 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 Leiceiter's Hiftory of Bucklow hundred; this William, about the fame time, procured a charter for a market on Saturday, which ftill 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, $133^{2}$; this fair alfo is Atill continued; there is another on the 8th of Nov. and a third has been eftablifhed within thefe few years on the 23 d of Aprit; none of them are noted as great marts for the Gale 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 Wednelday in Whitfun-week; this market has been long difcontinued, but the fair is ftill 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 quarterfeffions for the county are held in this town at Midfummer and Michaelma: In the year 1777, an account having been taken of the population of Knutsford, it was found that there were 375 familics, and 1674 inhabitants; annual average of deaths for the ten years then preceding had been only one in forty, beirg thout the fame proportion as Hi the city of Chefter, and very much below the ufual average of towns. According to the returns made to parliamest, under the population act in ISOr, there were then 543 families in Over and Nethrr-Kausford, and 2372 inhabitants, of whom $7^{\$ 2}$ were emplojed in trade, manufactures, or handicraft. A manufacture of thread has been long eftablifhed in this town. There is no cotton factory,

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but a great deal of cotton fpinning and weaving is dunc in private houfes.

Under an act of parliament paffed in the year 174 t , Knutsford was made a diltinct parim and vicarage, and the anciert chapel in Nether-Kintstord taken down; the new parifh church, then built in the 'Tentry-croft, was confecrated in the year $174+2$ and dudicated to St. John the Baptitt; the patronage is velled, by the act, in the lords of Over-Knutsford, Nether-Kinutsferd and Ollerton, 'I'oft, and Bexton, who prefent in rotation. Knutsford is divided into two parts by a fimall rivulet, and from the relative fituation, thefe divifions are called Upper and Lower. Annual races are held in the vicinity of this town. Immediately in the neighbourhood are fome feats dillinguilhed for their antiquisy and picturefque features. F"o the north is Tatton-hall, the feat of Wilbraham Eiererton, efq. a large fone manfion, 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 houfe, the feat of fir John F. Leticefter, bart., a large brick manfion, in a fpacious park, which is ornamented with a large lake and fine foreft trees. The houfe is particularly noted for its nuble gallery of pictures, all executed by Englith artilts. Lyfons's Magna Britannia, visl. ii. 4to. 18 ro.

KNUTWEIL, a bailiwick of Switzerland, in the canton of Lucerne.

KNUTZEN, MATHIAs, in Bigrapby, a native of Oldenfworth, in the duchy of Slefwich, was educated at Konigherg, in Prulina. He is the only perfon on record who openly profefled and taught the principles of Atheifm. It has been afferted that he had, at one time, 1000 difciples in the different parts of Germany. 'They affumed the title of "Confcipntiarians," becaufe they maintained that people were bound to lay alide all confideration of God and religion, and to follow the dictates of reafon and confcience alone: Reafon, faid Knutzen, teaches every man the three fundamental principles of the law of nature: "to hurt nobody" - "to live hone?ly"-and " to give to every man his due." In the year 1674 , he difperfed a Latin letter, and two dialogues in German, explanatory of his doctrines, which affumed that there was neither God nor devil: that reither magiltrates nor prielts were to be regarded, and that there is no life but the prefent. Mufreus publifhed an anfwer to his Letter and Dialogues, as weil to refute the abforcity and wickednefs of his fyltem, as to contradict the fact relpecting the number of the difciples. He probably died in contempt, as no notice is taken of the latter part of his life by hiftorians. Moreri, Bayle.

Knutzen, Martin, a profeffor of philofophy in Pruffia, was born at Konigtberg in the year 1yI3. He filled, for fome years, the philurophical chair in the univerfity of his native place, and occupied the polt 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 prin. cipal are, "Syltema Caufarum Efficientium ;" "Elemenca Philofophice Rationalis, Methodo Mathematico demonAtrata;" "Theoremata de Parabolis infinitis;" and "A Defence of the Chrittian Religion." "This lalt is faid to be a very excellent piece, and one that is honourable to his virtues and talents.

KNYSNA, in Geography, an arm of the fea on the coaft of Africa, in the colony of the Cape of Good Hope, at the ditance of about 18 reif s to the weitward of Plettenberg's bay, which, in the opinion of Mr. Barrow, may one day become an important dtation. He has given a plan of it in the fecond volume of his "Travels in Southern Africa,"

The tide fets into it through a uarrow paflige, or portal, as into a dock. The deptit of water, and great extent of it, running into the centre of very fine foreft, render it a molt eligible place for building and repairing thips. Veffels of 500 tons a:d upwards, deeply laden, may pals the portal, and thofe that are much lager might be buil in it and fent out light, to be completed in Plettenberg's bay. 'The forelts contain feveral different kinds of durable and well. grown timber fit for that valuable purpofe, as well as abundance of mafts and yards.

KNYSZYN, a town of the dachy of Warfaw; 3/5 miles N of Bi ilk.

KOADGWAH, a town of Hindooftan, in the circar of Jenhat; 20 miles W.N.W. of Gujurat.
 culiarities of which have been defcribed by Mr. E. Home in the Phil. Tranf. for 1809 , part. ii. 'The koala imhahits the forelts of New Holland, about 50 or fo miles to the S.W. of Port Jackfon, and was firt brought to that place in dugutt, 1803 . It is commonly about two fee: long and one high, in the girth about one and a half foot : it 1s cosered with fine foft fur; lead-coloured on the back, and white on the belly; the ears are fhort, erect, and pointed; the eyes gencrally ruminating, fometimes fiery and menacing; refembling the bear in the fore part of its body; it has no tail ; and its pofture is commonly fitting. The New Hollanders eat the flefh of this animal, and are therefore diligent and active in the purfuir of it ; afcending the loftieft 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 fhoots of the blue gum tree, and in the night it defcends, and prowling about, fcratches the ground in fearch of fome particular roots. It feems to creep rather than walk; when incenfed or hungry, it utters a long thrill yell, and affumes a ferce and menacing look. Thefe animals are found in pairs, and the mother carries the young on its fhoulders. The koala appears foon to form an attachment to the perfon who feeds it. Thefe animals feem to form the intermediate link between the opoftum and kanguroo. See Wompat.

KOAMAROO, CAre, in Geography, the S.E. projection of land at the entrance of Queen Charlotte's Sound, on the illand of Tavai-Poenanimoo, one of the New Zealand illands. S. lat, $41^{\circ} 34^{\prime}$. E. long. $176^{\circ} 30^{\prime}$.

KOANG-TCHEOU, a town of Corea; 150 miles S. of King-kitao. N. lat. $35^{\circ} 6^{\prime}$. E. long. $125^{\circ}+1^{\prime}$.

KOB , in Zoology. See Antelope Lerwia.
KOBA, in Gcography, a town of Africa, in Kullo. In. lat. $12^{\circ} 20^{\circ}$. W. long. $9^{\circ}$ - Alfo, a town of Arabia, in thes province of Hedsjas ; three miles N.W. of Midina. - Alfu, a town of Turkeftan; yo miles E. of Toucat.

Koba of Buffon, in Zoology, Anfelope Kobe, is referred by Gmelin, with fome hefitation, to Antelork Pygarga, (which fee); but Pennant refers the koba to the fipecie:; we are now to dercribe ; i.e. his Senegal antelope, the Cervus temamaçama of Seba, the antilope Bubalis of Pallas, la grande vache brunne of Adanfon. The horns are thick and annulated, very clofe at the roots, much bent in the middle, then approaching and receding at the ends, which are fmooth, fharp, and bent backwards. This animal inhabits Senegal ; it is a large fpecies, feven feet long; the head is Irge and clumfy, with large ears, feven inches long; the horns are feventeen inches long, and are furrounded wish fifteen prominent rings ; the head and body are of a light reddifh-brown colour, with a narrow black lif down the hind part of the neck; the rump is dirty waite ; there 28 a dujky mark on each knee, and dobove each fetlock joimt

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the tail is about a foot long, and is covered with longifh black hairs.

KOBdCK, in Georraphy, a town of Sclavonia, on the Save; 20 miles E.S.E. of Belgrade.-Alfo, a town of Africa, in the kingdom of Yani.

KOBAD, a diltrict of Perfia, in the N.W. part of Farfinam.

KOBAK, a town of Sweden, in Weft Bothmia; feven miles N.W. of Umea.

KOBAN KUpri, a town of Turkifh Armenia; 27 miles E. of Erzerum.

KOBELNIKA, a town of Auftrian 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 Cryfal Caves. Thefe are difficult of accefs, the only poffible mode of entering them being in a creeping pofture. From the firft of thefe caves you defcend into the fecond, and afcend again in order to arrive at the third, out of which iffues a brook, which fupplies forty baths at Kobelwies. The interior of the cares is fudded all over, not with rock cryftals, but with calcareous \{par, which is partly coated with a yellow kind of clay ; it is found white and of an afhgrey colour, feparates into brilliant large grains with a fimooth furface, and when burnt yields the fineft and white it fort of lime which is applied for the purpofes 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 marfhy parts of the country tordering on the Rhine.

KOBEN, a town of Silefia, in the principality of Glo. gau, on the Oder. N. lat. $51^{\circ} 31^{\prime}$. E. long. $16^{\circ} 26^{\prime}$.

KOBI, a town of Ruffia, 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 Kalifh.

KOBIL, a town of Ruffia, in the government of Peterfburg, on the E. coaft of the Tchud hoi lake; 2q miles N . of Pikov.

KOBILINKAIA, a town of Ruffia, in the country of the Coflacks ; 156 miles E.N.E. of Azoph.

KOBIN, a town of Perfia, in the province of Segeflan; 30 miles S. of Zareng.

KOBINIKI, a town of Lithuania, in the palatinate of Wilna; 52 miles E.N E. of Wilna.

KOBRESIA, in Botany, fo called by profeffor Willdenow, in honour of a nobleman at Vienna, named de Kobres, whom he celebrates as an eminent promoter of natural hif . tory. - Willd. Sp. Pl. v. 4. 205.-Clafs and order, Monoecia Triandria. Nat. Ord. Calamaria, Lim. Cyperoidece, Juff.

Gen. Ch. Mate, Cal. the inner fcales of a catkin, each oblong, flightly concave, fingle-flowered, permanent, fometimes wanting. Cor. none. Stam. Filaments three, capillary, erect, lunger than the calyx; anthers vertical, linear, erect.

Female, Cal. the outer fcales of the fame catkin, rather larger, fheathing, elliptic-oblong, fingle-flowered, permanent. Cor. none. Pift. Germen fuperior, triangular ; It yle cylindrical, fhort ; Atigmas three, briftle-fhaped; downy. Peric. none, except the permanent fcales. Seed one, triangular, pointed, hard, naked.

Eff. Ch. Male, Calyx the inner fcales of an imbricated catkin, folitary. Corolla none.

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Female, Calyx the outer fcales of the fame catkin, fleathing, 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 difpofition of the flowers. Thefe in Kobrefict ftand in pairs, the males being interval, and fmaller. In one known inflance only they want their fcale or calys, fo that there is no feparation between the flamens and pittil, and the flowers become apparently united, or hermaphrodite. Three fpecies only are known.

1. K. firpina. Willd. n. 1. (Carex Bellardi; Allion. Pcdem. v. 2. 264. t. 92. f. 2. Schkuhr. Car. 12. t. D. f. 16. C. myofuroides; Villars. Dauph. v. 2. 194. t. 6. See Carex, n. 15.)-Spike folitary, fimple, cylindrical. - Native of dry clevated fpots on the mountains of Savoy, Dauphiny, Italy, Carinthia, Styria, and the Tyrol, flowering in July and Augult. We have gathered it high on Mount Cenis, in company with the able botanift whofe name it bears. Linneus had fpecimens from Italy, which he never defcribed. Mr. Davall found this plant on the mountain of Valforey, though Hailer has it not. The root is perennial, tufted, confifting of numerous blackif, zigzag fibres, running deep into crevices of rocks. Stems nu. merous, a fpan liigh, or lefs, fimple, naked, round, itriated, fmooth, erect or fightly curved, compofing denfe tufts, with numerous, fheathing, brown, polifited radical fcales, Leaves radical, erect, fhorter than the ftems, narrow, acute. involute, rough-edged. Spike terminal, folitary, erect, about an inch long, obtufe, flender, of from ted to twenty pair of flowers, mof lax in its lower part. Glumes brown, fhining, with membranous edges, awnlefs. Schkuhr figures but two ftigmas; we find three, as all other writers defcribe them. The permanent glumes, invefting the feed, look like the torn tunic of a Carex, as Villars reprefents them. That of the male flower is much the fmalleit and molt membranous.
2. K. caricina. Willd. n. 2. (Carex hybrida; Schkuhr. Car. t. Rer. f. 161. Willd. Schoenus monoicus; Sm. Eng. Bot. v. 20. t. 1410.)-Spike compound, denfe, fomewhat ovate; (pikelets alternate, imbricated.-Native of Mount Cenis, in rather moilt muddy fpots, flowering in Auguft ; gathered by the writer of the prefent article in 1787. Mr. Dickfon obferved it in the county of Durlam in 1 /99. The Rev. Mr. Harriman mentions the mountain of Cronkley, and the neighbourhood of Widdy bank, in Teefdale forelt, as its particular ftations. At the fuggeftion of the late Mr. W. Brunton, it was referred in Eng. Bot. to Schoenus, proving, on examination, no Care.. Its habit and fize are much like the preceding, except that the fems grow lefs crowded or tufted, and are ftouter, and the leazes fhorter, fomewhat broader, as well as more fpreading. The fipike is effentially different, being compofed of four or five alternate, fhort, elliptical fpikelets, making all together an ovate figure. Glumes rather more pointed, keeled, and lefs membranous, than in the foregoing fpecies. 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; fipikes cyiindrical ; 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 fove at Vienna, from May to Auguft. The habit is that of a Cyperus, or a Kyllingia. Root perennial. Stems annual, triangular, fmooth, about two feet high, with feveral long, theathing, linear, roughifl leaves, bulf an inch broad at their bafe, and many fmaller
ores at the umbel, which confifts of numerous, fimple, or compound Italks, hearing various thick but lex jpikes. Thefe are compofed of mumerous fpikelets, fpreading horio zontally, each linear lanceolate, flender, a quarter of an inch long, and confiling of four or five, apparcutly hermaphrodite, imbricated flowers. It feems to us, however, that they are really pairs of flovers, of which the male wants the glume or calyx, which fuppofition is juftified by the analogy of the other fpecies. The culour of the whole plant is reprefented by Jacquin, as a rearly uniform pale green.Stigmas three. Seed oblong, triangular, pointed, brown. S.

KOBRYN, in Gcography, a town of Lithuania, in the palatinate of Brzefc ; 28 miles E. of Brzelc.

KOBYN, a town of Lithuaniz, in the palatinate of Brzefc; 34 miles E.S.E. of Brzefc.

KOCHEISKAIA, a town of Ruffia, in the government of Irkutk, on the Ilga; 28 miles N.W. of Vercholenfs.

KOCHIA, in Botany, fo named by Dr. Roth, and adopted by Mr . R. Brown, in honour, as we prefume, of a German botanilt, John Frederick William Koch, author of a periodical work on economical plants, printed at Magdeburgh in 1797 and 1798 , in octavo. It may alfo commemorate Jofeph Matthias Koch, who pubhihed on agriculture at Vienna in 1767 , recommending falt for manure; an opinion perhaps to be adopted "cum grano fulis ;" but as this plant belongs to a faline tribe, he may, under fuch limitation at lealt, be faid to have merited the diltinction as well as fome profeffed botanilts.-Brown Prodr. Nuv. Holl. v.r. 409.-Clafs and order, Pentandria Digynia. Nat. Ord. Holeraces, Linn. Atriphices, Jufl. Cbenopociea, Decandolle and Brown.

Eff. Ch. Calyx inferior, of one leaf, in five fegments, having appendages at their backs when in fruit. Corolla none. Seed one, depreffed, enclofed in the wiagred calyx.

Two £pecies only are mentioned by Mr. Brown as natives of the fouth coait of New Holland.

1. K. brevifolia. Leaves cylindrical, feffile, fmooth. Stem fhrubby, much branched, erect and woolly. Appendages of the calyx 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 membranous.

There feem to be many more fecics in other parts of the world, as Mr. Brown advifes a divifion of the genus into Kochia, properly fo called, the fpecies of which have the appendages of their calyx awl-fhaped and fininous, their feeds deltitute of albumen, and their embryo cloven at the bafe ; and Willemetia, whofe appendages are membranous and dilated, their feeds furnifhed fparingly with albumen. This diffcrence however, refpecting the albumen, in plarits fo nearly akin, fhews how little any character is to be trufted abfoutely. The abfence or prefence of albumen forms one of the moft effential marks of diffinction with writers on natural orders, and, on account of the difficuley of its deteetion, might feem more impofing and authoritative to the pnlearned than it really is.

KOCNI, in Geography, a town of Walachia, on the Ardgis: 15 miles N , of Buchareft.
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 ; $4^{8}$ miles S.S.W. of Braclaw.

KOCZMYN, a town of Lithuania, in the palatinate of Novogrodek; 28 miles N. of Sluck.

FOCZOWA, 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 Neds. jed; 50 miles W. of Janama.

KODAL.I.Y, a town of Hindoofan, in Myfore; 27 miles E. of Chinna Balabaram.

KODbA-I'AIL, in Botany, the Indian name of the Linnxan Piffia Stratiotes. Sice Řhecde Hort. Mal. v. xi. 63. t. 32, and Plum. Nov. Gen. 30. t. 39

KODDE, Vander, 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 ame 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 ace quainted with facred literature, and enemies to religious controverfy. Gilbert was an elder of the Remonittrant church at Warmond, and poffeffed a flucnt elocution. In the year 1619, when the perfecution of the Calvinilts had driven the Remonitrants from their churches, the thee brothers propofed that meetings fhould be held of members of the charch at Warmond, at which one or more of their number fhould read a chapter or two out of the Bible and pray ; and if any perfon had any thing to offer by way of exhortation, inftruction, or the editication of others he fhould be at liberty fo to do. Hence they foon inferred the inutility of the minifterial profeffion, as the people were fufficiently qualified to teach and inftruct one another. From this origin Sprung a fect, or community, already referred to, confilting of perfons of all fects which fpread very widely over the Dutch provinces. Morheim's Ecclef. Hitt

KODEN, in Geogruk ${ }^{2}$, a town of Lithuania, in the palatinate of Brzefc; is iniles S. of Brzefc.

KODGIA-HISAR, a town of Afiatic Turkey, in the province of Diarbekir; 10 milles S. of Merdin.

KODGIA-SiłEHR, a town of Natolia; 12 miles N. of Kiutaja.

KODIAK, a range of iflands, confifing of one large; bearing this name, and feveral fmaller, 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. coaft of America, and 30 S . from the entrance into Cooke's inlet. N. lat. $56^{\prime} 45^{\prime}$ to $5^{8} 28^{\prime}$. E. long. $206^{\circ}$ $12^{\prime}$ to $208^{\prime} 45^{\prime \prime}$.

KODJA. See the next article.
KODJAKANS, or Kodjas, a numerous clà?s of per* fons in the Ottoman empire. particularly in the capital, which holds the middle ran between the military men and the lawyers, and which is become fufficiently powerful, fincethe influence of the Ulemas has declived, as the divan is compofed of them, and as fome of thes ob:ain fiefs, military rank, and governments. Almoft all the minitters, all the agents ia the different adminitrations of the capital, the cuftoris, and the mofques; all the principals of offices, all the fecretorics, all the clows, all the fchool-maiters; in a word, all the writers from the fimple "kiatib," who copies books, petitions, or me:norials, and him who applies himfelf to writing parely and correctly the language, to the "reiso effendi," who is at the heze of them, are all diftinguifhed by the name of Kodja, and mak:e part of that fort of corporation. The art of tranfcribing the national books, and efpecially the kordn, is a kind of nurfery for this clafs of perfons. The Maffulmen are indebted to the Kodjas for a great number of works, which they hold in high eftimation, relative to the Arabic and Perfian languages, philofophy, morality, Mahometan hiitory, and the geography of their provinces; and among them are generally found the moft intelligent

1tatefmen, or thofe whe are mutl capable of ferving as minillers.

KO1)I-HISSAR, a town of Natolia: 13 miles N of Kianguri- - Nllo, a town of Ahatac 'Turkey, in Aladulia, 18 miles N. k . of Sivas.

KODINSKA, a cown of Ruffia, in the government of 'l'obolk; 224 mics L. of Enileilk. N. lat. $58{ }^{\circ} 30 \prime$. E. long. 02' It'.

KODMA, a town of Perfia, in the province of Ferman; $t o$ miles N. of Kermanthir.

KODMAN゙入, a towa of Walachia; so miles S. of Kordedearda.

KODNIA, a town of Ruffan Poland, in Voilymia; yo miles $S$. of $Z y$ tomiers.

KOEG. Sce Dagzbuther.
KOEI, or KOEP-YANG, a city of China, of che firt clafs, and capital of the province of Koci-tcheou. It is a fmail vity, being only about three miles in circuit ; its hondes are partly of earth, and partly of brick, and as the river that approaches it is not navigabie, 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 nagnificence; but the monuments of grandeur are mouldering into rums. Within its juridiction there are three towns of the fecond order, and four of the third; about it are many forts. N. lat. $26^{\circ} 30^{\prime}$. E. long. $106^{2} 19^{\prime}$.

KOEI-TCHEOU, the fmallelk prosince of China, bounded on the N. by Sc-tchuen, on the E. by Hou-quang, on the S. by Quang-fi, and on the W. by Yun-nan. The whole country is almoft a defert, and covered with inacceffible mountaius; fo 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 wifhes to provide; the garrifons are entrufted 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 purpofe, forts have been erected, and troops fent to conquer them; but they retire within the faltneffies of their mountains, and feldom iffue forth, but to dettroy the Chinefe works, or ravage their lands. Neither filk tuffi, 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 laft metal, they make thofe fmall pieces of coin, which are in circulation throughout the empire. This province contains 10 cities of the firlt clafs, Koei-yang being the capital, and $3^{8}$ of the fecond and thitd. Some of thefe cities, which are conftructed 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 Chinefe are fo awed by the mountaineers, that they dare not leave the neighbourhood of their fortreffes.

Koei-tcheou furnifhes the beft horfes in China; an immenfe number of cows and hogs are raifed here, and wild poultry, of a molt exquifite talle, are every where to be found. Sir George Staunton eftimates the population of this province at $9,000,000$.

Koes-tcireou, a city of China, of the firf clafs, 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 cuftom houfe for receiving the duties of the merchandize which is brought thither. Its trade is great,
and of courfe it is opulent. Its jurifdiction comprehends one city of the fecond clafs, and sine of the third. The adjacent country is mountainous, but is rendered fruitful by th indufty of its occupiers, who are unvolifhed hufbandmen. The neighbourbood affords great quantities of muks, and feveral fprings from which filt is procured. Orange and lemon trees are very common. N. lat. $35^{\circ} 10^{\prime}$. E. long. 1:91 $14^{\prime}$

KOLLCOTTI, , town of Thibet, on the Ganges; 30 miles $S$ of Gangurti.

KOELI:, a ridge of mountains between Sweden and Norwav.

KOEI.PINLA, in Botany, fo named by profefor Pallas, in the third volume of his $\mathrm{R}_{\mathrm{n}} \mathrm{Gi}$ an Travels, p.755. t. L. I. fis. 2, in memory of his "highly meritorions friend," Alexander Bernard Koelpin, Profeffor of Phyfic at Stetin, in Pomerania, author of feveral botanical tracts. Pallas fubmits this genus to the decition of thofe who, as he modeftly fays, take the lead in botany. Few are more worthy to do fo than himfelf, and his Kcelpinia is eltablifhed as a genus by Schareber and Willdenow, though they found themfelves obliged to adopt a different name, this identical genus being the Rhagadiolus of Cxefalpinus, Tournefort, Vaillant, Juffieu, and Gærtner, confounded by Linnæus under Lapfana. The name they have retained feems to us expreflive and unexceptionable, though Ambrofini furcly gires a wrong explana. tion of its meaning. See Riacadiolus.

IOELREUTERIA, a genus named by Laxman, in the Memoirs of the Peterfburg Academy, in honour of John 'Theophilus Kölreuter, M.D. profeffor of Natural Hiftory at Carlfrhue, born in the year i 733 , 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. IS. 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. Juff. 45 I. Lamarck. Illuttr. t. 30S.-Ciafs and order, Odindria Monorynia. Nat. Ord. Tribilata, Linn. Sapindi, Juff.

Gen. Ch. Cal. Perianth inferior, of five, ovate, obtule, concave, membranaceous, unequal leaves, afcending towards the upper fide, gaping below. Cor. Pctals four, equal, afcending towards the upper fide; the two lower ones oppofite : claws cylindrical, fraight, the length of the calyx: borders lanceolate, recurved at the top, fpreading. Nectary compofed of four erect, deeply cloven fcales, affixed to the claws of the petals, forming: a crown to the orifice; with three glands between the famens and pitil. Stam. Filaments eight, awl-fhaped, erect, affixed to the columnar receptacle $i$ anthers oblong, obtufe. Pi/f. Germen fuperior, oblong, triangular, ftanding upon the columnar receptacle; ftyle fimple, three-fided, alcending, as long as the petals; Atigma 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. Coroila of four petals, irregular. Nectary of four cloven fcales, and three glands. Capfule of three cells, with two feeds in each.

1. K. faniculata. Willd. n. I. La'Herit. Sert. Angl. t. 19. (Sapindus chinenfis; Linn. Suppl. 228.)-A nat tive of China, hardy with us, flowering in July and Augult. -Stem arboreous, upright, round, fmooth, branched, fix or feven feet high. Brancbes fcattered, twitted; the younger ones glandulous and dotted. Buds conical, imbricated. Leaves on long, club-fhaped, channelled foot-Italks, unequally pinnate, with about fix pair of ovate, laciniated, fer
rated,
rated, acute, flat leanets. Panicles terminal, more than twice compound, loofe and fpreading. Flowers three or mure on erch partial ftalk, greenifh and in themfelves not very confpicuous. Some male flowers being intermixed among the reft, have induced Schreber to refer the genus to Polysumia.

## KOEMPFERIA. See Kemprima.

KOENIG, Samuel, in Biograply, a learned phitufopher, diltinguifhed by his mathematical abilities, was a Siwifs by birth. He filled the chair of philofophy and natural law in the univerfity of Franeker, whence be removed to the Hague, where he had the appointment of librarian to the fladtholder, and to the princefs 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 interefted in the difpute. Koenig publifhed an "Appeal" written with much animation, which procured him many fupporters. He died in 1557 , 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 metaphyfician, a good geometrician, and, what is of itill greater moment, a very good man."

KOENIGIA, in Botany, fo called by Linnæus in honour of his difciple Dr. John Gerard Koenig, a native of Courland, born in 1728, who in 1765 difcovered this plant in Iceland, and after having inveftigated the vegetable productions of that dreary country, and of its circumyacent feas, vifited the richer climes of India, where he died at Jagrenatpour, in Bengal, in 1785. His communications have greatly enriched the coliections of Europe, efpecially thofe of Linnæus, Retzius, and frr Jofeph Banks. The fine Bankfian library contains his botanical manufcripts. His letters to Limex as are very numerous and infructive.-Linn. Mant. 3. §ichreb. 57. Willd. Sp. Pl. v. I. 490. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. I. 183. Jufl. 83. Lamarck. Illuitr. t. 5 r. Gærtn. t. 128 . -Clafs and order, Triandria Trigynia. Nat. Ord. Holeracce, Linn. Polygonex, Juft.

Gen. Ch. Cal. Perianth inferior, in three deep, ovate, concave, permanent fegments. Cor. none. Stam. Filaments three, capillary, fhorter than the calyx ; anthers roundifla. Pijl. Germen fuperior, ovate; thyles none; ftigmas three (often but two), clofe together, downy, coloured. Peric. none. Seed folitary, ovate, as long as the calyx.

EIT. Ch. Calyx in three deep fegments. Corolla noue. Seed folitary, ovate, naked.
I. K. iflandica. Linn. Mant. 35. Fl. Dan. t. 4iS. Native of Iceland, from whence fir Jofeph Banks brought feeds to Kew garden in 1773, and where Mr. William Jackfon Hooker obfersed it on his late eventful vifit to the fame country, of which he has favoured the public with fo pleafing and unaffected a narrative. This humble plant is chielly ca'culated to attract the fcientific botanitt, being an aunual, fcarcely two inches high, with a few alternate, obovate, or fpatulate, entire leaves, and fmall, green, fafciculate, terminal flowers. The whole herb is fmooth, a little fucculent, turning red in decay, or from expofure to much light, like its allies the tribe of Docks and Sorrels.

KOERTEN, 'Joavin, in Biograpby, was born at Amflerdam in 1650 . She had a fine tafte for drawing in water colours and for embroidery. She alfo modelled in wax, and made artificial ornaments and flowers; bit her chief excellence confifled in cutting out figures in paper with fciffors only, ald her portraits and landfcapes, in this way were fo mued -Vol. XX.
talked of that foreigners from all countries rifited Amferd an to fee them, among whom was Peter the Great of Ruliza She made a magniticent difplay of her art for the confort of the cmperor Ieopold, confithing of trees, arms, eagles, \&ec. for which fhe was very handfomely paid. She died ia 1715.

KOETEKOIE, in Gcograply, a fmall ifland in the Enft Indian fea. S. lat. 4 38. E. long. $133^{\prime}$ ' ${ }^{\prime}$ '。

KOEWAK, a town on the $S$. conff of the inand of C ram. S. lat. $3^{\circ} 1^{\prime} \mathbf{\prime}^{\prime}$ E. long. $129^{\prime \prime}$ I $8^{\prime}$.

KOF, a town of Japan, in the ifland of Niphon; 27 milee S.E. of Nigata.

KOFEL, a town of the county of Tyrol, on the borders of the Vicentin; near which is a celchrated pafs, with a fort erected on a high and ftcep rock, in which is a fpring of water for the fupply of a fmall garrifon, which can onls enter by means of pullies. The road below is fcarcely wid, enough for two carriages. On the lide oppofite to the for: is the precipitous bank of the Brenta; 21 miles E. of Trent.
KOFEZ, mountains of Perfia, between Mecran and Kerman.
KOGETIN, a town of Moravia, in the circle of O1mutz; 14 miles S. of Olmutz. N. lat. $49^{\circ} 20^{\prime}$. E. long. $17^{\circ} 15^{\prime} \cdot$

KOGL, a town of the duchy of Stiria; 17 miles N.N.W. of Rakefpurg.

KOGONG, a town of Africa, in the country of Sierra Leone. N. lat. $10^{\circ} 45^{\prime}$. E. long. $122^{\prime} 12^{\prime}$.

KOHAU'T, a town of Candahar; 130 miles S.E. of Cabul. N. lat. $33^{\circ} 5^{\prime}$. E. long. $70^{\circ} 20^{\prime}$,

KOHHEL, a town of Arabia, in the province of Yemen; ro miles N. of Dcbin.

KOHLBERG, a town of Bavaria, in the principality of Sulzbach ; If miles N.E. of Sulzbach.

KOHLMEISE, in Ornitbology', the Colenoufe of Pertnant, \&c. See Panus ater.

KOHLMULEN, in Ichthyography, a mame given by fome to the afelius flavefcens, or yellow cod, called by others blank and gelbe. See Gadus Pollachius.

KOHLRABI, in Agriculture, the name of a fort of tur. nip 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 eatable 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 raifing of plants of this kind, the feed fhould be fown at the fame period as for the common cabbage, and the plants, when of proper growth, be tranfplanted out in the fagre manner about the beginning of June, allowing good diflances both between the plants and rows. In performing this work, it is advifed to cut oif about one-third of the roots of the plants, care being taken to plant them fufficiently deep in the ground, as by this means the bulb grows to a much larger fize without becoming tough.

Plants of this fort furceed beft on fuich foils as are not too much difpofed to moifture. This plant is found to withftand the feverity of froits much better than the Ruta baga, or Swedifl turnip. And it is further obferved, that in the botanical garden at Brompton, fome of the plants weighed feven or eight pounds ; and that though many of them were notched and hacked on purpofe for the experiment, the turnip remained perfectly found and uninjured, while a bed of Swedifh turnips near them was quite roten. The faccharine quality of it is equally remarkable, and both its leaves and bulb are very ufctul as kirchen vegetables.

## K O K

In our own trials, we found it to fland the feverity of the winter without the leaf injury, and to be perfectly well tafted, though the bullos did not increafe to a large fize. It has every appearance of being a varicty of the turnip cabbage. But few experiments have, however, yet been made upon it, cither in regard to its culture or application as a green cattic fodder.

KOHMU, in Gcegraphy, a town of Bengal; nine miles N. of Torec.

KOHONE, a town of Africa, in the kingdom of Burfali. KOHTAUM, a town of Bengal; is miles W. of Doefa.

KOH-ZERDEH, mountains of Perfia, in the province of Chufillan, bordering on the Irak. Sce Hemzamara.

KOJA-KIZ, a town of Kharafm, near lake Aral ; 18 miles N.E. of Urkonje.

KOIDANOW, a town of Ruffian Lithuania; 15 miles S.W. of Minsk.

KOJEND, or Kogend, a town of Greater Bucharia, on the left bank of the Seir, on the borders of T'urkeltan. In 1220, it was taken and plundered by Jenghiz Khan, after a brave defence; 120 miles N.E. of Samarcand.

KOIRVIRAH, a town of Perfian Armenia; 18 miles S. of Erivan.
KOISJU, a town of Japan, in the ifland of Ximo; 26 miles W. of Naka.

KOIVIST'A, a town of Ruffia, in the govermment of Viborg; 20 miles $S$. of Viborg.

KOK ANO, a town of Poland, in the palatinate of Brachaw; 28 miles $N$. of Braclaw.

KOKAR, a finall inaud of Sweden, in the Baltic, about 30 miles S.E. from the ifland of Aland. N. lat. $59^{\circ} 58^{\prime}$. E. long. $20^{\circ}+6^{\prime}$

KOKERWARA, a town of Hindooftan, in Guzerat ; 15 miles N.W. of Amedabad.

KOKETARRA, a town of Hindooflan, in the circar of Gangpour; 16 miles N.E. of Pada.

KOKLOT, a fmall inland on the E. fide of the gulf of Bothnia. N. lat. $62^{\circ} 17^{\prime}$. E. long. $21^{\circ} 25^{\prime}$.

KOKOB, in Zoology, the name of a fpecies of ferpent found in the Welt Indies, and yery fatal by its bite. It is fmaller than our viper, and of a brown colour, variegated with green and ted fpots.

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 extenfive country to the W. of China, and she province of Chen-fi, from which they are feparated by lofty mountains. See Kalaucks.

Kокомо,, or Kokorol, Lake, is the largett in T"artary; it is about 20 leagues in length, and 10 in breadth, and is fituated between $3^{\circ}$ 40' and $37^{\circ} 10^{\prime} \mathrm{N}$. lat. and $100^{\prime}$ and $101^{\circ}$ E. long.

KOKORE, a town of Hindooftan, in the circar of Kischwara; 45 miles E.N.E. of Shajehanpour.

KOKORO, the eaftern branch of the Senegal river, which riles about N, lat. $11^{\circ} 50^{\prime}$. W. long. $6^{\circ} 40^{\prime}$, and joins the wefteriy branch about N . lat. I 4 .

KOK ORY, a town of Moravia, in the circle of Prerau; fix miles N.W. of Preratu.

KOKRA, a lown of Hindooftan, in the circar of Ruttunpour; 20 miles S . of Ruttunpour.
KOKURA, a fea-port town of Japan, on the N. coaft of the ifland of Ximo; furrounded with walls, and having a citadel, it is a place of extenfive trade, but the harbour is nearly choked wish fand. N. Lat. $33^{\circ} 50^{\prime}$. E. long. $130^{\circ}$ $20^{\prime}$.

## K O L

KOLA, a fea-port town of Rufla, in the government of Archangel, fituated near the North fea, on the river K ola, forming a bay at its mouth, in which is a confiderable fifhery for whales, feadogs, and other fifh, which the inhabitants cure for fale. N. lat. $68^{\circ} 52^{\prime}$. E. long. $32^{\circ} 26^{\prime}$. 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 T'urkifh Armenia; 40 miles N.E. of Kars.

KALABOORA, a town of Hindooltan, in Oriffa; 20 miles N.E. of Sumbulpour.

KOLAH, a town of Natolia; 36 miles N.E. of AlahSehr.

KOLAR, a town of Africa, in the kingdom of Burfali, near the coall of the Atlantic. N. lat. $13^{\circ} 5^{\circ}$. W. long. $15^{\circ} 55^{\prime}$.
KOLASSIN, a town of Dalmatia; $2 \&$ miles S.E. of Moftar.
KOLAY, a river of Cochinchira, which runs into the Chinefe fea, N. lat. $13^{\circ} 51^{\prime}$ 。 E. long. $10 S^{\prime} 54^{\prime}$.

KOLbe, or Kolbex, Peter, in Biography, was born at Dorfas, a village in the principality of Baireuth, of which place his father was a judge, and afterwards a receiver of taxes. When he had attained the firlt principles of knowledge, he was fent to Nuremberg to purfue his maturer ftudies. Here he lived fome time in grat poverty, being unknown, and having brought with him a fingle dollar only. In 1696, he was received into the houfe of Eimart, a great altronomer, under whofe directions, and by whofe aid, he made confiderable progrefs in the fciences. He entered himfelf at the univerfity of Halle in the year 17 co , and in the following year he difputed "De Natura Cometarum," after which he gave a courfe of lectures in mathematics and philofophy. He was introduced to baron von Krofie, privy counfellor to his Pruffian majefty, to whom he became fecretary, and whom he accompanied in his travels. It being known that he had a great defire to vift forvign 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 obfervations on the country and the people, till he was afflicted with the misfortune of blindnefs, which came on without any external injury. He now returned to Europe, and by means of medical affittance he fo far recovered his fight as to be able to read with the affittance 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 Autrian counts, but his paffion for foreign countries had fublided, and he preferred remaining at home, and taking upon himelf the office of rector of the fchool of Neuftadt. He difcharged the duties of his fituation with much diligence till the year 1526, when he died, in the fiftyfecond year of his age. His bufinefs, as an inltructor, had not prevented him from publifhing his great work, entitled "A Defcription of the Cape of Good Hope," in folio, with twenty-four plates. This work was tranflated into the Dutch language in 1727 ; and at London, into the Englifh, in 1731. It. was afterwards abridged, and publifhed in French in three yols. 12mo. Kolbe has been charged with, recciving information without much examination, and with having publifhed, as true, many falfe and incredible fories; but when the proper deductions are made that fevere criticifm has fuggefted, there fill remains much important in. formation with regard to a country, which, at that time, was fcarcely known. Gen. Biog.

KOLBEN-

KOLBENDORF, in Geography, a town of Bohemia, in the circle of Konigingratz ; nine miles N.N.W. of Trautenau.
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 Swedifh Lapland, and atterwards bending, in the form of a horfe-fhoe, on the S. of Finmark.

KOLGAPARI, a town of Ruffia, in the government of Olonetz; So miles N.N.W. of Olonetz.

KOLIAKOV, a town of Ruffia, in the government of Simbirk, on the Sura; 80 miles W.S.W. of Simbirk.
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 Jeniarrow.
kOLLMA, Kolyara, or Kompma, a river of Ruffia, which rifes in the Stanovoi-Krebet, almoft over-againit Ochotk, and after receiving feveral other rivers, partichlarly the Omolon, forms a multitude of iflands, and, by means of four broad arms, flows into the Frozen ocean, N. lat. $71^{\circ} 25^{\prime}$. E. long. $15^{2} 24^{\prime}$.

KOLIN, a town of Bohemia, in the circle of Kaurzim, on the Elbe; 30 miles E.S.E. of Prague. N. lat. $49^{\circ} 5^{\prime \prime}$. E. long. $15^{\circ} 1^{\circ}$.

KOLIVAN, Kolyvas, or Kolhyvan, a city of Ruffia, and capital of the government of the fame name, fituated ou the Oby, near the mouth of the Berda; known before the inflitution of this government under the name of "Berdfkoi oftrog:" Kolyvan is fanous for the filver mines difcovered in its vicinity. They lie between the rivers Oby and Irtifch, near the mountains which feparate Siberia from the Chinefe empire, or rather from the territory of Kalmucks dependent on the Chinefe. They were difcovered in the year 1725 or 1728 , and appropriated to the crown by the emprefs Elizabeth in $17+4$ 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 fe. paration of whicle is made in the imperial laboratory at Peterburgh. Upon the whole, it appears from the accounts of the board of mines, that they have produced, from their difcovery 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 Koljvan employ nearly 40,000 colonits, befides the peafants in the dillriets of Tomfk and Kufnetz, who, in licu of paying the poll-tax in money, cut wood, make charcoal, and traniport the ores to the founderies. In the year 1765 , a mint was eftablifhed at the foundery of Sufunfk, for the coinage of the copper fupplied from thefe mines, the greater part of which had been, till that period, of no ufe. Pieces of one, two, five, and ten copecs (the copec being nearly equal to a halfpenny) are ftruck and difperfed over Siberia. Of this currency, the amount of 500,000 roubles is annually coined, which is fufficient for reimburling the pelltax, paying the miners, tranfporting the ore, purchafing the lead, which muft bé brought from Nerfhinfe, and defraying the expence of fending the gold and filver as far as Toholks. The filver melted in the founderies is conveyed on large fledges twice a year ; the firft convoy fets off in the beginning of winter, and reaches Peterfurgh a little after

Chriftmas; the fecond in the middle of winter, and arrives there towards fpring. Kolivan is diflant 480 miles S.S.E. of Tobolfk. N. lat. $54^{\circ} 20^{\prime}$. E. long. $81^{\prime} 20^{\prime}$. Coxe's Travels in Ruffia, vol. iii.

Kolivan;, Kolyvan, or Kollyzan, is alfo a government of Ruffia, bounded on the N. by the government of Tobolik. on the E. by that of Irkutk, on the S. by China, and on the W. by Tartary; about 720 miles in Jength, and from 240 to 360 in breadth. This government was formerly included in that of Tobollk; it contains five diltricts, qiz. Kolyvan, Semipalat, Birfl, Kufnezk, and Kralfnoiarlk.

Kolivan, or Kollyvan, is alfo the name of a range of mountains, conftituting the principal pert of the Altay mountains, or the proper ore-mountains of Altay. (See Altar.) The Kolhysanovos-krefenfioi 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 f.ith copper-mine, called Vofkrefenfoi. Thefe mountains are bounded on the $S$. by the granitic ridge, which parts them from the Korbo-likinkroz, which fee. They are confined to the E. by the deep valley in which the line of the prefent firepolls is drawn, and by the lofty Tigeretzkoi fnow-mountains; and bounded on the N. by the river Thary fh, whofe courfe is accompanied by conliderable high fchift and chalk mountains; towards the W. they lofe themfelves in the north-weftern Steppe. The greateft elevation of thefe mountains is the Simnaia-fopka, or Blue-mountain, which is computed to afcend 28 I 4 Parifian feet above the level of :he fea. At the middle and greateft height, this range confifts of a motlly coarfe granite, compoled of Spatum compeftre, quartz, and blackih mica. In the angle formed by the little Biela with the great Biela, at the foot of the Blue mountain, are found fchitus and chalk-fone, in which latter are fome little cavities, containing lapis calcareus ftalactites. From the little Biela the mountains rife agaia toward the fouth, elevating themfelves to the Revennaiafopka, or Rhapontic fummt, which is furrounded by the ore-mountains, and confifting of fchiffus corneus, mixed fparingly with mica fpathola and crumbs of mica cam. peltris, in which latter are a few fmall hoilows, in which are found ftalactites. Towards the welt, from the Blue mountail, runs the granite-mountain range, in bulk from 15 to 30 verts, interrupted by a multitude of vallies, procceding 100 verts to the Alay, and there uniting with the Alaikoi granite-hills. The northern foot of this graniteridge runs under powerful fchitus and chalk mountains, in and between which the two firft Kolhyvan mines were dug. Another mighty ridge of granite runs from the Blue moun. tain northwards to the river Tharyfh, under-run on the weftern dide by fchiltus and chalk. The component parts of thefe granite ridges are various. In fome parts the feldfpar, in others the quartz, has the afcendant. In one place the component parts are coarfe, and then fo delicate and $f_{0}$ poor in micx, that one might be induced to take the granite proceeding from them for fand-ftone. This track of mountains is uncommonly rich in filver, copper, and zinc ores. Tooke's Ruflia, vel. i.
KOLKI, a town of Poland, in the palatinate of Val. hynia; 22 miles N.N.E. of Lucko.

KOLKOTOVATOI, an ifland in the Cafpian fea, near the W. coaft. N. Iat. $4445^{\prime}$.

KOLLAT, a town of European Turkey, in Bulgaria ; 72 miles E.S.E. of Driltra.
KOLLOW. See Killow.

## K O L

KOLI.UVI, a conntry of Africa, between Arben and Calhna, inhabited by the Tuarick.

KOLKYRITE. Under this name an argillaceous forfil is mentioned in Kariten's Mineralogical Tables, which is found at Stephani-Schacht, near Shemnitz. Dr. Townfon, we fuppofe, is one of the firlt naturalifts who obferved it there. This mineral fubltance, which was firlt confidered as pure alumine, is light, very friable, and fnowwhite; it foils the fingers, and adteres Atrongy to the tongue, which laft property has procured it the name of kollyrite (from kolyrion of Diofcorides and Pliny.) According to Klaproth's analyfis of the Hungarian kollyriie, it contits of

| Alumine | 45 |
| :--- | ---: |
| Silica | 14 |
| Water | 41 |
|  | 100 |

This fubfance, which may be confidered as a purer variety of clay, has alfo been found, by Frieneben, at Weiffenfels, in Thurisgia, in a ltratum of fand-ftone.

According to Bronguiart, it has a tolerable degree of tenacity, and the water it abiorbed is feen 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 feparates into bafaltic prifms, like-ftarch, lofes half of its weight, and becomes very light.

KOLMOGOR, in Geograply, a ditrict of the government of Archangel, fituated on the Dwina.

KOLNO, a town of the duchy of Warfaw; So miles N.E. of Warfaw.-Alfo, a town of Lithuania, in the palatinate of Brzefc ; 88 miles E. of PinR.

KOL $\Theta$, 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 Koftroma, on the river Unza; 116 miles N.E. of Koftroma. N. lat. $5^{8^{\circ}} 5^{\prime \prime}$. E. long. $44^{51} 4^{\prime}$.

KOLOMNA Moseva, a town of Ruffia, and difrict of the government of Mofcow, about five verlts from its junction with the Occa; the fee of a bifhop; $4^{8}$ miles S.E. of Mofcorr. This town is reckoned to contain about 60,000 inhabitants.

KOLONEI, a town of Auftrian 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 Beffarabia; 40 miles W. of Akerman.

KOLSKOI, a town of Ruffia, in the government of Archangel, on the E. fide of the Dwina; 96 miles S.S.E. of Archangel.

KOLTER, one of the Faroer iflands.
KOLTYNIANY, a town of Lithuania, in the palatinate of Wilna; 32 miles $E$. of Wilkomierz.-Alfu, a town of Samogitia; 28 miles N.W. of Rofienne.

KOLLVEREID, a town of Norway; 95 miles N.N.E. of Dronthein.

KOLUMBATZ, a town of European Turkey, in Macedonia; 6 S miles N . of Akrida.

## K O M

KOLZUMM, or Colsum, anciently Clyina, (which ice, ) a town of Egypt, which formerly exifted near the E. coalt of the Red fea, but the fea has long fince left the coatt ; and the town has been deftroyed. From Volney we learn, that the name is fill attached to a hillock of fand, bricks, and flones, on the coalt of the Red fea, about 300 paces to the N. of Suez: whereas D'Arville places it 16 miles S. of Suez.

KOM, or Kiusas, a large and populous city of Perfia, 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 vifited it, the houfes were computed at 15,000 ; and the chief manufactures were white earthen ware, foap, and fword-blades, fabres, and poniards. The walls are lofty, and the town has feven gates. The public fquares are fmall ; the grand bazar crofles the town from one gate to the other; and there are others, which are furnithed with coffee-houfes, and hops of various kinds. Here are a celebrated mofque, and an afylum for debtors, who are protected and fupported. One of the mofques is highly efteemed by the Perfians, on account of the fepulchres of fhah Sefi I. and fhah Abbas II., and alfo that of Sidy Fa. tima, grand-daughter of Mahomet. Thefe tombs are frequented by pilgrims from all parts of Perfia, who refort hither once a year to pay their devotions, and are fupported by a fund affigned to this purpofe. The city is governed by a vifier, and is the refidence of a khan. The adjacent country is fertile in rice and fruit; 150 miles N . of Ifpahan. N. lat. $34^{\circ} 20^{\prime}$. E. long. $51^{\circ} 14^{\prime}$.

KOMA, a town of Lithuania, in the palatinate of Wilna; 42 miles S. of Braflaw.-Alfo, a town of Per!:a, in the province of Khorafan; 227 miles N.N.E. of Herat.

KOMANA, in Botary, an arbitrary name given by Adanfon to $H_{y p e r i c u m ~ m i s n g g y n u m ~ o f ~ o t h e r ~ a u t h o r s, ~ w h i c h ~}^{\text {a }}$ he eftablifhes as a genus, on account of its folitary ftyle. Jufien, however, ailerts that this fuppofed fimile fyle is compofed of five, clofely united. The capfule 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.
Komasis, in Georraphy, a town and abbey of Walachia: is milcs S . of Bucharelt.-Allo, a diftrict of Africa, on the Slave coalt.
KOMANGO, or Amango, one of the Friendly ines; 5 miles E. of Annamooka.

KOMARA, a town of Hindoofan, in Myfore; 65 miles E.N.E. of Harponelly.

KOMA RNA, a town of Auitrian Poland, in Galicia; 24 miles S.S.W. of Lemberg.

KOMBAH, a town of Africa, in the country of Gago ; 170 miles E. of Kaffaba. N. lat. $11^{\circ} 25^{\prime}$. E. long. $2^{\circ} 30^{\circ}$.

K OMBO, a kingdom of Africa, near the Atlantic, $S$. of the Gambia.

KOMBREGUDU, or Combreco-A vou, a kingdom of Africa, fituated on the banks of the river Falemi, about N. lat. $13^{\circ} \mathrm{Io}$. W. long. $10^{\circ}$.

KOMCHA, or Komsina, a decayed torn of Perfia, in the province of Irak, celebrated for its garden3 and dovehoufes, and degraded by the bad character of its inhabit. ants; 39 mile $S$. of I[pahan.

KOMENTIN(, the name of two towns in the ifland of Borneo ; one 45 miles N . and the other 15 miles S.S.W. of Negara.

KOMMANICK, in Ornitleclegy, the German mame for the large-cretted lark, common in many part3 of Germany;, but not knawn in England. See Alavda crigherso

KOMOL, or Comol, in Geograpby, a fet-port town of Nubia, with a fmall but fafe harbour in the Red fea. N. lat. $22^{\circ}+5^{-1}$. E. long. $35^{\circ} 15^{\prime \prime}$.

KOMRI, AL, a mountainous ridge in the interior part of Africa, called alfo the "Mountains of the Moon," terminating 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. $15^{\circ} 45^{\circ}$. E. long. $743^{\circ}$.

KONDOZ, a town of the Greater Bucharia; 60 miles N.W. of Anderab. N. lat. $36^{\circ} 50^{\prime}$. E. long. $67^{\circ} 22^{\prime \prime}$.

KONDRA, a town of Bengal ; 36 miles S.W. of Doefa.

KONDUR, a town of Hindooflan, in Dowlatabad; 100 miles S.E. of Aurungabad. N. lat. $1 S^{\prime} 5 t^{\prime}$. E. long. $77^{\circ} 30^{\prime}$.

KONEVETZ, a fmall ifland of Ruffia, in lake Ladoga; 60 miles N.N.E. of Peterfburg.

KONEZKOI, a town of Ruffia, in the government of Vologda, on the Vim ; 56 miles N.E. of Yarenk.

KONG. See Goxumi.
KONGA, a town of Africa, in the kingdom of Loango.
KONG-FORS, a town of Sweden, in Welt Bothnia; 16 miles N.W. of Unea.

KONGHELL, Koxasitele, or Kong elf, a town of Sweden, in the province of Wett Gothland, on an illand in the Gotha; formerly the capital of Norway, and refidence of kings, but now decayed; 10 miles N of Gotheborg.

KONGSBACKA, a fea-port town of Sweden, in Halland; 13 miles S. of Gotheburg. N. lar. 57 30'. E. long. $125^{6}$.

KONGSBERG, or Conisberg, a town of Norway, celebrated for its filver mines. It flretches on both fides the river Lowe, which, in its courfe through the town, falls in a feries of fmall but picturefque cataracts over the bare rocke. "The crags which border the town are in fome parts naked, in others clothed with wood, and intermixed occafionally with flips of corn and pafture; neverthelefs, the prominent Features of the circumjacent fcenery are ruggednefs and horror. Kongłerg contains about 1000 houfes, including thole of the miners, and 6000 inhabitants. The mines are dittant from the town two miles They were difcovered and opened during the reign of Chrittian IV. Thirty-fix mines, fays Coxe, are now working; the deepelt is $6 \rho_{2}$ feet perpendicular. The matrix of the ore is the faxtm of Linnæus; the filver is extracted according to the ufual procefs, either by fmelting the ore with lead, or by pounding. Pure filver is occationally found in fmall grains, and in finall pieces of different fizes, feldom weighing more than four or five pounds. One mafs has been found which weighed 409 marks, and was worth 3000 rix-dollars ( 6001 .) ; this piece is preferved in the cabinet of curicfities at Copenhagen. Formerly thefe mines produced annually 70,0001 . ; in $1769,79,000 \%$; at prefent, (fays Mr. Coxe) they yield only from 50,000\%. to $54,000 \%$ The expences, it is faid, generally equal, and fometimes exceed the profits. The largelt piece of money fruck at Kongforg is only eight fkillings, or four-pence.

KONGSWINGER, a town of Norway, in the province of Chriftiania; 42 miles N.E. of Chrittiania. N. lat. $60^{\circ}$ 52'. E. long. $128^{\prime}$.

KONG-TCHANG, a city of China, of the firft clafs, in the province of Chen-fi, feated os the ba:ks of the river Hoci, and furrounded by very high mouatains. This city is very populous, and has great trade. A tomb is fhewn liere, which the Chinefe pretend to be that of Fo-hi. The jurifdicion of this city extends over three others of the fe-
cond clals and feven of the third. N. lat. $34^{\wedge} 56^{\prime}$. E. ionge $104^{\prime \prime} 19^{\prime}$.

KONI, a town of Imircta; 30 miles S.W. of Cotatis.

KONJADA, Gros, and Kkin, two towns of Prumia, in the palatinate of Culm; the former 12 miles N.N.W. of Stralburg; and the latter if miles.

KONIAWA, a town of Lithuania, in the palatinate of T'roki: 36 miles N.E. of Grodno.

KONIECPOLE, a town of Poland, in the palatinate of Braclaw; 60 miles S.E. of Braclaw.

KONigingratz, or Kbalowe 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 bifhop, under the archbihop of Prague; 58 miles E. of l'rague. N. lat. $50^{\circ} 10^{\prime}$. E. long. $15^{\circ} 39^{\prime}$.

KONIGSBERG, a large anc beautiful city and fea-port of Pruffia, fituated on the river Pregal, which has feven bridges; founded in 1255, rebuilt in another fituation in 126 t, and well fortified in 1526 , by a rampart about feen Englifh miles in circumference. The rampart inclofes the gardens, the large cattle moat, with fome meadows and fields. The number of houfes is about 3 sioc, and of inhabitants about 60,000 . This city properly confits of three towns that are joined together; viz. Altitadt, Lubenicht, and Kneiphof, and of feveral fuburbs. Altitadt, or the old town, coatains 16 Atrects, and 550 houfes, of which more than 100 are malt-houfes and brewhoufes. It is embellifhed with fix gates, two itrong-built towers, and four bridges. Lobemichit, built about the year 1300 , was formerly called Neuftadt, or the new town. Kneiphof is the moit modern, as it was founded in 1324. This ftands on an ifland formed by the river Pregel, the buildings of which are erected on piles. of 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 confits of 5000 pipes, and was finihed in 1721 . The univerfity was founded, in 154t, by the margrave Albert, and has 3 S profeffors, exclufive of the tutors. The number of itudentsin 1802 was 300. The town-houfe is a fine building, where the magiftrates of the three towns, which were incorporated in ${ }^{1724}$, meet every day. The ftrong citadel, called "Frederickfourg," was built in $1 \sigma_{57} 7$, 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 increafed by the canal or dyke, called "Kupferteifch." In the citadel are a church and an arfenal. Konsforg has always ranked high in commerce and fhipping, and was formerly one of the Hans towns. Its trade is ftill flourithing, by means of the river Pregel, which is here navigable, and from 120 to $2 \neq 0$ feet in breauth. In 1752,493 large fhips, and 373 floats of timber, arrived in this port, belides fmaller veffels. A colony of French Calvinilts excepted, the inhabitants of Konigherg are chiefly Germans of the Lutheran perfuafion. In 1753 , this city was taken by the Ruffians, and in ISO7 by the French. N. lat. $54^{\prime} 43^{\prime}$. E. long. $20^{\circ} 38^{\prime}$.

Konicsbere, or Klinkowice, a town of Silefia, in the principality of Troppau; 13 miles S.E. of Troppau. -N . lat. $49^{\circ} 40^{\prime}$. E. long. $18^{\circ}$ 10.

Konigsberg, a town of Brandenburg, in the New Mark; ${ }^{2}+$ miles N.N.W. of Cuttrim. N. Iat. $53^{2}$ 2! E. long. $13^{\circ} 33^{\prime}$-Alfo, a town of Germany, in the principality of Coburg, fituated on the fide of a mountain, on which is an ancient cafte; 20 miles S.S.W. of Coburg. N. Hit. 50 t'. E. long. $10^{\circ} 45^{\prime}$.

LONICS.

## K O N

## K O N

KONIGSBRONN, a town and convent of Wurtem. berg; 20 miles N.N.E. of Ulm.

KONIGSEGG, a principality of Germany, comprehending Konigfegg-Rothenfels, and Konigfegg-Aulendorf. 'The former poffeftes the county of Rothenfels and lordhip of Stauffers; and the latter the county of Konigfogg, and lordfhip of A ulendorf. The lordhip of Konigfegg confits ouly of an ancient catle, 8 miles N.W. of Ravenfpurg, and a few hamlets.

KONIGSEK, a town of Bohemia, in the circle of Bechin; 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 hifhopric of Bamberg, on the Auffses; 10 miles N.E. of Bambery

KONIGSFELDEN, a bailiwick of Switzerland, in the canton of Berne, fituated between the town of Bruck and the river Reufs. The monaftery of this place, belonging to the monks of St. Francis and the nuns of St. Claire, founded in comnemoration 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 houfe of Auftria, and other nobility.

KONIGSHEIM, a town of Germany, in the county of Wertheim; $1+$ miles $S$. of Wertheim.

KONIGSHOF, a town of Bohemia, in the circle of Konigingratz; ${ }^{\text {I }}+$ 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 Wurzhurg. N. lat. $50^{\prime} 12^{\prime}$. E. long. $10^{\prime} 27^{\prime}$.

KONIGSLUTTER, a town of Weltphalia, in the principality of Wolfenbuttel, fituated on a ftream, called the "Lutter;" 12 miles N.E. of Wolfenbuttel. N. lat. $52^{\circ}$ $7^{\prime}$. E. long. $10^{\circ} 5^{\prime \prime}$.

KONIGSTEIN, a town of Germany, and capital of a county of the fame name, with a caftle built on a rock; If 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 Chrittiania, built for the defence of Frederickftadt.-Alfo, a town of Saxony, in the margraviate of Meiffen, fituated on the left fide of the Elbe, with manufactures of linen and woollen. It is fituated on a mountain, and rendered, as it was fuppofed, impregnable. It is acceffible only in one place; and fupplied with water from a very deep Spring in the mountain; 16 miles S.E. of Drefden.

KONIGSTUHL, i.e. King's Cbair, a head-land on the N.E. coaft of the ifland of Ufedom, in the Baltic. N. lat. $5+^{\circ} 37^{\prime}$. E. long. $13^{\circ} 58^{\prime}$.

KONIGSWALD, a town of Bohemia, in the circle of Leeitmeritz; 13 miles N.N.W. of Leitmeritz.

KONIGSVALDE, a town of Brandenburg, in the New Mark; 22 miles E. of Cuftrin. N. lat. $52^{\circ} 25^{\prime \prime}$. E. long. $15^{\circ} 26^{\prime}$.

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. No lat. $52^{\circ} 6^{\prime}$. E. long. $18^{\prime} 15^{\prime \prime}$.

KONINCK, or Koning, David de, in Biograpby, a painter of birds, animals, and ftill life. He acquired the principles and executive powers of the art under the tuition of John Fytt ; whofe jealoufy is faid to have been excited by the praifes beftowed upon his difciple.

On this account De Koninck left him, and travelled to

Italy, from Antwerp, where he was born. He arrised in Rome in 1668, having refufed engagements to paint upon his journey, oftered 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 greatell among the nobles there; and receiving commiflions from foreign kings and fovereign princes.

His works and manner refemble thofe of Fytt, with whom, on his return to Antwerp, he was a conftant competitor. But he is not fo perfect, his effects are not fo brilliant, nor is his touch fo frec. He died in 1687: his age is not known.

Koninck, or Koning, Philip de, a portrait painter, who, having ftudied in the fchool of Rembrandt, proceeded in his courfe with great fuccefs, obtaining in early life a good reputation, and maiutaining it in the great number of pictures which he produced. His ftyle is, neceffarily, almoft an imitation of that of his matter. It is too fafcinating for a man that had once obtained poffeffion of the court to quit it eafily. His likenefles were efteemed, and he had great choice and varicty of attitude. He is among the number of thofe whofe portraits are honoured with a place in the gallery at Florence. He died in 1689, at the advanced age of 70 .

KONINGH, Solomos, a portrait and hiftoric painter of the Flemifh fchool. He was the difciple - of Vernando and Moojart, and rofe to a certain degee of eminence, but not among the firtt clafs.

KONI'T, or Cosir. Profefors Retzius and Schumacher deficribe under this name a calcareo-liliceous rock of a whitifh-grey, or white colour, found in Norway, Iceland, \&c. It has only been feen in detached pieces, moft of which bear the marks of being rolled. It is faintly glimmering; in fome pieces its lultre approaches to the vitreous, and even the unctuous luftre. Its fracture is uneven, flat conchoidal, fometimes obfoletely foliated, fometimes even and £plintery, not unlike that of fome varieties of horn-ftorie. The fragments are indeterminately angular. The varieties having an unctuous luftre, and obfoletely foliated fracture, are tranilucent at the edges. Its hardnefs is far fuperior to that of common compact limeftone, and it even ftrikes fire with the fteel. It is not eafily frangible. Specific gravity 2.8. When reduced to powder, and thrown on burning charcoal, it emits a greenifh light, but it is not phofphorefcent from friction. It effervefces with diluted nitric acid, and is partly diffolved in it : the remainder is filiceous earth.
The proportion of the calcarcous and filiceous earth, of which the konit confifts, is not yet afcertained.

Upon the whole, we know too little of this mineral fubftance to affign it its proper place in the fyftem. Haily refers it, with a query, to his quarz-acathe calcifere, which is the filicicalce of Sauffure. See Haîy and Brongn. vol. i. P. 326.

The fpecimens of conite defcribed by Schumacher were from Iceland; the one which we had an opportunity of examining came from Kenrudvern, near Dramen, in Norway:

Among the many new names which a modern writer on rocks is defirous of palming upon the world, we have alfo that of konite, which, without mentioning that it has been previounly given to a different rock, he applies to the variety of compact lime-ttone, called freefone.

KONITZ, in Geograply, a town of Germany, in the county of Schwart\%burg-Rudolftadt; where are mines of filver and copper; 6 miles E.S.E. of Rudolitadt.-Alfo, a baili.
a bailiwick of Sivitzerland, 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 Banbouk, 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. $12^{\circ} 10^{\prime}$ to $13^{\circ} 10^{\prime}$. W. long. $9^{\circ}$ to $10^{\prime \prime}$.

KONN, a town on the N. coalt of the ine of Timer. S. lat. $8^{\circ} 18^{\prime}$. E. long. $126^{\circ} 16^{\prime}$.

KONNARUS, a name given by Agathocles in Athenxus to a plant of Arabia, which the defcription fhews to be the fame with the faduc of the later Arabians, the fruit of which is calied nabac or nabech. See Consiarus.

This tree is the lotus of Diofcorides, and the acanthus of Virgil, whofe 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 phyficians, 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 ufes. They were altringents, and ufed both externally in poultices and fomentations, and internally in decoctions aaid other forms where altringents were required.

KONNO, in Geograpby, a town of Japan, in the ifland of Niphon; 70 miles N.W. of Meaco.
KONOE, one of the Faroer iflands; 2 miles N. of Bardoe.

KONOS, a town of Afiatic Turkey, in Natolia; 20 miles N.E. of Degnizlu.
KONOTOP, a town of Ruffia, and diftrict of the government of Novogorod Sieverfkoi, feated on a rivulet falling into the Seim. N. lat. $51^{\circ} 5^{\prime}$. E. long. $33^{\circ} 34^{\prime \prime}$.

KONSAN, a town of Africa, in the country of Sierra Leone. N. lat. $10^{\circ} 44^{\prime}$. W. long. $12^{\circ} 15^{\prime}$.

KONSBERG. Sce Kongsberg.
KONSTANTINGRAD, a town of Ruffia, in the government of Ekaterinoflaf, on the borders of Turkey. N. lat. $49^{\circ} 15^{\prime}$. E. long. $34^{\circ} 52^{\prime}$.

KONTOP, a town of Silefia, in the principality of Glogav; 15 miles E . of Grunzberg.

KOOCH , a town of Hindooftan, in the country of Agra; 60 miles E. of Gwalior. N. lat. $26^{\circ}$. E. long. $399^{\circ} 35^{\prime}$.

KOOHANGAN, a fmall illand in the Sooloo Archipelago. N. lat. $63^{\prime}$. E. long. $121^{\circ} 18^{\prime}$.

KOOJAR, a town of Africa, in the country of Woolli; 54 miles E. of Medina.

KOOLASSLAH, a fmall inand in the Sooloo Archipelaro. N. lat. $6^{\circ} 22^{\prime}$. E. long, $120^{\circ} 38^{\prime}$.
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; 330 miles S.W. of Sego.

KOOLUCONDA, a town of Hindooftan, in Myfore; 33 miles N.E. of Nagamungalum.

KOOMAR, a town of Hindooftan, in Bahar; 13 miles E N.E. of Bahar.

KOOMBOO, a town of Africa, in the kingdom of Tenda. N. lat. $12^{\circ} 42^{\prime}$. W. long. $12^{\circ}$.

KOOND, a town of Hindooftan, in Bahar; 17 miles N. of Saferam.

KOONDA, a circar of Bengal, bounded on the N.E. by Balar, on the E. by Ramgur, on the-S. by Toree, and on
the W. by Palamow ; about 25 miles long, and 16 broal: the capital is Koonda; 92 miks S. of Patua. N. lat. ${ }^{2} 4^{\prime}$ $11^{\prime}$. E. long. $84^{\prime} 4^{\prime \prime}$.

KOONI, a town of Japan, in the ifland 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 Kafion. N. lat. $14^{2} 36$. W. long. $8^{2} 5^{\prime \prime}$.

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.
KOONTI, in Hindoo Mytbological Hifory, is the mother of three of the five Pandus, whole wars are related in the Mababarat; which fee. See alfo Pandu.

KOORBAH, in Geography, a town of Hindooftan, 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, Theodone, in Biography, defcended from a refpectable family at Auntterdam, was born in the year 1522. He was brought up to the profeffion 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 fupport 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-malters of that city. In this character he was frequently fent to the prince of Orange, governor of Holland, with whom, and with other perfons of confequence, he confulted refpecting the means of maintaining the liberty of his country. Through him, the famous petition of the Confederates was prefented to the ducheis of Parma in 1566. He was alfo the author of the firt manifefto which the prince of Orange publifhed in his camp, intitled "An Advertifement to the Inhabitants of the Low Countries for the Law, the King, and for the Flock." The part which he took in politics excited againf him the refentment of the government of Bruffels, by whofe directions he was fent to the Hague, where he fuffered a long and cruel imprifonment. He at length obtained a hearing, and, fuccefsfully vindicating himfelf, he was fet at liberty; but he found it neceffary to withdraw from the power of his enemies, and went to the county of Cleves, where he again maintained himfelf by his profeffion as an engraver. When, in the year 1572, the States of Holland had taken the refolution to affert their liberty againll the tyranny of the Spaniards, Kooornhert returned to his own country, and was appointed fecretary to the ftates of the province: finding, however, the people prejudiced againft him, for avowedly vindicating the principles of toleration in refpett to the Roman Catholics, he refigned his poft, 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 fhould be pleafed to raife reformers, in all refpects like the apoitles. His plan being, that only the text of God's words fhould be read to the people without comment or explication, and without prefcribing any commandment, or prohibition, but at molt by way of advice. In 1578 , he returned to Holland, where

## K 00

the engaged in a controverfy with two mininters of Delft at Leyden, concerning the characteriftics of the true church. He foon proved too powerful for his antagonifts, who charged him with the defign of making a fchifm among the poople, and who obtained an order that he fhould not be pernitted to publifh any thing in print conserning the difputc. He was alfo forbidden to trouble the minilers of Delft with letters, or otherwife, upon pain of the utmolt Feverity. Being thus effectually filenced, the minifters in different towns of Holland directed their attacks agaiuft him from the pulpit, reprefenting him, by name, as a heretic, an impious fellow, and a free-thinker. He petitioned to be lieard in his own defence, but was refufed, and ordered to comport himfelf peaceably and dutifully, in which cafe he fhould be fecure from danger. This he regarded as the introduction of a new inquifition, or force upon confeiences in Holland. Koouhert was ever, and at all times, the confiltent friend to liberty of confcience, and the firm opponent to whatever could abridge the right of free difcuffion; for his zeal and intrepidity in this caufe, he was contiuually haraffed by bigots and the government of the country: he had, however, a mind that could not be fulsdued, and he made ufe of his pen, in various tracts, to vindicate the principles which he efpoufed. Among his other literary antagonifts was the celebrated Lipfius, who, in a treatife on civil goverument, maintained that only one kind .of religion fhould be tolerated in one Itate, and that perifons who held different opinions, and who endeavoured to bring others over to their party, ought to be punined. "Mercy," fays the profeffor, "has no place here, caullics and amputations muft be made ufe of, it being better that one limb Thould perifl than the whole body.". In anfwer to thefe perfecuting tenets, Kooruhert publihed his treatife, intitled .6 The Procefs, or Trial of Heretic-killing, and Force upon Confcience," which he dedicated to the magiftrater of Leyden. Thefe, however, to gratify Lipfus, 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 6Sth year of his age. Grotius expreffed a high efteem for his character, and an ardent hope that his judicious labours would be ufeful to his country and the world. He is claffed by Pontanus among the learned men of the city of Amiterdam, and as one warmly attached to the interelts of piety and truth. Hadrian Janius, in his defcription of Holland, calls him a man of divine underitanding: he adds, that Fortune was his enemy, and he thinks that he fuffered himfelf to be nade ufe of by God " as a voluntary demolifler of the murthering prifon of confciences." Àn edition of all his works was publithed in $\mathbf{1} 530$, in three volumes folio. Byyle. Gen. Biog.

KOOROO, in Geography, a town of Africh, in the country of Foota. N. lat. 10' 8. W. long. 10' $20^{\prime}$.

KOORTA, a town of Bengal; 35 miles W. of Nagore.
KOORUMBAH, a town of Hindooltan, in Dowlatabad; to miles E. of Poorunder.

KOORWEY, a town of Hindonftan, in the route from Agra to Oojein, connected with another town called "Bo. rafn," on the banks of the Betwa. Thefe towns are of confiderable fize, and at the former is a large fonc-fort. They are inh.bited by Patans, who fetiled here about 100 years ago, in the time of Aurungzebe. The revenue of the prefent Nawab is faid 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 ifland of Niphon; 45 miles S.E. of Jetfen. - Alfo, a town in the ifland of Xmo: \& 5 miles E S.E. of Udo.

## K O R

KOOSAMBO, a town on the N. coaft of the illand of Bali. S. lat. $8^{\circ} 24^{\prime}$. E. long. $114^{\circ} 46^{\prime}$.

KOOSHAUB, a town of Hindooftar, in the fubah of Lahore, on the Behut; 95 miles W. of Lahore. N. lat. $3^{1^{\circ}} 43^{-1}$. E. long. $71^{\circ} 5^{\prime}$.

KOOSHINJEE, or Pusheng, a tom of Candahar; 80 miles S.E. of Candahar. N. lat. $32^{3} 14^{\prime}$. E. long. $66^{\circ} 53^{\circ}$.

KOOTACONDA, a town of Africa, in Woolli; 16 mlies W.S.W. of Medina.

KOOTAKOO, a town of Africa, in Fooladoo. N. lat. $13^{\circ} 30^{\circ}$. W. long. $70^{\circ}$.

KOOTY, a town of Hindooftan, in Bahar; $\varepsilon_{4}$ miles S.S.W. of Patna. N. lat. $24^{\circ} 23^{\prime}$. E. long. $84^{\prime} 43^{\prime}$.

KOPACZOW, a town of Poland, in the palatinate of Braclaw; $7^{2}$ 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 Dageflan; 45 miles N.W. of Derbend.

KOPIGOWKA, a town of Poland, in the palatinate of Braclaw, on the Bog; 6 miles S.W. of Braclaw.

KOPIL, a town of Lithuania, in the palatinate of Ncvogrodek; 45 miles S.E. of Novogrodels.

KOPIN, a town of Poland, in Podolia; 28 miles N. of Kaminiec.
KOPOLET, a fea-port of the principality of Guriel, on the Black fea. N. lat. $41^{\circ} 35^{\prime}$. E. long. $41^{\circ} 22^{\prime}$.

KOPORE, a town of Ruflia, in the gulf of Finland; 32 miles W. of Peterfburg.

KOPYL, a town of Lithuania, in Novogrodek; 16. miles N.W. of Sluck.
KOPYSS, a town of Ruffia, and diftrict of the government of Mohilef, fituated on the Dnieper.

KORA, a town of Ruffia, in the government of Irkutik, on the Ilga; 36 miles N.W. of Vercholenfk.-Alfo, a town: of Africa, in the kingdom of Jemarrow.

KORACHORYNCHUS Indicus, in Ichthyology, the name of a fea-filh of the Eaft Indies, called by the Dutch the 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 wholefome and well-tafted fifh. Ray.

KORALLEN-ERTZ, i. e. Coral-Ort, a name given by the miners of Idria, in Friaul, to a variety of bituminous fhale, with tuberculated fhining furface, and containing much hepatic and fome other mercurial ores. See Mercury.

Koramo, or Curamo, in Geggraply, a town of Africa, in the kingdom of Benin.

Koran. See Alcoran.
KORASAN, or Chorasan, a province of Perfia, terminating it in the NE. is bounded on the N. by Charafm and the country of the Ufbeck Tartars, on the N.E. by the Gihon or Oxus, on the E.by Bucharia and Candahar, on the S. by Segeftan 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 Segeltan. The principal towns are Herat, Kenef, Talekan, Merwah, Zaweh, \&c.

KORBETH,

## K O R

KORBETH, a town of Perfia, in Irak; 126 miles $S$. of Hamadan.

KORBI-LA-HOU, a town of Africa, on the Ivory Coait.

KORBOLE, a town of Sweden, in Helfingland; 53 miles W.N.IV. of Hudwick fwall.

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 enclufed 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 confilts, except in fome few points, which are covered with fea-bottom materials, for the molt part of clay, fchitt, marl-wacke, lapis corneus, and quartz, here and there underlaid by granite and porphyry. Although the height of thefe mountains, between the origin of the Korbolikha and the little Biela, is confiderable, yet the mountain on the great Bied, fuch as the Revennaia-Sopka, and the Karaulnaia-Sopka, remarkably dittinguifh themfelves on aceount of their fingle fummits. The mineral of this mountain confifts of a fchiftofe marlwacke and horn-fchit, in which here and there hornblende and crumbs of feldfpar are to be met with. The chain of mountains, in conjunction with the north-weftern and foutheaftern rivers of the Revannaia-Sopka, the Blue mountain, and the Kolhyvan granite mountain, and in the fouth-eatt, affer they have encompaffed the kliut fheffkoi majak, terminate at the foot of high granitic fnow mountains. The Revennaia-Sopka is the higheft point of thefe mountains, being eftimated at 2213 Parifian feet higher than the Slangenberg; it is faid not to confift of granite, but of firm horn-fchiftus. In this Korbolikinfkoi tract of mountains, the riohelt of all the Altay mine-works are carried on. See Kolivan and Altaf.

KORCHELLEN, a town of the duchy of Warfaw; 52 miles N. of Warfaw.
KORCHINO, a town of Ruffia, in the government of Nizegorod; 80 miles S.S.W. of Niznei Novgorod.

KORCK, a town of Norway, in the diocefe of Drontheim ; nine miles S.W. of Romidal.

KORCZANY, a town of Samogitia; 24 miles IW.N.W. of Miedniki.

KORCZICK, a town of Poland, in Volhynia; $1 ;$ miles N.E of Oftrog.

KORDEDEARDA, a town of European Turkey, in Walachia; 8o miles N.W. of Bucharelt. N. lat. $45^{\circ} 15^{\prime}$. E. long. $24 \quad 24^{\prime}$.

IORRDOFAN, a country of Africa, between Dar-Fûr and Sennaar, fubject to the fultan of Dar-Futr, by whom it was conquered in 1795. Mr. Brown informs us in his "Travels in Africa, Egypt, and Syria," that an inveterate animofity fubfifts between the natives of Dar-Fûr and thofe of Kordofan; infomuch that wars have been almoft continual between the two countries, as far as the memories of individuals extend. One of the caufes of this holtility appears to be their relative pofition; the latter lying in the road between Dar-Fûr and Sennaar, which is confidered as the moft practicable, though not the direct communication between the former and Mecca. Nor can caravans pafs from Suakem to Fûr, unlefs by the permiffion 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 juftice. 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 ufurped by VoL XX.

Fur, in confequence of the weaknefs and diffentions of the go. vernment at Sennaar. The people of Kordofan are reported to be not only indifferent to the ainours of their daughters and filters, but even attached to their feducers. The father ur brother will even draw the fiword againf him who offends the "Refik," or companion of his daughter or filter. Kordofan extends from N. lat. $12^{\circ}$ to $1+40^{\prime}$, and from L:. long. $29^{\circ} 25^{\prime}$ to $32^{\circ} 30^{\prime}$ 。
KORDYN, a town of Poland, in the palatinate of Kicy ; 44 miles W.S.W. of Kier.

KOREPSKOL, a cape on the N. coaft of Ruflia, in the North fea; 124 miles N.W. of Archangel.

KORIAKI, an oltrog of Kamfclatka, on the Awatika; 27 miles W. of Awattka.

KORIAKS, the denomination of a people who inhabit the northern parts of the Penthinikui gulf, and of the peninfula of Kamtichatka, near and amony the Kamtichadales, Tungufes, Lamutes, and Tfchukthes. 'They are fuppofed to derive their name from the word $\mathrm{K}^{\prime}$ ra, which is their language fignities a rein-deer. The great likenefs they bear to many illanders of the Eallern ocean, and to the neareit Americars beyond the ftrait, afford reafon for fuppoling that they, and alfo the Tfchukthes, are the primitive poifeffors of thefe coalts; who cirther came over frum the continent of America, or were feparated from it by the probable infractions of the fea, and the confequent divilion of the two quarters of the world. With refpect to number they are about equal to the Kamtfchadeles, who, according to the enumeration of 1760 , amounted to about 3000 males, though it is not unreafonable to conclude, that their number is in reality three or four times larger. According to Lefleps the Koriaks are fuppofed not to exceed 2000 famlies. Theie people are divided into two claffes, viz. the wandering and the fixed Koriaks. The latter iuhabit the northera part of the itthmus of Kamtfchatka, and the whole conlt of the eallern ocean, from thence to the Anadyr. The country of the former ftretches along the N.E of the fea of Ochotik, to the river Penfkina, and weftward towards the river Kovyma. The fixed Koriaks have a ftrong refemblance to the Kamtfchadales; and, like them, depend altogether on fishing for fubfiltence. Their drefs and habitations are of the lame kind. They are tributary to the Ruffians, and under the diltrick of the Ingiga. The wandering Koriaks occupy themfelves entirely in breeding and pafturing deer, of which they are faid to poffers immenfe numbers; fo that it is not unufual for a fingle chief to have a herd of 4 or 5000. They defpife fifh, and live altogether on deer. They have no balaigans, and their only habitations are like the Kamtfchadale jourts, with this difference, that they are covered with raw deer-kins in winter, and tanned ones in fummer. Their gedges are drawn by deer, and never by dogs; which, like the latter, are always fpayed, in order to be trained to this bufinefs. The draft deer palture in common with the others; and when they are wanted, the herdfman makes ule of a certain cry, which they inftantly obey, by coming out of the herd. Captain King was informed by the prielt of Paratounca, that the two nations of the Koriaks and the Tfchutiki fpeak different dialects of the fame language; and that it does not bear the lealt refemblance to the Kamtichadale. According to the account of Leffeps, the manners of the fixed Koriaks are a compolition of duplicity, mitruft, and avarice; and they are faid to have all the vices of the northern nations of Afia, without the virtues. Robbers by nature, they are fufpicious, cruel, and iscapable either of pity or benevolence. Perfidious and favage in their difpolition, they are in a flate of M
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perpetual hoftility with their neighbours; and hence every individual is led to cherifh a ferocious fpirit. Hence alfo they acquire an inflexible courage, and glory in a contempt of life. Supcritition alfo impofes upon them a law which obliges them to conquer or todie. The vicinity of the Ruffian fettlements has hitherto produced no change in the mode of life of the refident Koriaks. Their commercial intercourfe with the Ruffians merely feem to render them more avaricious and more addicted to plunder; and they refit every attempt of civilization. The wandering Korinks were for a long time more intractable. Their regular occupation is hunting and filhing, and when the feafon dues not allow of their purfuing it, they fleep and fmoke, and indulge themfelves in drunkennefs. Their paffion for flrong liquors has led them to inrent a drink, equally powerful with brandy, which is fearce and dear, and which they extract from a red mufhroom, known in Ruffia as a ftrong poifon, under the name of "moukhamorr." With a preparation of this they entertain their guefts for one, two, or three days, till their fock is exhaulted. 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 ttature, ill fhape, and the colour of their fkin. Others of them have the fame characteriftic outlines with thofe of the Kamtfchadales. Among the women particularly, there are very few who have not fank eyes, flat nofes, and prominent cheeks: the men are almof wholly deftitute of beards, and have flort hair. The women carry their children in a fort of arched balket, in which the infant is placed in a fitting pofture, and fheliered from the weather. When a Koriak dies, his relations aflemble, crect a funeral pile, and place a portion of the wealth of the deceafed, and a ftock of provifioss, confifting of rein-deer, fifh, brandy, and whatever elfe they conceive will be wanted by him for his journey, and prevent his Itarving in the other world. The body is exhibited in his beit 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 ahes. They wear no mourning, as they feel only the regret of a temporary abfence, and not of an eternal feparation; and the funcral pomp generally terminates in the intemperate ufe of liquor and tobacco. Death is regarded by them as a paffage to another life, in which other joys are referved for them. They acknowledge a fupreme being, the creator of all things, whofe refidence is the fun; but they neither fear nor worfhip him. Goodnefs, they'fay, is his effence; and it is impoffible, as all good proceeds from him, that he frould do any injury. The principie of evil they coufider as a malignant ipirit, who divides with the fovereign good being the empire of nature. To this evil fpirit they pay refpect, and perform their devotion, in order to pacify his wrath, and to avert the calamities which he iuflicts. Accordingly they offer him, as expitary facrifices, various animals that have begun to exift: rein deer, dogs, the firft fruits of their hunting and fifhing, and the moft valuable of their poffelions. Stipplications and thankfgiving conftitute their devotional exercifes. His votaries have no temple nor fanctury. This imaginary god is worfhipped 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 drunkennefs in their jourts: for, ftrange as it may feem, drunkennefs is among thefe people a religious practice, and the bafis of all theii folemmities. See Kamtsmatka and Tschutsky.

KORKAN, or Jorjan, a flat diftrict on the ealt fide of the Cafpian fea, fubject to great heat, frequent inundations, and an unwholefome air; but the foil is fertile, and produces dates, wine, cotton, filk, and corn.

KORKINA, a town of Rufia, in the government of Tobolik; 20 miles S.W. of Ifchim.

KORKUB, a town of Perfia, in Chufiltan; 30 miles W.S.W. of Jondifabur.

KORMAND, a town of Hungary, on the Raab; 52 miles S. of Vienna.

KORMESHTY, mountains of Ircland, in the count $\boldsymbol{y}$ of Mayo; 17 miles N.W. of Caflebar.

KORMUDSEH, a town of Perfia, in the Farfiftan; 100 mites S.TV. of Schiras. N. lat. $28^{\prime} 37^{\prime}$.
KORNBURG, a town of Stiria, on the Raab; 24 miles S.E. of Cratz.

KORNDYCK, a fmall ifland of Holland, in the Meufe, with a town of the fame name; about 7 miles W.N.W. of Willemftadt.

KORN-NEUBURG, a town of Auftria, on the north fide of the Danube, oppofite to Clofter-Neuburg; 8 miles N. of Viemna. N. lat. $48^{\circ} 19^{\prime}$. E. long. $16^{\prime \prime} 40^{\prime}$.

KORNOCK, an ifland near the weft coaft of Weft Greenland. N. lat. $6 \mathrm{I}^{\circ} 38^{\prime}$. V. long. $47^{\circ} 40^{\prime}$.

KOROL, a town of Hindooftan, in Guzerat; 20 miles E. of Baroach.

KOROLOVETZ, one of the eleven diftricts of the government of Novogorod Severkoi in Ruffia, fituated on a rivulet falling into the Defna; 40 miles S.E. of Novogorod Severfkoi.
KOROMANTEES, a general appellation given in the Britifl. Welt Indies to mot of the negroes purcliafed on the Gold Coalt, from Koromantyn, one of the carliell of ous factories on this part of the African coaft; which is now become an infignificant village, or factory, in poffeffion of the Dutch. It is fituated in the kingdom of Fantyn, two miles from the fort of Anamaboe. The Koromantyn or Gold Coaft negroes are diftinguifhed from all others by firmnefs both of body and mind, a ferocioufnefs of difpofition, and, at the fame time, activity, courage, and a kind of fubbornnefs, which prompts them to enterprifes of difficulty and danger, and enables them to meet death, in its molt dreadful forms, with fortitude or indifference. Many of them had been flaves in Africa, and others had been engaged in perpetual holtility with one another; and they were, therefore, prepared for endeavouring, even by means the moft defperate, to regain the freedom of which they had been deprived. Accordingly they have been difpofed to excite or to encourage rebellion. This was the cafe in Jamaica in the year 1760 . The firmnefs, and intrepidity, and contempt of death, which are dilting ififhable in adults, brought from the Gold Coant, are vifible even in boys at the age of ten years. Edw. W. Indies, vol. ii.

KOROP, a town of Ruffia, and diftrict of the government of Nuvogorod Severkoi, feated on the left hhore of the Defna.
KOROROFAH, a country of Africa, fituated ealt of Wangara
KOROTCHA, a town of Ruffia, and diftrict of the government of Kurfk, feated on a rivulet of the fame name, that falls into the Donetz; 44 miles E.S.E. of Kurfk.

KOROTOIAN, a town of Ruffia, and diftrict of the government of Voronetz, fituated on the Don; 20 miles S . of Voronetz.

KOROVA, a fmall ifland in the fea of Ochotk; 240 miles E. of Ochotk. N. lat. $5920^{\circ}$. E. long. $150^{\circ} 40^{\circ}$.

KORPIKYLA, a town of Sweden, in Welt Bothnia; If miles N.N.W. of Tornea.

KORPILAX, a town of Sweden, in Tavafland; 68 miles N.NE. of Tavalfhus.

KORPO, an inand of Sweden, in the Baltic, near the 2

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fouth-we? coaft of Finland, of an oral form, about 20 miles in circuit; having on the north-welt coalt a town of the fame name, and Ceveral villages. N. lat. $60^{\prime \prime} 9^{\prime}$. E. long. $21^{\circ} 25^{\circ}$ 。

KORPONA, a town of IIungary; 28 miles N.N.E. of Grau.

KORS, a town of Perfia, in the province of Adirbeitzan ; 80 miles S.SE. of Erivar.

KORSA, a :own of Hindoottan, in the fubah of Dclhi; 26 miles W. of Delhi.
KORSAKI, or Corsac, in Zoology. See Fox.
KORSEC, in Geography', a town of Poland, i: Volhynia; 32 miles E. of Lucko.

KORSENIEC, a town of Lithuania; 60 miles E. of TVilna.

KORSEWALAN, a fmall ifland in the Eaft Indian rea. S. lat. $7^{\circ} 39^{\prime}$. E. long. $128^{\circ} 40^{\prime}$ :

KORSNAS, a town of Sweden, in Eaft Bothnia; 25 miles S.S.E. of Wafa.

KORSOER, a fortified town of Denmark, lying at the mouth of a fmall bay, forming a well-protected harbour, on the Great Belt. It has a few good houfes, which belong to merchants, \&ec. 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 fifhermen and feafaring people. The breadth of the Great Belt between Forfoer 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. of Midniki.
KORTCHERA, or Kertchef, a town of Ruffia, and difrict of the government of Tver, on the Volga.

KORTHOLT, Christian; in Biography, a native of Holttein, was born at Burg, in the inle of Femeren, in the jear 1633. Having acquired the rudiments of learning, he was, at the age of lixteen, fent to Slefwick, where he purfued his ftudies tro years; and from this place he went to the college of Stettin, made great proficiency in learning, and obtained high applaufe by the able manner in which he maintained two thefes. He continued his literary ftudies at Roftock, to which place he removed in 1652 ; and afterwards he delivered lectures, in his own apartments, on logic, metaphyfics, and Hebrew. In 1656 he took his degree of doctor in philofophy, after which he went to fludy at the uniserfity of Jena, where he diftinguifhed himfelf by his academical acts, and by his private lectures on philofophy, the oriental languages, and divinity. In 1661 he went to the court of Schwerin, at the invitation of the duke of Mecklenburg, in whofe prefence, as well as in the prefence of a great number of the nobility, he difputed two days on theological topics with two learned Roman Catholics, one an Aultrian, and the other a Pole: and on a fimilar invitation he difputed, in the following year, with a Roman Catholic of Paris. On thefe occafions he acquired univerfal applaufe from the auditors. In 1662 he was nominated to the chair of the Greek profeffor at Roftock, and took his degree of doctor of divinity. From thence he removed to Kiel, became fecond profefor of divinity, and afterwards vice-chancellor and firt divinity profeffor. In 1680 the duke of Holttein beftowed upon him the profeflorfhip of ecclefiaftical 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 pofts with great ability and perfeverance. He died in the year 1694 , at the age of fixty-one, much refpected and honoured by his friends

## KOS

and the univerfity of Kicl. 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 alfo in l3ayle, to which the reader is referred for further information.

KORTISJARVE, in Geography, a town of Sweden; in the province of Wafa; 43 miles E N.E. of Wafa

KORTRIA:ET, a polt-town of America, in Delaware county, New York, in which are 1513 inhabitants.

KORTSCHIN, a town of Poland, in the palatinate of Sand mirz; 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. if Dongolu.

KORYSOWA, a town of Polard, in the palatinate of the Kier ; 32 miles S.W. of Kiev.

KORZECZOW, a town of Poland, in the palatinate of Sandomirz; $2+$ miles S. of Sandomirz.

KORZELLAN, a town of the duchy of Warfaw ; 70 miles N.IV. of Warfaw.

KORZYMECK, a town of Poland, in the palatinate of Lublin; $3^{S}$ miles N N.E. of Lublin.

KOS, in the $J_{c}$ ruifb Arriquitics, a meafure 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 pafloser.

KOSA, in Gsorraphy, a town of Ruflia, in the government of Perm; $4 \delta$ miles W. of Solikam fk .

KOSARIA, in Botany, Fork. EEgyptiaco-Arab. ${ }^{164}{ }_{4}$ Ic. t. 20. A lactefcent feetid very fingular plant, found by Forkall in the coffee plantations at Hadie. Juffieu, on the authority of Niebahr, refers it to Dorfenia, and it is $D$. radiata of Willdenow, Sp. Pl. v. i. 683 . Kofar is its Arabic name. The flem is thick and flefhy, like that of fome African Eupborbic, bearing on the upper part feveral oblong, jagged, ftalked learois. The flowers have a radiated common receptacle, and grow on talke, from tubercles at the fides of the fem. 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 Perfia, in the province of Kerman; 60 miles S.W. of Sirjian.
KOSCLOW, a town of Autrian 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 Siberiant Doc.
KOSHAB, in Geography, a town of Curdiftan; 20 miles S. of Van.

KOSHANIA, a town of Great Bucharia; 30 miles W. of Samarcand.
KOSHANIKUT, a town of Perfia, in the province of Segeftan; 110 miles N.E. of Boft.
KOSKANUADEGO, a river of Pennfylvania, which runs into the Allegany, N. lat. $41^{\circ} 52^{\prime}$. W. long. $79^{\circ} 20^{\prime \prime}$.
KOSKIN, a town of Norwegian Lapland; 108 miles S.W. of Pofanger.

KOSKIS, a town of Sweden, in Tavafland; 22 milez E. of Tavalthus.-Alfo, 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 ; IS miles W.N.W. of Chamir.
KOSLOF, a town of Ruflia, and diftrit of the governN 2

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ment of Tanbof, on the rivulet Ufnoi Voronetz; 48 miles N.W. of T'anbof.

KOSOLUI, a town of European Turkey, in Beffarabia; 28 miles N.N.W. of Bender.

KOSREUKEN, a town of Natolia; 16 miles N.W. of Kiutaja.

KOSSAR, a town of Yoland, 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.IV. of Novogrodek.

KOST, a town of Great Bucharia; 70 miles S.S.E. of Balk

KOSTEL, a town of Moravia, in the circle of Brunn, anciently the fee of a bifhop; 25 miles S. of Brunn. N. lat. $48^{\circ} 50^{\prime}$. E. long. $6^{\prime} 47^{\prime}$.

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 niles N.N.E. of Prague. N. lat. $50^{\prime} 12^{\prime}$. E. long. $14^{\circ}$ $45^{\prime}$. - 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. $50^{\prime} 59^{\prime}$. E. long. $16^{\circ} 4^{\circ}$.

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; is miles $E$. of Semendria.

KOSTOLNA, a town and caltle of Hungary; 24 miles N.W. of Topoltzan.

KOSTROMA, a government, town, and river of Ruffia; the government, formerly included in that of Mofcow, is about 210 miles from E. to W., and 150 from N. to S. The capital, Koftroma, with its diltrict, is fituated near the Volga, and furrounded with a rampart. N. lat. $57^{\circ} 30^{\prime}$. E. long. $41^{\circ} 14^{\prime}$ '. The river runs into the Volga at the capital
KOSUMA, a town of Japan, in the ifland of Niphon ; 60 miles W.S.W. of Meaco.
KOSZARA, a town of Bofnia; 12 miles N. of Banjaluka.

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.V. of Jafty.

KOTAH. See Kotta.
KO'AIGROD, a town of Poland, in Podolia; 12 miles S.E. of Kaminiec.

KOTAN. See Hotom.
KOTANA, a town of Hindooftan, in the circar of Sirhind; 40 miles E.N.E. of Sirthind.

KOTANKODERIPO, a town on the E. coaft of Ceylon; 10 miles S.E. of Batacola.

KOTAR, a pravince of Dalmatia, about 30 miles long, and 20 broad; called alfo the county of Zara, from its capital Zara.
KOTCHA, a town of Ruffia, in the goverament of Perm; 60 miles W. of Solihank.

KOTCGEEL, a town of Hindooftan; 10 miles $S$. of Aginere.

KOTCHELOVSKAIA, a town of Ruffia, in the cournsry of the Coflacks, at the conflux of the Donetz and the Don; 52 miles E. of Azoph.

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KOTCHENGSKA, a town of Ruffia, in the government of Irkutk, on the Ilim; 60 miles W.S.W. of Orlenga.

KOTCHUG, a town of Ruffia, in the government of Irkutk, on the Lena; 16 miles E. of Vercholenk.

KOTELNA, a town of Poland, in the palatiinate of Kiev; 60 miles W.S.W. of Kiev.

KOTELNITCH, a town of Ruffia, and dillrict of the government of Viatka, on the Viatka; 36 miles S.W. of Viatka.

KOTIAKOF, a town of Ruflia, and diftrict of the government of Simbirf, on the right fide of the river Sura.
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 difrict of the fame name, in Great Bucharia; 200 miles S.E. of Samarcand. N. lat. $38^{\circ} 10^{\prime}$ E. long. $68^{\circ} 36^{\prime}$.

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 Bucharelt.

KOTNA, a town of Great Bucharia, on the Gihon ; 40 miles $S$. of Bokhara.

KOTNAR, a town of Moldavia; 24 miles W.S.W. af Jafly.

KOTO, or Lampt, a fmall and barren diftrict of Africa, on the Slave Coaft, in the Whidah country, extending about I8 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 Hindooltan, in Mewat; 25 miles N.N.W. of Cotputly.

KOTOO, one of the fmall Friendly illands, furrounded by coral reefs, and fcarcely acceffrble by boats ; not more than $1 \frac{1}{2}$ mile, or two miles long, but not fo broad. The N.W. end of it is low, like the iflands of Hapaee ; but it rifes fuddenly in the middle, and terminates in reddifh 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 inands: it is tolerably cultivated, but thinly inhabited. The water is dirty and brackih. The burying places are neater than thofe of Hapaee; 16 miles N. of Anamooka. S. lat. $19^{2}$ $5^{\prime}$. E. long. 185 In'. $^{\prime}$.

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 Coaft.
KOTSKA, a town of Ruffia, in the government of Irkutfk, on the Tungufka; 140 mi'es N.N.W. of Ilimfk.

KOTLA, or Kotail, a circar of Hindooftad, 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, inclofed with a ftone wall and round battions. It contains many good flone houfes, and feveral handfome public edifices. The palace of the rajah is an elegant itructure. The flreets are paved with flone. It has, on the W., the river Chumbul, and on the N.E. a lake, fmooth and clear as cryflal, which, on two fides, is banked with ftone, 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 feparated from the lake by the road, is the "Chetrea," or maufoleum of one of the knights. In front of this handfome building are placed feveral ftatues of horfes and elephants, hewn out of Honc. To the fouth of the city, about three furlongs beyond the wall, is a place confecrated to the celebration of Rum's vietory at Lanka. Behind this, in a recumbent polture, is an enormous thatue of earth, which reprefents the dxmon "Rawoon." On the day of celebration the principal people affemble; and the fire of the guns is directed againtt the earthen wall, which make a breach in it, and deface or demolifh 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. $25^{\circ} 15^{\prime \circ}$ E. long. 76 20'. Aliat. Ref. vol. vi.

KOTTIMBEL, a fmall inand in the Red fea, N. lat. $17^{\circ} 57^{\prime}$. E. long. $41^{\circ} 25^{\prime \prime}$.

KOTTIS, a town of Auftria; io 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. $13{ }^{\circ}$ E. long. $5^{\circ}+0^{\prime}$.

KOTUL, a town of Hindooltan, 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 $\mathrm{N}:$ W. of Lignitz.

KOU, a town of Turkifh Armenia; 30 miles S.E. of Akalziké.

KOUAKAND, a town of Turkeltan, on the Sirr ; 60 miles S. of Tafhkund.

KOUANG-SI, or Quang-si, a city of China, of the firtt clafs, in the province of Yun-nan. N. lat. $24^{\circ} 40^{\prime}$. E. long. $103^{\prime} 28^{\prime \prime}$.

KOUANG SIN, or Koang-sin, a city of China, of the firlt clafs, in the province of Kiang-fi. This city is furrounded by mountains, many of which are lofty, and abound fome of them with forefts, and others with fine cryftal ; the country, however, is fertile and well inhabited; many of the mountains are cultivated, and are no lefs pro. ductive than the molt fertile plains. They make a very good paper in this city, and the belt candles in the empire. N. lat. $28^{2} 27^{\prime}$. E. long. $117^{\circ} 44^{\prime}$.

KOUANIN, in the Clinefe Language, the name of a tutclary deity of women. The Chinefe make great numbers of the figures of this deity in white porcelain, and fend them to all parts of the world, as wall as keep then in their own houfes. The ligure reprefents a woma 1 with a child in her arms. The women, who have no children, pay a fort of adoration to thefe images, and fuppofe the deity they reprefent to be of power to make them fruitful. It has been fuppofed, by many Europeans, that thefe images were meant to reprefent the Virgin Mary, with our Saviour in her arms; but this is an idle opinion; the Chinefe having been fond of this figure in all times that we have an account of. The ftatue always reprefents a handfome woman, very modeftly attired.

KOVAR, in Geography, a town of Hungary; 16 miles N.W. of Biltritz.

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.

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KOUDRA, a town of Hindooftan, in Bahar; 27 miles S. of Burwah.

KOUDUR, a town of Hindooftan, in Dowlatabad ; y mi'cs N.N.W. of Beder.

KOUE-HOA, a city of China, of the firlt clafs, in the province of Yun-nan. N. lat $23^{\circ} 26^{\prime}$. E. long. $103^{\circ} 56^{\prime}$.

KOUEIT, Grisn, Cathem, or Kadhema, a feaaport 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 fcheich of Lachía, but occationally alpires to independence. Whenever the fcheich of Lachfa advances with his army, the citizens of Koueit re:reat with their effects into the little ifland of Feludsje. 'The inhabitants are chicfly occupied in finhing, and particularly for pearls; in which bulinefs they are faid to employ more than Sco boats. N. lat. $27^{\circ}$ 40'. E. long. $49^{9} 10^{\prime}$.

KOUEI-TE, a city of China, of the firft clafs, in the province of Ho-nan, fituated in an extenfive and fertile plain, between two large rivers ; but ius order to render it opulent, it wants an increafe of inhabitants and trade. The air is pure, and the fruits, efpecially oranges and pomegranates, are excellent. The inhabitants are diftinguifhed by their mildnefs and hofpitality. The jurifdiction of this city comprifes feven towns. N. tat. 34 ? $30^{\circ}$. E long. $115^{2} 29$.

KOU-HISAR, a town of Aliatic Turkey, in Caramania; 12 miles N:W . of Akferai.

KOVINSKOI, Niznei, Sred, and Verchnei, towns of Ruffia: the firlt, on an iffand in the river Kolima, N. lat. $69^{\circ} 40^{\circ}$. E. long. 156.24:-the fecondy in the government of Irkutik, on the Kolima, N. lat. $65^{-2} 5^{\prime}$. E. long. 153? I4':-the taft; in the fame government, on the fame river, N. lat. $66^{\prime 1} 5^{\prime}$. E. long. $149^{\prime} 14^{\prime}$.

KOUKOU, or Kougov, a town of Afia, in the kingdom of Gaaga; the refidence of a powerful king in the twelfth century.

KOULIK, in Ornithology. See Ramphastos Pizerivorus.

KOULI-KHAN, Tifamas, or Nadir Schait, in Biography, was born in the province of Khorafan: his fatherwas chief of a branch of the Afghans, which rank defcended to Nadir when he was a minor, but his uncle ufarped the government. On this he entered into the fervice of the Beglerbeg, governor of Mufcada, in Khorafan, who gave him the command of an army fent againft the Tartars. Nadir, on this nccafion, gave fignal proofs of his prowefs and military fkill; 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 firt, treated Nadir with great diftinction, but at length he became jealous of his afpiring fipirit, and refufed to promote him in the army as he had promifed, and when Nadir complained of his breach of faith, he caufed him to be baftinadoed. Driven to defperation, he joined a banditti of robbers, and committed great ravages. The Afghans having made themfetves matters of Ifpahan, and the Turks and Mufcovites ravaging other parts of Perfia, Schah Thamas. applicd te Nadir for affiftance. He, without hefitation, entered into the fervice of the fchah; but one of his firft actions was to murder his uncle who had ufurped his title. For his great fervices againilt the Turks, he was ennobled with the title of khan, and honoured with other ditinctions; neverthelefs, he depofed 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 Perfia. He difpofed 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,

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died, and Kouli-khan was elected to the vacant throne, and on his acceffion affumed the name of Nadir Shah. His reign was marked with a high degree of glory, but his government was to the laft degree defpotic. In the year 1739, he conquered the Mogul empire, making himfelf matter of Delhi, where he acquired immenfe riches. He there affumed the title of emperor of the Indies, but difgraced himfelf by ordering a maffacre of the inhabitants of Delhi, in revenge for an infult offered to fome of the troops. The project was difcovered, and the profcribed party aftembled with a view of taking revenge. They were furrounded by a powerful army, which was devoted to the fchah. It was neceffary to force a confidential guard, and they were neither acquainted with the lituation of the emperor's tent, nor knew how to dittinguifh it from the relt. Defpair, however, enabled them to furmount every obftacle. Five of them rufhed into the pavilion, and the emperor was inflazitly known by the glitter of the ornaments with which he was covered. In defending hinfelf he dew two of the confpirators, when a third gave him a mortal wound. He exclained "fpare me, and I will pardon all." "No," replied the fourth, "thou haft never fhewn metcy to any, and we will fhew none to thee." They then difpatched him, and fevered his head from his body. This event took place in 1747 . Univer. Hitt.

KOUM, in Geography, a town of Thibet; 15 miles N. of Darrnadijira.
KOUNDGI-AGHIZ, a town of Afratic Turkey, in the government of Sivas, on the coalt of the Black fea; 15 miles N.W. of Samfoun.

KOUNMEON, a town of Birmah; 48 miles N. of Ava. N . lat. $22^{\circ} 33^{\prime}$. E long. $97^{\circ} 5^{\prime}$.

KOUPHOLITE, in Mineralogy. See Prennite.
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 Lariftan ; 36 miles 5. of Tarem.

KOURMA, or Kurma, a fmall town of Dar-Fûr, W. by S . of Cobbé, at the ditance of 12 or 13 miles.

KOVROF, a town of Ruffia, and diftriet of the government of Volodimir, on the river Kliafma; 24 miles E . of Volodimir.
KOUROU, a river of Guiana, which runs into the Atlantic, N. lat. $5^{-1}$. W. long. $53^{\prime \prime} 3^{\prime \prime}$.

KOUS. See Cous and Apollinis Urbs.
IOUSSIE, a river of Africa, which runs into the Atlantic, S. lat. $30^{\circ} 12^{\prime}$. E. long. $17^{\circ} 50^{\prime}$. This river is the northern boundary of the colony of the Cape of Good Hope.
KOUSSIS. Sec Kaffers.
KOUTA, a town of Hindooltan, in Vifiapour ; 10 miles N. of Merritch.

KOUXEURY, in Icthtbyology, a firh found in the lakes of South A merica, whofe palate is employed by the Indians for polifhing their carvings in wood. It is unknown to which genus this fifit belongs.

IFOWAI, in Geograpby, a town of Afia, 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 Vollynia; 25 miles N.W. of Lucko.

KOWERO, a town of Sweden, in the government of Kuopio ; 8o miles E.S.E. of Kuopio.

KOWNO, or Kowne, 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 Lutheran; 40 miles N.IV. of 'Troki. N. lat. $54^{\circ} 54^{\prime}$ '. E. long. $23^{\circ} 45^{\prime}$.
KOWRA, a town of Birmah ; eight miles N. of Raynangong.

KOWRAH, a town of Hindooftan, in Guzerat; so miles S. of Gogo.

KOWROWA, a village in Karakakooa bay, rendered infamous by the murder of captain Cook. See Cook, and Karakakooa.

KOYAHT, a fmall American ine, at the S. end of Wamhington's iffe, at the entrance of a ftrait feparating a fmall ine from the larget.

KOYDANOW, a town of Lithuania, in the palatinate of Minft; 16 miles S.W. of Minfk.

KOZAK, Join Sophroyius, in Biography, a phyfician of fome celebrity, was a native of Bohemia, and practifed his profeflion at Bremen during a feries of forty-five years, and died there on the 30 th of January 1685 , at the age of 82. He was an admirer of Robert Fludd, the rofycrucian, and adopted many of his fanciful notions in bis writings. He left the following works: "Difcurfus Phyfici quatuor, de rerum naturalium principiis, de generationum et tranfplantationum modis, morborum caufis et fpeciebus, methodo curationum," Bremen, 1631.-" Anatomia vitalis Microcofmi," ibid. 1636.--" Tractatus Spagyrici de Phlebotomis et de Fontanellis," ibid. 1655.-"Tractatus Medicus de Sale, ejufdemque in corpore humano refolutionibus falutaribus et noxis,", Francfort, 1663. - "Tractatus de Hæmorrhagià," Ulm, 1666. Eloy. Dict. Hirt.

KOZANGRODEK, in Gegrapby, a town of Lithuania, in the palatinate of Brzefc; 4? miles E. of Pinfk.

KOZAR, a town of Perfia, in the province of Adirbeitzan; 75 miles W. of Tabris.

KOZDAR, a town of Afra, in the kingdom of Can. dahar, on the borders of Perfia; 1 So railes S.S.E. of Candahar. N. lat. $30^{\circ} 30^{\prime}$. E. long. $67^{5} 15^{\prime}$.

KOZELSK, a town of Ruffia, and difrict of the government of Kaluga, feated on the left fide of the fmall river Shifdra, which falls into the Occa; 36 miles S.S.W. of Kaluga.

KOZELUCH, Join Anthony, in Biography, mufie director in the Metropolitan church at Prague, was born at Wellwarn, in Bohemia, 1738. He fludied and lived privately many years at Prague, long before he obtained any profeffional honours or preferment. His firft advancement was to the place of chapel-mafter of Chrilt-church, and the next, in 1784 , was that of organitt of the dan kirk or cathedral. He afterwards diftinguifhed himfelf as a compofer both for the church and theatre. Among his productions for the latter are his Italian operas of Demofoonte, and Alefiandro nell' Indie, by which he very much increafed his reputation. It is a pity, fays Gerber (Mufical Lexicon) that more of his works have not been publihed!

Kozeluch, Leopold, a celebrated harpfichord-mafter and compofer for that inftrument at Vienna, was born at Wellwarn in 1553. He had learned the principles of mufic regularly at 18 years old, and the art of finging. At 19, he was brought to Prague, where he ftudied at the fame time compofition and the harpfichord. But before he was 18, he produced fpecimens of his gerius and talents. In

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1771, he publihed his firf effay at compofition, in a ballet for the Prague playhoufe. This was followed by 24 others and two pantomimes. After this he was invited to Vienna, where he eltablinhed limfelf, and whence bis fame and works were circulated all over Europe, with thofe of Vanhal, Hadyn, and Mozart. His ftyle is more eafy than that of Emanuel Bach, Haydn, or Mozart ; it is natural, graceful, and flowing, without imitating any great model, as almolt al! 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 phrafed, his accents well placed, and harmony pure. He publifhed 20 or 30 different fets of harplichord and piano-forte fonatas, fome 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 12 th fet. He was the firlt in Vienina who publifhed duets for two performers on onekeyed inftruments, and feveral of them are exceilent. He publifhed likewife a duet for two harpfichords, or pianofortes, with many concertos for the harpfichord à grand orcheffra.

Nor has he confined himfelf to inffrumental mufic; he has fet a French comic opera, Le Muret ; Didone abbandomata, a ferions opera in Italian; Mofes in Egypt, a grand oratorio, in Italian, 1787 , the beit for the widows and chi'dren of decayed muficians, that had been compofed for that fociety. The fame year he was engaged, by a fociety of 150 fubfcribers, to compofe for the Italian opera: and for the national theatre, or German playhoufe, he compofed airs, cantatas, and ballets without end. In $1_{7} 8 \mathrm{I}$, on the death of the emprefs queen, he compofed the mufic to a very pathetic dirge. Jofeph and his Brethren, a cantata, with a harpfichord accompaniment only. Pfeifel's cantata for Mad. Paradis, his fcholar in $\times 784$, with innumerable leffons and concertos exprefsly for that blind but admirable performer ; 15 fongs to German words, and cantatas in Italian, with accompaniments for two French horns, two violins, hautbois, tenor, and bafe; three fymphonics, various fets of trics, 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 Koslof.

KOZMODEMIANSK, or Kusmodemiansk, a town of Ruffia, and diftrict of the government of Kazan or Cafan, on the Volga; 100 miles N.IV. of Kazan.
KOZU, a town of Poland, in the palatinate of Volhynia; 56 miles E. of Lucko.

KRABBEN, a finall ifland in the Atlantic, near the coalt of Guiana. N. lat. $0^{\circ}$ so'. W. leng. $57^{\circ} 50^{\prime}$.

KRAFT, Geonge Wolfgane, in Biograpby, a celebrated mathematician, was born at Dutlingen, where his father was paftor. He received a good education, but applied himfelf chiefly to geometry and natural phioiophy, in which he made great progrefs under the celebrated Buifinger, whofe friendfip and patronage he enjoyed. In 1728 , he took his degree of matter of arts, and almoft immediately fet out for Peterburgh, 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 profeffor of natural philofophy. He was, in confequence of his great reputation, recalled to his
native country, which obliged him to folicit permiftion to relign his profeflorfhip. This was accompanied with the moft diftinguifhed teftimonies of high efteem; the academy elected him an honorary member, and fettled upon him a handfome penfion. He quitted Peterfburgh in 174t, and arrived at 'Tubingen, where he entcred on his office as profeffor of mathematics and natural philofophy, which he retained till his death in 1754 . He was autlior of many very valuable works, among which are "Intitutiones Geometrix fublimioris;" "Prælectiones Academicæ publicæ in Phylicam "Theoreticam;"" De vera experimentorum Ilhyficorum conflitutione ;" "De HIydroftatices Principiis generalhbus."

KRAGG Stone, a rock found near Belfaft, belonging to the fletztrapp formation, but which, together with thofe rocks called wacke and mullen, is kept dilkinet from bafalt by Mr. Kirwan, who gives the following defeription of the kragg flone. Colour greyifh-red or reddifh-grey, exceeding porous: the pores often filled with various cryftallizations. Luftre and tranfparency none. Fracture uneven and earthy ; fragments 2 ; hardnefs from 5 to 7 . Spec. grav. 2.3i4. Feels rough and harfh; gives a yellowifhgrey itreak. At ${ }_{3} 3^{\circ}$ it ineited into a reddifh-brown porcelain mafs. It is often mixed with globules of magnetic iron-ltone, which adds confiderably to its fpecific weight.

Wacke, mullen, and kragg (Mr. Kirwan adds) have been by molt writers confounded with what he confiders as trap; but their colour, Specific gravity, and fulibility, fhew that they mult be diftinguifheci.

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. $44^{\circ} 5^{\prime}$. E. long. $26^{\circ}$.

KRAKAN, a fmall ifland on the W. fide of the gulf of Bothnia. N. lat. $63^{\circ} 30^{\circ}$. E. long. $19^{\circ} 33^{\prime}$.

KRAKATOA, a fmall ifland in the ftraits of Sunda. S. lat. $6^{\circ} 6^{\prime}$ E. long. $105^{\circ} 21^{\prime}$.

KRAKAW, or Krako, a town of the duchy of Meck. lenburg, on a lake ; 10 miles N. of Guftrow.

KRAKEN, in Zoology, a marine animal of moft fupen. dous magnitude, faid to have been feen in the northern feas, and particularly near the coafts of Norway and Swzeden. The exiftence of fuch an enormous creature is attel.ted by bifhop Pontoppidan, who, in his "Natural Hittory 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 aimmated fubftance, very rarely rifes near the furface; whent it does, the calmelt fea becomes troubled to a valt diftance around it, the heaving billows point out the more immediate fpace in which it will emerge, and when it has rifen, thofe parts vifible above the furface of the water affume the afpect of fo many iflands, variable in dimenfions as well as thape, 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 eftimated,) is faid to be a mile and a half in circumference, (or, as fome affirm, even more.) Its limbs, and of thefe it is furnifhed with feveral, are truly gigantic, appearing, when elevated above the water, as thick and long as the mafts of veffels of a moderate fize, and are befides endowed with fo much Arength,

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Shat with one of thefe it can feize on boats and the fimaller kinds of veffels, and drav them under water. The defcent of this montter froms the furface of the fea to the bottom, is faid alfo to be not lefs terrible than its rifing, fince it occafions a fiwell and whirlpool fo violent and irrefiftible, that fhips of the lar gelt burthen, drawn within its vortex, inevitably fink into the abyfs of the waters, and fink to rife no more.

Thefe, and various other circumflances equally calculated to excite altonifhment, are related of the kraken by the learned prelate before mentioned, the particulars of which have been differently received. many having phaced an implicit confidence in his relations, and others as Itrenuoufly determining to reject them ats ates unworthy of belief. In julfice to Pontoppidan, we Mould obferve, however, that though we are principally indebted for our knowledge of the kraken to this writer, it muft be undertood that the exitence of fuch an animul as the kraken is not teltified on his authority alone; nor is it in his volumes only that details fo marvellons have appeared; his accounts in general are in a greater or lefs degree corroborated by feveral northern writers, and with fuch internal evidence of truth, that we camot rejcet their reports as wholly fabulous, or conceive the kraken to be the mere creature of fiction. Still we mult receive their obfervations dcliberately; we may, and certainly do, on their veracityo admit the probable exittence of a marine animal, fuch as the kraken is deferibed, of a fize very far furpaffing that of the whale, and confequently, of any amimal 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 litite doubt, if any confidence can be placed in the confeffedly imperfect deferiptions left us hy different authors, that it is a creature by no means analogous either to the whale tribe, or any kinds of tifhes; it is affuredly, on the contrary, one of the mollufca order or family of worms peculiar to the fea. 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, fhould fortune ever favour the naturaliff fo far as to decide the point in quefion, it nay prove to be one of the medufe tribe; this we fuggef, though we flould itill rather be inclined to imagine it an animal of a diftinct genus not at prefent afcertained, as being .mof likely partaking in fome degree of the characters both of the genera Seria, and Medusa, and yet not ftrictly appertaining to either. See Sepia and Medusa.

KRAKO, in Geography, a town of Sweden, in the pro .vince of Upland; 17 miles N. of Upfal.

KR.i INON, a fmall ifland on the W. fide of the gulf of Buthinia. N. lat. GI 33'. E. long. 17' 9'.

KRALAMI, a town of Bofnia, near the river Mifan ; 34 mites S. of Serajo.

KRALITZ, a town of Moravia, in the circle of Ol.mutz: 8 mites $S$. of Olmutz.

KRALOVAVELFKA, a town of Sclavonia; 30 miles W.N W. of Pofzera.

KRdLOWIDWUR, or Koniginhof, a town of Boheniaz, in the circle of Konigingratz, on the Elbe; 13 miles N. of Konigingratz.

KRALOTVITZ, a town of Bohemia, in the circle of Rakonitz; 13 miles S.W. of Rakonitz.-Alfo, a town of Buhenia, in the circle of Czaflau; 16 miles S.W. of Czafau.

KR MMER, in Biography. See the next article.
ISRAMERIA, in Botany', received its name from Lin-

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nsus, in commemoration of two German botanile, John George Heury Kramer, the father, and W Hiam Henry, the fon, both of whom flourifed towards the middle of the lait century. The former, a phyfician to the army, publifhed at Drefden, in 1728, an anomalous arrangement of plants, partly by the fyttem 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 Viema in $17+4$, interfperfed with various remarks upon the technical terms of botany, anecdotes of what happened to the author in various journeys, and, according to Haller, many fabulous abfurdities. He was alfo author of other botanical tracts.-The latter (William Henry) publifled at Viemna, in 1756 , a catalogue of the animals and plants of Auftria.- Linn, in Loefl. It. 195 Gen. 63. Schreb. 86. Wild. Sp. Pl. v. 1. 693. Mart. Mill. Dict. v. 3. Juff. 425 . (Ixine ; Loefl. MSS.) Clafs and order, Tetrandria Monogynia. Nat. Ord. uncertain, poftibly Lomentacea, Linn. Legumino $\sqrt{\text { a }, ~ J u f f . ~}$

Gen. Ch. reformed. Cal. Perianth infurior, of four or five oblong, acute, unequal, fpreading leaves, internally coloured, deciduous. Cor irregular, much fhoter than the calyx, of five petals; the three uppermoft with long claws, reflexed, and a fmall ovate limb, which is fometimes wanting in the middle one; two lowermolt ovate, concave, feffile, at each fide of the germen, fcarcely fpreading, much horter than the others. Stam. Filaments four, at the upper fide of the germen, awl-flaped, parallel, afcending, two of them rather floorter than the reit ; anthers terminal, finall, ovate, crect, opening by two terminal pores. Pif. Germen fuperior, feffile, ovate; ftyle awl-fhaped, afcending, nearly equal to the flamens; ftigma fimple, acute. Peric. Legume? glubofe, of one cell, not burlting, arred on all fides with barbed projecting brilles. Seed folitary, ovate, hard, fmooth.

Eff. Ch. Calyx of four or five leaves. Petals five ; the three uppermolt with long ciaws ; two lowermott feffile, ovate. Fruit globofe, prickly, of one cell. Seed folitary.

Obf. It docs not appear that Linnzus ever faw this genus; all that he fays of it being taken, not very exactly", from Loefling; nor is there a fpecimen in his berbarium. Neither does Mutis feem to have known any thing of it, when he fent Linnreus a defcription of the Acena, Mant. 2. I45, under the denomination of "Kramerie affinis " fcr thefe two genera have nothing in common, except a flight coincidence in their artificial characters, not founded in nature. This Acena indeed was never feen by Linnzus, being adopted entirely from his friend's account. It is, with great judgment, referred by Juffieu to his own matural order of Rofacce, after Ancijfrum, with which Krameria has no relationflip whatever. - The defeription and figure of a fecond fpecies of Kranieria, in Cavanilles, have enabled us to form fome idea of its natural affinitics, hitherto left in the dark, as well as to venture on a reformation of its generic charackers; though all this is done from the above authorities alone, without infpection of any fpecimens. The genus in queltion will not conveniently go into any of Juffieu's prefent fections of the Leguminnfa, but a comparifon of its anthers with thofe of Caflia, its hard ovate feed, and its anomalous corolla, will, we prefume, confirm thofe more obvious indications which have led us to the above conclufion, notwithflanding the ftrange and peculiar feed-veffel.
Only two fpecies have hitherto been defcribed by authors, both natives of South America.

1. K. Iaina. Linn. Sp. Pl. 177--Leaves all fimple. Calyx four-cleft.-Gathered by Loefling near the town of Comana, on the coalt of the Caracaos, latitude about $10^{\circ} \mathrm{S}$. The inhabitants

## K R $\Lambda$

Inimbitants call it Cartillo Brive, or rather, as we prefume, Cordillo Breva, Teafel Fig, from the hape of the fruit and its barbed briltles. Whether there be any thing vilcid in its habit, which might induce its difcoverer to adopt the Greek name Ixine, does not appear from his delerijution here fubjoined. "Roots fibrous. Stoms lhrubby, procum. bent in their lower part, and fpreading every way, but foon afcending and wand-like: their branches fcattered and srect. Leaves alternate, lanceolate; the upper ones linear, acute, nearly feffle. Fiocuers alternate, in a termirial (leafy) clufter, their ftalks axillary, fursifhed about the middle with two fmall acute linear bracteas. Calyx of a roly purp'e. Upper petals pale at the tios, lower ones rugofe, dark purple. The plant itfelf is of a brownifh hoary lue."
2. K. cytifoids. Cavan. Ic, v. 4. Gr, t. 302.-Leaves ternate ; the floral ones fimple. Calyx five-cleft.-Found by Lewis Née, near the town of Cimapán in New Spain, efpecially on the hill commonly called del carpintero, bearing flowers and fruit in September.- The flon is fhrubby, three fect high, with a grey bark: its branches numerons, altarnate, downy when young. Leaves alternate, on longifh, downy, compreffed foot-Italks, ternate; leafiets elliptical, feffile, entire, downy. Flowers forming a fimple clulter at the end of each branch, with a fimple elliptic-lanceolate leaf at the bafe of each of their ftalks, and a pair of fmaller ones above the middle, the falks all fingle-flowered, rather longer than the leaves, and downy. Calyz externally downy, internally of a violet red. Stamens equat, red, inferted into the receptacle, all at the upper fide of the germen, and within the upper petals, which latter therefore cannot, as Cavanilles fuggefts, 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. Gernen hairy. Frait globular, the fize of a currant, cowny, muricated on all fides with longifh projecting briftles, barbed at their points only with three or four fharp reflexed teeth. S.

KRAMERSIKY, in Geography, a town of Pruflia, in the procince of Ermeland; $I_{5}$ miles S. of Heilfberg.

KRANICHFELD, a town of Saxony, in the principality of Altenburg; 12 miles S.E. of Erfurt. N. Izt. $50^{\circ} 43^{\prime}$. E. long. $11^{\circ} 4^{\prime}$.
KRANOWITZ, a town of Silefia, in the principality of Troppau; 11 miles N.E. of Troppau. N. lat. $49^{\circ} 55^{\prime \prime}$. E. long. $18^{\circ}$.

KRANTZ, Alrert, in Biography, a native of Hamburgh, of whofe early life we have no information, became profeflor of canon law and theology in the univerfity of Roflock, and afterwards refor of it about the year I 482. 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 occafions. Of fuch confequence was his opirion reckoned, that in the year 1500 , the king of Denmark and the duke of Holtein made him their umpire in a difpute with the people of Dithmarfh. He died in 1517 , leaving behind him a claracter for integrity and indultry in his refearche;. His works are, "Chronica Regnorim Aquiloniorum Danix, Sueciæ, Norvegix:" "Vandalia, five Hiftoria de Vandalorum origine :" "Metropol is, five Hiftoria Ecclefiattica de Saxomia." Moreri.
KRAPERNA, in Geography, a town of Ruffia, and dittrict of the government of 'Tula.

KRAPINA, a town of Croatia; 8 miles W. of Agram. KRAPPITZ, or Krzapkowitz, a town of Silelia, in the principality of Oppeln, near the Ober; 12 miles S. of Oppeln. N. lat. $50^{\circ} 25^{\prime \prime}$. E. long. $17^{\circ} 52^{\prime}$ 。

Yol. XX

ITRAS, a town of I'oland, in the palatinate of Latlin ; 20 miles S. of 1 cublin.

KRASIEOM, a town of Poland, in Volhymia; 8 misco IT. of Combantinow.
KRASCHENINNIKOVIA, in Bomn, a rat:s formed by Guildentadt, Now. Comm. Petrop, v: 16. 55', of the Ayrris Cematoiks of Lumene, ans which is ratan ond in Schreber's Genera 633 uader the: 1 ame of Disis of the propricty of its eftadilhment wo have furte dunbsts, having never examined the living plant, nar traced the progrefs from the fower to the fruit. It poffibly, however, bears the fame analogy to A. yris that Airiplex des to Chenopodiurr.

KRASNE, in Geograpby, a town of Poland, in the palatinate of Braclaw ; 24 miks N.IV of Braclan:

KRASNEPOL, a town of Poland, in Podulia; 32 miles N.E. of Kıminiecz.
KRASNOBORSK, a town of Ruffia, and ditrict of the government of Vologda, in the province of Veiki-Ulting, on the left fide of the Dwina; 60 miles N.N.W. of Uliting.
KRASNOBROD, a town of Poland, in the palatinate of Belcz; 28 miles TV. of Belcz.
KRASNOI, a town of Rufiia, and difrict of the government of Smolenfioo, on a rivulet which falls into the Dnieper; $2 S$ miles S.W. of Snolenfio.

KRASNOIAR, a town of Ruffia, in the government of Upha; 16 miles N.N.W. of Upha.

KRASNOIARK, a town of Ruffia, and diftrict of the government of Kolyvan, on the Yenifei, where it receives the Katcha: it was built in 1618 , furrounded with palifades, fmall towers, and fome batteries. The inhabitants, who occupy about 3 50 houfes, principally trade in cattle, horfes, and furs; 100 miles S. of Enifeilk. N. lat. 56. E. long. $96{ }^{6}{ }^{1} 4^{\prime}$.

KRASNOIARSKAFA, a town of Ruflia, in the government of Irkutf, near the conflux of the Oka and Angara; 6+ miles W.S.W. of llimfk.

KRASNOI-KHOLM, a town of Ruffia, and diftrict of the government of Tver, on the river Schoea, which falls into the Mologa; 60 miles N , of Tver.

KRASNOKUTSK, a town of Ruffia, and diftrit of the governneent 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 Ruffa, and diftrict of the government of Penza, on the Mokvka, or MoRva; 8 . miles N.W. of Penza.

KRASNOUFIMSK, a town of Ruffia, and diftrict of the governmeut of Perm, on the Upha; $9^{6}$ miles S.E. of Perm.

KRASOIJAR, a town of Ruffia, in the government of Caucafus, at the mouth of the Volga; 16 miles N. of Aftrachan.

KRASUKKA, a fmall inand on the E. fide of the gulf of Rothnia. N lat. $65^{\circ} 22^{\prime}$. E. long. $24^{\circ} 4^{6}$.

KRASUPOL, a town of Poland, in Braclax ; fix mile E. of Braclaw.

KRASZNA, a town of Hungary, on a river of the fame name, which runs into the Samus; 16 mites S. of Zatmar.
KRAUPEN, or Krupas, a town of Bohemia, in the circle of Leitmeritz; 14 miles IW.N. W. of Lenmer:tz: N. lat. $50^{\circ}+\mathrm{I}^{\prime}$. E. long. $13^{\circ} 54^{\prime}$.
KRAUS, Martin, in Biography, an eninent fcholar in
polite literature, the fon of a Lutheran clargyman, was bura N

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## K R E

in 5526 , at Grebern, in the bifhopric of Bamberg. He received his claffical education at UIm, where he acquitted himiedf with fo much credit, that the magiltrates of the city allowed him a pention to affift him in his future fludies. He went to Strafburg, and added to his former acquifitions theology and the Hebrew language. He afterwards undertook the dircction of the public fchool-at Memmingen, which he rendered celebrated by adopting the methods purfued at Strafourg. In 1559, he was appointed profeflor of moral philofoply and the Greek language at the univerfity of Tubingen, where he refided till the time of his death, which happened in $160 \%$. He publifhed a great number of works, grammatical and critical, with orations, Greek and Latin, but his molt valuable publication is entitled " TurcoGrecix libri octo," containing an excellent collection of pieces relative to modern Greece, with the language and litcrature of which he was well acquainted. He was author Jikewife of Annales Sue vici, ab initio rerum ad annum, $1594{ }^{\circ}$ " A very flort time before his deceafe, and forefecing 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, Iftbmus of, the narrow part of Lower Siam, between the Indian lea and the gulf of Siam, about $7 \circ$ miles wide. N. lat. $9^{\circ}$ to $12^{\circ}$. E. long. $98^{\circ} 20^{\prime}$ to $99^{\circ} 30^{\prime}$.
KRAYSK, a town of Lithuania, in the palatinate of Wilna : St miles E. of Wilna.

Kreese. See Chisse.
KREIBITSCH, in Geography, a town of Bohemia, in the circle of Leitmeritz ; 24 miles N.N.E. of Leitmeritz.
KREMENTCHUK, a town of Ruffia, and difrict of the government of Catharinenflaf or Ekaterinoflav, on the Dnieper; $3^{8}$ miles W.N.W. of Ekaterinoflav. N. lat. $49^{\circ}$ E. Iong. $33^{\circ} 10^{\prime}$.
KREMINIEK, a town of Poland, in Volhynia; $3^{6}$ miles S. of Lucko.
KREMPE, a fmall tewn of Hollein, formerly fituated on the banks of the Elbe and ftrongly fortified, but now only remarkable for the height of its fteep'e, which ferves as a mark for feamen, fituated between Itzehoe and Gluckftadt; 3 miles N . of the latter.

KREMSIER or Kremerziz, a town of Moravia, in the circle of Prerau, on the Morawa, belonging to the bifhop of Olmutz ; 17 miles S. of Olmutz. N. lat. $49^{\circ}$ I $7^{\prime}$. E. long. $17^{\circ}{ }^{20^{\prime}}$.

KREMSMINSTER, a town of Auftria; 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 Hindooftan, in Bundelcund ; 28 miles S.S.W. of Pannah.

KRESTA, a fmall ifland near the S . coaft of Nova Zembla, in the ftraits of Waigats. N. lat. $70^{\circ} 32^{\prime}$. E. long. $59^{\circ} 20^{\prime}$.

Kresta, St., a gulf or bay of Ruffia, in the north part of the Anadirdkaia gulf. N. lat. $65^{\circ} 20^{\prime}$ to $65^{\circ} 4^{\prime}$. E. long $180^{\circ} 34^{\prime}$ to $181^{\circ} 24^{\prime}$.
KRESTIAI, an ifland in the Frozen fea, at the mouth of the Lena, of a triangular form, having its mean diameter about 12 miles. N. lat. $77^{\circ} 42^{\prime} . \mathrm{E}$. long. $16^{3} 14^{\prime}$.

KREUPEL, a fmall ifland near the W. coalt of Borneo, N. lat. $3^{\circ} 47^{\prime}$. E. long. $112^{\circ} 25^{\prime}$.

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KREUSBACH, a town of Aultria; 9 miles S.S.E. of St. Polten.

KREUTZBURG, a town of Ruffia, in the government of Polotfk, on the Duna; 60 miles E.S.E. of Riga.

KREWITZ, a town of the duchy of Mecklenburg; 10 miles E. of Schwerin. N. lat. $53^{\circ} \cdot 4^{\prime}$. E. long. $\left.11^{\circ}{ }^{\prime \prime}\right)^{-1}$ 。

K $\vec{R} E W O$, a town of Lithuania, in the palatinate of Wilna; 42 miles S.E. of Wilna.

KRICHEVSKAIA, a town of Ruflia, in the government of Archangel, on the Dwina; 16 miles S. of Kolmogori.

KRIEbeL Kraykueit, the German appellation of the difeafe faid to awife from cating the feeds of the raphanus, and thence called Raphania by Linnæus and others. Sce that article: alfo Engot and Ignis facer.

KRIEGSTETTEN, in Geography, a bailiwick of Swizzerland, in the canton of Berne.

KRIENS and Hore, a bailiwick of Switzerland, in the canton of Lucerne.

KRIGIA, in Botany, named by Schreber, apparently in honour of Dr. David Krieg, a German phyfician, mentioned in the preface to the third volume of Ray's Hiforia Plantarum, who is there faid to have accompanied Mr. William Vernon, fellow of St. Peter's college, Cambridge, in a botanical excurfion through the province of Maryland. In this journey they difcovered and collected fome hundreds of new and rare plants, many of which are defcribed in the work of Ray, above cited. Schreb. 532. Willd. Sp. Pl. v. 3. 1618 - Clafs and order, Syngenefia Polygamia Equalis. Nat. Ord. Compofita Semifoofoulofi, Linn. Cichoracea, Juff.

Gen. Ch. Common calyx fimple, cylindrical, of about ten, lanceolate, erect, acute, equal leaves, fhorter than the corolla. Cor. compound, fomewhat imbricated, uniform, each flower hermaphrodite; proper, of one petal, tongue-fhaped, linear, truncated, five-toothed. Stam. Filaments five, capillary, very fhort; anthers cylindrical, tubular. Piff. Germen nearly ovate; ftyle thread-fhaped, the length of the flamens; ftigmas two, reflexed. Peric. none; common permanent calyx ovate, at length reflexed. Seeds folitary, five-fided, ftriated, with a membranaceous crown of five, roundifh, erect leaves; down capillary, confitting of five long rough britles, alternating with the crown. Recept. naked.

Eff. Ch. Receptacle naked. Calyx fimple, of many leaves. Seed-down of five membranaceous leaves, with tive alternate briftles.
I. K. virginica. Willd. (Hyoferis virginica; Linn. Sp. Pl. if38. Michaux Boreal-Amer. vo 2. 88. Lamarck in Journ. d'Hift. 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 ftarved Dandelion. Radical leaves at firft ovate, then lanceolate, and at length lyrate, acute, fmooth. Stalks naked, fingle-flowered, thrice as long as the leaves. Calyx perfectly fimple, not imbricated, of ten lanceolate leaves. Flowers deep yellow. Seeds fquare, crowned with five flort, rounded, membranous fcales, and as many alternate, long, rough, ftraight brifles.

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 diftrict of Africa, in the kingdom of Calbari.

Krim. See Crim, Crimea, and Tacrida.
KRINK, a town of Itria; 12 miles S.S.E. of Capo. d'Iftria.

KRIS,

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KRIS, the denomination of Indians that inhabit the banks of lake Chriltineaux, who can raife 1000 warriors.

KRISHNA, in Hindoo Mythology, one of the avataras, or incarnations of the god Vifhnu, in which he is faid by the fectaries, who exclufively worfhip 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 aflumed only an anf(r, or portion of his divinity, while Krifhna was Vifhnu himfelf in mortal mould. A numerous fect, called Gokalaita, from Gokala, one of Kriflha's names, worfhip him exclufively, or conjointly with his confort Radha: this lect are immeafurably lavift in their praifes, and vehement in their adoration of this deity, while other fects of Hindoos call Krifina an impious wretch, a mercilefs tyrant, an incarnate demen, now expiating his crimes in hell. As information is received from thele different defcriptions of zealots, fo confequently will it differ in the account of the character and actions of this motley perfonage, of whom as much is recorded as of any of the Hindoo deities. His life and actions have occupied the attention of many volumianus writers; and if taken literally he led a life of exceffive libertinifm, but his followers maintain fuch appearances to have been the refult of maja, or delufion, for that in reality his life was chafte and holy. The Gita Govinda, a beautiful poem by Jayadeva, is a feries of myitical rhapfody in praife of Krifhna, and a relation of his loves with his confort Radha, and although warm, and indeed loofe, in a degree not admitting of literal tranflation into our language, is faid to be purely myftical, and to mean the "reciprocal attraction between the divine goodnefs, and the human foul." This poem has been finely tranflated by fir W. Jones, and appears in his works, and in the third volume of the Afiatic Refearchcs. The fame fubject is myftically handled in the tenth book of the Sri Bhagavata, a life of Krifhna, not hitherto tranfated, fo much venerated among cestain fects, as to be efteemed as the eighteenth Purana. (See Jayadeva, Mystical Poetry, Sri-Bhagavata, and Purana.) Moft of the extravagant tales related of Krifhna, may be refolved into a continued folar allegory, for he is a perfonification of the fun, and correfponds with the Apollo of the Greeks. (See Kaliya.) His mortal parents were Vafu-deva and Devaky. He was foftered by an honeft herdfman named Ananda, or the happy, and his amiable wife Yafuda; and paffed his youth in dancing, fporting, and piping among a multitude of young Gapas, or cow-herds, and Gopias, or milk-maids, from whom he felected nine as favaurites. As a fpecimen of the tales of the Bhagavata, it may fuffice to relate, that on one occafion the Gapia, his playfellows, (that is, the Mufes) complained to Tafuda, that he had pilfered and ate their curds; and being reproved by his Softer mother, he defired her to examine his mouth, in which, to her juft amazement, the beheld the whole univerfe in all its plenitude of magnificence. Another of his miraces is given under Ka/ya, which fee.

Innumerable are the estravaganzas related of Krifhna, whom fome French writers have impioufly compared with Jefus Chrift. On this fubject the following paffage orcurs, in Moor's Hindoo Pantheon, whence chiefly this article is taken. Defcribing a plate of Krifhna deftroying Kaliya, " It has," he fays, "been furmifed by refpectable writers, that the fubject here reprefented has reference to an auful event figuratively related in our fcriptures, and Krifhat is not orly painted, as feen in the plates, bruifing the head of the ferpent, but the latter is made to retort by biting lis heel. Among my images and picturcs of this deity (and they are very numerous, for he is enthufiaffically and
extenfircly acored, and his hithory affords great fcope for the imagination) I have not one original, nor did I ever fee one, in which the fnake is biting liriflna's foot; and I have been hence led to fuipect, that the plates cmaraved in Europe of that action are not folely of Hindoo inmention or origin. I may eafly crr in this infance; but I am farther Atrengthened in the fulpicion, from never having heard tl:fact alluded to, in the many converfations that I lave hell with Brahmans and others on the hiftory of this avatara.
"Sonnerat was, I believe, the firft who extubited limana cruning a fnake: how, otherwife would he or any ore kit it fo eafily and obvioufly, as by ftamering on it head? No. can the reptile in any mode retort but by bitins the fee of its affailant. Zeai formetimes may have in its refults the: fame effects as infidelity; and one cannot help latrentime that a fupertruchure requiring fo litte fupport, fhould b encumbered by awkward buttrefles, fo ill appied, that th... would, if it were poffible, diminifin the thability of til building that they were intended to uphold. Of this deferiytion were the zea'ous refearches of lome nifhionartes, wh: $m$ Brahma and Sarafwati eafily found Abraham and Sarais; and the Chrittian Trnity is as readily difcovered in the monftrous Trimurtiof the Hindoos." (See Saraswatiand Thmurti.) Of this defoription aifo, I am difpofed to think, are the attempts at bending !o many of the events of Krifhna's life to tally with thofe real or typical of Jefus Chrift's. That Krifhna, according to his hittorians, pafted a life of a molt extraordinary and incompreheníble rature. may be admitted; and that his name, and the general outline of his ftory, exited long anterior to the birth of our Saviour, is very certain, and probably to the time of Homer. His miracles are amazing, but ridiculous; a term that may, perhaps, be applied to a majority of the legends detailed with fuch protixity in the modern poem, the Sri Bhagavata. He is reprefented as the meekell, tenderelt, and molt benerolent of beings ; till, however, he fomented the terrible war defcribed ia the Mahabarat : he wafhed the feet of the Brahmans: he exhibited an appearance of excefine libertinim: but it was, they fay, all maya. or delufion, for he was pure and chaste in reality ; he uplifted meuntains, raifed the dead, (fee Kasya,) delcended into hell, and performed fuch motley exploits, as induced fir William Jones (Af. Ref. i. 27.) to think that "the \{purious gofpels, which abounded in the firtt ages of Chriitianity, were carried to India, and the wildeft parts cf them repeated to the Hindoos, who engrafted on them the cid fable of Ke「ava, the Apollo of Greece."

Krihna has eight regular wives affigred him, whofe names are 1. Rukmeni or Radha, an incarnation of Lakfhmi ; 2. Yanuminti ; 3. Kalenderi, a water nymph, daughter of Surya, or the Sun; 4. Satyavama; 5. Lakihmeni; 6. Mitraviada; 7. Satya; 8. Vrundi. Of thefe fomething is faid under their names refpectively. He beffdes attached to him 16,000 women that he found virgins in the ample feraglio of a five-headed tyrant, who, for his manifold crimes, Krifhna flew. The legendary tales defcriptive of thefe events are of great length and va:iety. Each of thefe 16,008 women bore him ten fons, and each fuppofed herfife the exclutive favourite of her lord. Kama, the god of love, is faid to have been the offispring of las firit wife Rukmem ; and in this broth he was named P'radyama. (See Fama.) On the death of Krihara, Rukmeni became a fati dee Sat1), and, with feveral cther of his wives, bunted herfif, with a view to an immediate reunion with her lord in Vaikontha. See Vakontina.

Krifhna's names, like other. deified perionages, are ne merous. He being Vifhnu, they enjoy fereal in comN 2.
mon.

## K R I

mon, Murari, Meri, Madhava, and Baghavan, among them; Govinda, Copala, Gokala, are derived from his occupation of herdfman ; Gopinatha, or the Gopia's god ; Murlidur, the tracful; Kecfiu, Kefava, or Kefavi, are faid to refer to the fineneds of his hair; Varyimali to his peudant calland; Tadava, Vurfhncya, and Vafudeva, to this tribe and tomily.

Ifo is unarely manted of a clack line colour ; his name Karuaderotes tlins; and wifh four arms; elegantly drefled ; . 1 : wotuton of jwels, and often playing on a pipe. ? : Stes of himate given in the Hindru linthoon, from in= res and pictures, and many legends are there wisteck, con wited wh their fubjects. In the Gita Govidal ho is anas cuferben. "His azure breat glitered with
 lean Yamuna, iwter perfold with curls of white foam. From his graceful waill hlowid a pale yellow robe, which refemLe delle gelden chit of the water lily featered over its biuc petals. His paffin was inflamed by the glanets of TRadha's cyes, which played like a pair of water birds with azure plamage, that fyort naar a fuil blown lotes, on a peol in the feafor of dew. Bright ear-rings, like two funs, difplayed, in full expantion, the Howers of his cheeks and lips, which glikened with the liquid radiance of fraiks. His locks, interwoven with bofioms, were like a cloud varicgatcd with moon-beans; and on his forchead flone a circle of edorous eils, extracted from the fandal of Malaya, like the moon juit appearinc on the dully horizon; while his whole body feemed in a llatne, from the blaze of unnumbered gems."
In that very curious work tranlated by Mr. Wilkins, entitled Bhaydvat-Giza, Arjun, the fon of Pandu, addreffes Krihna as "the fupreme Brahm: the moft holy; the moft hi h god; the divine being before all other gods; without hirth t the mighty lord; god of gods; the univerfal lord." In different parts of the Gita he fays of himfelf, " 1 am , of things tranfient, the beginning, the middle, and the end: the whole world was fpread abroad by me in my invifible form. At the end of the period kalpa (fee Kalpa) all things return into my primordial fource; and, at the begimning of another kalpa, I create them all again. I am the creator of ail mankind, uncreated, and without decay. There is not any thing greater than I , and all things hang on me, as precious gems on a fring. I am the underflanding of the wife, the glory of the proud, the itrength of the ftrong. I am the eternal feed of all nature; I am the father and mother of this worid, the grandire and the preferver; I am death and immortality; I am entity and nonentity; I am never failing time ; I an all-graiping death, and I an the refurrection.""I am the emblem of the immortal, and of the incorruptible; of the iternal, of jaltice, and of endicfs blifs."-"Neither the fun nor the moon, nor the fire, enlighteneth that place, whence there is no return, and which is the fupreme mantion of my abode."

Sanjay, one of the interlocu:ors of the Gita, defcribes Frimina, as he revealed his " million forms divine," to Arjun, "covered with every marvellous shing - the eternal god, whofe countenance is turned on every tid:. The glory and amazing iplendour of this mighty being may be likened to the fun, riting at once into the heavens with a thoufand times more than ufual brightnefo. The fon of Pandu then belaeld within the body of the god of gods, flanding turetiner, the whole univerle divided forth into its valk variety." Arjun, territied at this wondrons exhibition, exchuins - "Thout art the fapreme being ! Ife thee withont beginning, withon midhe, and wihout end; of valour intinite, cif arme imamerable; the fun and noon thy eyes; thy mouth a flaming fire; and the who world flumg with thy refleted glorg.

## K R I

Having beholden thy dreadful teeth, and gazed on thy countenance, emblem of time's latt fire, I know not whick way to turn; I find no peace. Have mercy then, O god of gods! thou manfion of the univerfe! and fhow 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 thoufand arms! image of the univerfe! thy four-armed form." -Krifnna is here, as ufual by his feetaries, identificd with Vinnu, and as "cmblem of time's latt fire," and other paffages of the above extracis, is apparently alluded to in the charaker noticed under Kalya, as the ruling Kalfva-rupi, or Chronus.
It is believed by fome of the moft refpectable refearchers into Hindoo theology, that the worhip of Krifhna, Rama, and other deified perfonages, is modern compared with the inflitutions of the vedas (fee Veds), in which no mention is made of fuch deitics. As noticed under the article JaganaTiAA, ore of the names of Krifina, he is principally worfhipped at that extenfively revered temple. Under Jambavanti is reJated a legend of this frolicfome deity, who efpoufed a bear of that name. (See alfo Kaxsa.) Many plates, and legendary particulars and fpeculations, are given of Krifhns 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 Krifhna is varioufly written in European languages: Crifhna, Criftna, Kruitna, Kifhna, Kiftnah, Quixena, Kifhen, \&c. and is differently pronounced in $\bullet$ different provinces of Iudia.

KRiss, See Creese.
KRITANTA, a name of Yama, the Hindoo Pleto. Kritamala is the name of a river connected with the hifory: of this perfonage under fome of his forms, and may have a common origin. See Yama.

KRITIKA, in Afironomy, the Hindoo name of the Pleiades, refyecting which their poetical'mythologilks have related many pleafing tales, every thing connected with Hindoo fcience being veiled in allegories. This conttellation perfonified is, as one of the mantions of the moon, or Soma (fce Soma), fabled to be a beautiful nymph receiving the incontant deity in his noctumal wanderings. (See Naksuatra.) The fix Kritikas are feigned alfo to have been the wet-nurfes of Kutikya, as mentioned under that articie. Other legends make them the wives of the Rilhis, who, anoug other characters, are made to thine the feven brighth flars in Urfa major; but being unequal in namber, farther fables became neceffry to recomelle the difference, and an attronomical legend is related in the Hindoo lanthcon, affording a fpecimen of the manaer in which the Brahunans have buried, in mytholegical fictions, hitlorical or fcientific facta, and of the coincidence of thofe fictions with the tales of wellern fabulilis. "It is related that Agni, or Pavaka, the ardent deity of fire (fee Pabaka), was charitably and gallantly difpofed to communicate a portion of his warmth to thefe ladies, wives of the frozen Riflhis; and fituated as they were in the artic circle, their complacency to fuch a comfortable fuitor is not furpriling. But it is faid that he had not, in fact, complete fuccels, for that his wife (fice Swama), dreading the refentment of the boly Rithis, aliumed fuccefively the flape and counterance of each of their defirable wives, and thus perfonifyiag them, fatisfied her hufland's ardour. Arundhati, however, the wife of Valifita (fee Vasishita) having always been exemplar; as to toliuefs and fanctity, was not fufpected on this ualuckjo occation; but the other fix Rinks, in confuguence of fuandalous reports, not only diimited their fparking fpoules, but, litee ereat bears, drove them out of the urctice circle, and they now thine the pleiades.

## K R O

It would appear that they had qualified themfelves for wetnurfes, and accordingly nurfed young Kartiky, as noticed under that article, or were entrufked with his education, and were placed by him in the zodiac." In this wild tale we fee an allufion to the difappearance of the feventh Itar of the Pleiades. Arundhati, the wife of Vafifhta, is retained by him. The tar called by his zame is in lat, $6 r^{\circ} \mathrm{N}$. and the is the fmaller flar near him. They are proverbial for conflancy; and attrologers carefully watch their motion, as their influcnces are variouly modified: whatever newly married couple fee them in an aufpicious conjunction or pofition, are furely to live happily together for a hundred years. Peurile as thefe ftories 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 mythologits in the welt, were entruited likewife with the education of Bacchus (who, acording to Macrobius, was the fame with Mars, or Kartikya), and ou that account he tranflated them into heasen. According to thofe writers they fuffered a real bodily pollution; and the feventh, fays Hyginus (Poct. Aftro. p. 47 I.) left her fifters and fled to the regions of the heavens: and this is the Arundhatiof 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 Pofen.

KROEPELEIN, a town of the duchy of Mecklenburg ; 12 miles W. if Roltock.
KROKEI, a town of Sweden, in Eait Gothland: in miles N.E. of Nordkioping.

KROKINOW, a town of Samogitia; 22 miles E. of Rofienne.

KROKY, a town of Samogitia; is miles S.E. of Rofienne.

KROLENDORF, a town of Auftria; 16 miles Erof Steyr.

KROMAYER, Joms, in Biograpby, 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 fuperintendant-general of the churches in that diftrict, and the fenate of that city chofe him as paftor of their church. He died at the age of fixty-feven. He was author of "Harnonia Evangelitarum ;" "Hiftorix Ecclefialticx Compendium ;" "Specimen Fontium, Scripture facre apertorum ;" "A Paraphrafe on the Prophecy and Lamentations of Jeremiah," \&c. \&cc.

Kromayer, Jerome, nephew of the preceding, was brought up chiefly at Leipfic, where he tools his degree of M.A. in $163_{2}$. From that time he became lecturer on logic, rhetoric; natural philofophy, and aftronomy. In 16 +3 , he was appointed profefior of hiftory and oratory in the leffer coliege of princes, at Mifnia. Four times he was called to the office of dean of the univerfity; twice he prefided as prochancellor, at the creation of malters, once he was chofen rector; and in the leffer college he was honoured three times vith the poit of provoft: He filled feveral other high pofts in the univerfiy with great advantage to the place, and died at the age of lifty, in the year $16 \%$. He was author of "Commentaries on duvers Parts of the Holy Scriptures;" of an "Ecclefialtical Hittory," and other works.

KROMI, in Geograply, a town of Ruffis, in the goverment of Orel ; 16 miles S. of Orel.

## $K R U$

KROMME, a river of Africa, forming a bay at it mouth in the Indian fea, S. lat. $34^{\circ} 6^{\prime}$.

KRONENBURG. See Cronenbung.
KRONHAMN, a fmall ifland on the W. fide of the gulf of Bothia. N. lat. $62^{\circ} 25^{\prime}$. E. long. $17^{\circ} 26^{\prime}$.

KRONOBY, a town of Sweden, in the government of Ulea: feven miles S. of Gamla Karleby.

KRONORN, a fmall ifland on the W. fide of the gulf of Buthnia. N, lat. $63^{\circ} 27^{\prime}$. E. long. $19^{\circ} 8^{\prime}$.

KRONOTSKOI Noss, a cape in the northern part of Kamtfchatka, about which the land is very high. N. lat. $54^{\prime \prime} 4 z^{\prime}$. E. long. $162^{\circ} 17^{\prime}$.

KROPPA, a town of Sweden, is the province of Warmeland; 30 miles N.E. of Carlitadt.

KROPPENSTADT, a town of Weftphalia, in the principality of Halberfadt; nine miles E.N.E. of Halberitadt.

KROPSUNKARI, a fmall ifland on the E. fide of the gulf of Bothnia. N. lat. $65^{\circ}{ }^{10}$ '. E. long. $25^{\circ} 6^{\prime}$.
KROREN; a lake of Norway; 33 miles N.W. of Chrilliania.

KROSKA, a town of Servia, on the right bank of the Danube; 10 miles S.S.E. of Belgrade.

KROSNO, a town of Auftrian Poland, in Galicia; 25 miles N.W. of Sanock.

KROTTAU, a town of Bohemia, in the circle of Boleflau; 46 miles E. of Drefden.

IROUNA, a town of Bohemia, in the circle of Chrudim; 12 miles S.S.E. of Chrudim.

KROUSTA, in the Ancient. Mufic, is a term purely Greek, implying the third \{pecies of nufical inftruments, which the Latins term pulfulifia, and the Englith, infrumcruts of percuffion; their tones being produced by beating with the hand, as drums, tabours, timbrels, $\& \mathrm{cc}$. or with fmall liticks or iron rods, as the pealtry, cymbal, and dulcimer, or by being ftruck with hammers, as bells, gongs, pianofortcs, \&c.

Reprefentations and deferiptions of all thefe inftruments may be feen in Lufcinius, Merfennus, Kircher, Bonarni, Laborde, and in almoft all hitories of mufic.

KROZE, in Geography, a town of Samogitia; 20 miles N.W. of Rofienne.

KRUCKEN, a town of Pruffia, in Natangen; 15 miles S.E. of Brandenburg.

KRUDOSEL, a town of Perfia, in the proviace of Ghilan; 12 miles S.E. of Refhd.
KRUDZEWO, a town of Lithuania, in the palatinate of Wilna; 16 miles S.E. of.Wilna.
KRUG, Locis, in Biography. See German School of Engraving.
KRUGLIKIN, in Geograply, a town of European Turkey, in Moldavia; 12 miles S. of Choczin.
KRUMPACH, a town of Autria; 20 miles S. of Ebenfurth.
KRUPA, a town of Poland, in Volhynia; $60^{\circ}$ miles E. of Lucko.

KRUPKA, a town of Lithuania, in the palatinate of Mink ; 50 miles N.E. of Minfk.

FRUPULIK, a town of European Tuikey, in Macedonia; $8+$ miles N.N.W. of Saloniki.

KRUSCHIN, a town of Pruffia, in the palatinate of Culm; $2+$ miles E. of Culm.

KRUSZWICA, or Kuctswicza, a town of Poland, in the palatinate of Brzefc; 28 miles W. of Brzefc. This place deferses to be recorded, as it was the birth-place of

Piaf,

Piait, who, occupying the flation of a private citizen, was elected king of Poland in 842 .

KRUTA亡A, a town of Ruffia, in the government of Tobolik, on the Irtiich; 36 miles N. of Omfk.

KRUTEN, a town of Courland; 32 miles S.S.IV. of Goldingen.

KRUTOGORSKOI, an oftrog of Ruffia, in Kamtfchatka. N. lat. $54^{\circ} 50^{\prime}$. E. long. $155^{\circ} 54^{\prime}$.

KRUWOTOW, a town of Aufrian Poland, in Galicia; 22 miles S.E. of Halicz.

KRYLOW, a town of Galicia; 10 miles N. of Belz.
KRYOLITE, or Cryolite; Alumine fluatée alcaline, Haïy. The colour of this mineral is fnowowhite, fometines brownifh-yellow, by the admixture of a fmall portion of iron ochre.

It occurs maffive, generally in angular fragments with faiut ftrix, indicating a rhomboidal nearly cubical nucleus; fecondary forms have not yet been obferved.

Its lultre is vitreous, often inclining to pearly.
Fracture imperfectly foliated, fmooth in one direction, and uneven in another.

It is tranflucent even in fragments of confiderable fize; fmall pieces approach to tranfparent, and when immerfed in water for fome time become completely fo.

It is foft, fo as to be feratched by fluor, particularly in the principal direction of the laminx.

It is eafily frangible.
The fpecific gravity of kryolite is 2.928 ; that of a fmall fragment immerfed in water for twelve hours was 2.94 I , Schumach. Haüy ftates it to be 2.949; Karlten 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, fuppofed to be derived from that circumitance;) 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, hews a degree of deliquefcence. It is not operated on by the muriatic and nitric acids, but is diffolved by concentrated fulphuric acid under developement of greyifh-white vapours that corrode glafs.

Profeflor Abildgaard, who was the firlt who analyzed this mineral, which had before been mittaken for a fubftance related to barytes, found it to be compofed of alumine and fluoric acid. Vauquelin, who examined it after him, obtained the fame refults, and both chemifts accounted for the fmall proportion of alumine which they found, by the poffibility that part of the earth might have been carried off by the fulphuric acid. Klaproth was enabled to afflgn the true caule of the apparent difproportion by the difcovery of a confiderable proportion of foda, till then but little known as an ingredient of ftony fubitances. His analyfis, and the fubfequent one by Vauquelin, have given the following refults.

Klaptr. Beitr. Vauquelin A. de Ch.

| Alumine | 24 | 21 |
| :--- | ---: | ---: |
| Soda | 36 | 32 |
| Fluoric acid and water | 40 | 47 |
|  | 100 | 100 |

The only place where kryolite has been hitherto found is Greenland; but nothing is known relpecting its geognotic fituation. Werner, we are told, has adopted this mineral as a fpecies of a genus of his, called the Hallite genus, which is
to comprehend fuch fubftances as bear great refemblance to foffil falts, without poffeffing all the requifte characters to entitle them to be enumerated as fuch.

KRZEMIEN, in Geograpby, a town of the duchy of Warfaw ; 34 miles S.W. of Bielik.

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.

KT'EIPHE, a town of Syria, anciently called Adarif, the laft town in the pachalic of Damafcus, encompaffed with walls, as a defence againft the Arabs; 22 miles N.E. of Damafcus.

KUAN, a town of Perfia, in Farfiftan ; 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 Perfia, in Ghilan ; 90 miles N.W: of Reflid.

KUBA, a town of Perfia, 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 Hindooftan, in the fubah of Moultan ; 45 miles E. of Moultan.
KUBENSKOI, a town of Ruflia, 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.

KUBUCHANSIKOI, a town of Ruffia, in the government of Irkutfk, on the Amul; 86 miles S.E. of Doranink.

KUCHAVIE, a fown of Poland, in the palatinate of. Kiev; 60 miles N.N.W. of Kiev.

KUCHTA, a town of Pruffia, in the province of Olonetz; 52 miles N . of Povonetz.

KUCKENDORF, a town of Pruffia, in Ermeland; 24 miles S.W. of Heilberg.
KUDA, a town of Mingrelia, on the coaft 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 Ruffia, in the government of Tobolik. N. lat. $65^{\circ} 15^{\prime}$. E. long. $S_{1}{ }^{\circ} 14^{\prime}$.

KUDDA, a town of Hindooltan, in Vifiapour; 20 miles N. of Poonah.

KUDDDANO, a town of Africa, in Bergoo ; 6; miles N.W. of Wara.

KUDEEL, a town of Hindooftan, in Bahar; 20 miles W. of Ramgur.

KUDEZEVA, a town of Ruffia, in the government of Kolyvan; 28 miles S.E. of Kuznet tk.

KUDINSKA, a town of Ruffia, in the government of Irkut fk; 32 miles N. of Irkutht.

KVETLI, a town of Turkih Armenia; 27 miles W.S.W. of Akalziké.

KUFFSTEIN, or Kopstens, a town of the county of Tyrol, near the borders of Bavaria, on the Imn; built at the foot of a itupendous rock, on which is a caftle, that ferves for a fortrefs; 32 miles E.N.E. of Infpruck. N. lat. $47^{\circ}$ 32\% E. long. $12^{9}$ 14'。

KUGNA,

## K U H

## $K \mathrm{UH}$

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 Ramgur.

KUHESTER, a fea-port of Perfia, at the entrance of the Perfian 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 Tavathus.

KUHMONIEMI, a town of Sweden, in the government of Ulea; 50 miles E.S.E. of Cajana.

KUHN, Joachim, in Biography, a learned critic, fon of a rich merchant at Gripfiwaide, in Pomerania, was born in 1647 . He ftudied at the univerfity of Jena, and after vifiting feveral parts of Germany, was appointed, in 1669 , principal of the college at Oetingen in Suabia. In 1676, he was chofen profeffor of Greek and Hebrew at Stralburg. He died in 1697 , and after his death appeared his "Queftiones Philofophire ex facris Veteris et Nov. Teit. aliifque fcriptoribus." He is well known in the learned world by his editions of Elian, Paufanias, and Diogenes Laertius.

KUHNAU, Johaxn, the fon of a tifherman of Gryfingen, a town near Altenberg, on the borders of Bohemia, four miles diftant from Dre〔den, was a learned and fkilful mufician of the higher clafs, among thofe who have formed and eltablifhed the German fchool of mufic, particularly in the ecclefiattical ftyle, and in organ playing.

In the ycar 1684, he was organit of the church of St. Thomas at Leipfic; and while in that ftation, he wrote a differtation "De juribus circa muficos ecclefiafticos," and afterwards defended it againft the cenfures of his adverfaries.

In 1689, he publifhed leffons for the harpfichord in two volumes, and in 1696 feven fonatas, entitled ellabici Jfrucbte, fruits of the keys or of keyed inftruments ; and in 1700, fix fonatas, entitled wibluthe Mifari, a bible narrative. Here Luftig of Groningen, in a Dutch treatife entitled "Inleiding tot de Murikkunde," takes notice of this work, and fays that it is a lively reprefentation, in mufical notes, of David manfully combating Goliah. In the fame year ( 1700 ) Kuhnau, to filence the clamours of fome ignorant men of his profeflion, who, envying his merit and reputation, had libelled him, he wrote a mall tract, which he entitled "The Mufical Quack, or Mountebank." In the fame year (1700) Kuhnau was appointed direcior myffices of the univerfity of Leipfic, in whicis flation he died in ${ }_{1722}$, in the 63 d year of his age; and was fucceeded in that honourable polt by John Sebailtian Bach. Kuhnau was celebrated immediately after his death in a Latin difcourfe by a count palatine and magiltrate of Merfeberg for his Akill, not only in mufic, but theology, laweloquence, poetry, foreign languages, algebra, and mathematics.

Matthefon, in his life of Handel, as the highelt praife he could beltow on his performance, fays, that he was even more powerful on the organ than the famous Kuhnau of Leipfic, 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, fo named by Linnrus, after his pupil Adam Kühn, a native of Pennfylvania, who travelled to Upfal for the fole purpofe of improving himfelf in natural hittory, and brought this plant with him for the examination of Linnæus; in whom it excited confiderable attention, as having diltinct anthers, though in every other refpoct ap-
pearing to belong to the clafs Syngenefia. Arduino, who had obtained the fame from Siberia, had referred it to Eupazorium, noting the peculiar Atructure 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 Linnæus remarks that the leaves, !es ing alternate, afford another diftinction, as to habit. On thefe grounds Kubnia was eltablifhed as a genus in ${ }^{7}$ P ${ }^{c}$ rrtandria Monogynia. So it remained till Gxertuer, in his 2d vol. P. 4II, having acquired another fpecies, which he miftook for the original, and finding its anthers firmly united info a tube, took upon him to fay that the Linnitan character of Kubnia was "altogether fictitious," and that the genus, differing from Eupatorium in having an evidently feathery feeddown, thould 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 brittly feed-down, routh indeed, but by no means feathery, as is abundantly evident in Browne's own fpecimen now before our eyes. But the author laft mentioned defcribes it "pappo ramofo," which it feems Gærtner adopted upon trult. We are well aware that the diftinction between feathery and rough feed-down, is only a difference in degree; but by this many good genera are difcriminated, and upon it, as a technical character, Kubnia muft chiefly depend ; for more recent examinations have found other examples of diftinct anthers in compound flowers, witnefs feveral fpecies of Tufflaga, and one of Siegefockia; and as the genus in queltion has, according to the above authors, one fpecies with united, and another with more or lefs ditinct anthers, it is beft placed with its natural allies in the Syngenefag, to which clals we fhall follow Willdenow in removing it.-Linn. Gen. 95. Schreb.. 129. Willd. Sp. Pl. v. 3. 1772 . Mart. Mill. Dict. v. 3. Juff. I77. Lamarck. Dict.v. 3. 370 . Illultr. t. 126. (Critonia ; Gærtn. t. 174; but not Browne Jam. 490.)-Clafs and order, Syngenefía Polygamia cqualis. Nat. Ord. Compofite difcoidea, Linn. Corymbifera, Juil.

Gen. Ch. Common Calyx oblong, imbricated; fcales linear-oblong, erect, unarmed, unequal ; the outermoit fharpeft and fomewhat ovate; innermoft bluntifh, flightly membranous at the end. Cor. compound, uniform, difcoid; florets from 10 to 15 , all equal, perfect, fertile, of one petal, funnel-fhaped, with a regular, five-cleft, erect border. Stam. Filaments five, capillary, very fhort ; anthers oblong, either all united into one tube, or into two or three fets, or entirely diftinct, each opening at the top, with a projecting lip. Pif. Germen oblong, furrowed; ityle thread-haped, longer than the corolla, cloven down to the top of the anthers ; ftigmas two, flightly club-fhaped, bluntifh, fpreading. Peric. none, except the permanent calyx - Seeds folitary, oblong, angular, rough ; down feffile, long, feathery Recept. naked.

Eff. Ch. Receptacle naked. Down feathery, feffile. Calyx imbricated, oblong. Sţ̧le prominent, cloven half way down, divaricated.

Obf. If the above characters be finally judged fufficient to eftablifh Kulnia, the word feathery muft be flruck out of the character of the feed-down in Eupatorium; fee that article.
I. K. eupatorioides. Linn. Sp. Pl. 1662. Linn. fil. Dec. 21.t. 11. (Eupatorium alternifolium; Ard. Spec. Alt. 40. t. 20.) -Leaves lanceolate, toothed, ftalked. Anthers feparate. - Native of Pennfylvania, from whence feeds-were brought to the Upfal garden in $1_{7} 62$, and the plants they produced, kept in the green-houfe, flowered the fame year in November. Root fibroas, perennial. Stems feveral, herbaceous, a foot and half high, erect, round, leafy, mi-

## F U L

sutuely downy, bearing a few Thort axillary branches. Leaves alternate, on hort channelied bordered footfalks, lanceolate inclining to ovate, near two inches long, pointed, fitrongly and varinufly toothed, decurrent at the bafe, fomewhat triply nerved, green, roughifh, or minutely downy, on buth dides, with pale rib and vcins. Flowers corymbofe, terniuating the ftem and branches, white, with a ltriated roughith calyx. - Wre find no reafon to doubt Ardesino's Siberina plant, in the Liunzan herbarium, being the fame fpecies with that from the Upfal garden.
2. K. Critonia. Willd. n. 2. (Critonsa Kuhnia; Gertn. v. 2.711 . t. 174 ; the fynonyms wrong.) -L Laves lineqy, nearly entire, fefliie. Anthers united-Native of Pennfylxania and Virginia, according to Willdenow, who had it alive. Root percnuial. Stem round, fmooth., Leuves an inch and half long, attenuated at each end, feffile, alternate, almott perfectly entire, fmooth. Corymbs of few flowers, divaricated, at the top of the them and branches. IV illd.

Neither of thefe plants is known in the gradens of England. S.

KUIU, in Mythology, is the Indian goddefs of the day. It is molt likely one of the many names of Parvati ; but refpecting her very little has yet been made known.

KUIA, in Geografby, a town of Ruffia, on the coaft of the White fea, in the government of Archangel ; 20 milcs N. of Archangel.

KUIATZKAIA, a town of Ruffia, in the government of Irkutnk, on the Dzonmuren, built in 1728 for carrying on commerce between the Ruflians and Chinefe; it connits of two parts, one inhabited by the people of each country; 44 miles N. of Irkutk. N. lat. $52^{\circ} 50^{\circ}$. E. long. $105^{\circ} 14^{\prime}$.

KUINUC, a town of Natolia; 20 miles N. of EtkiShehr.

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; 3 S miles $E$ of of $A$ bo.

KUKERPEH, a town of Natolia; 32 miles W. of Boli.
KUKI, a town of Japan, in the ifland of Niphon; 70 miles N. of Meaco.

KUKKAISTENMAA, a fmall ifland on the E fide of the gulf of Bothnia. N. lat. $60^{\circ} 53^{\prime}$. E. long. $21^{\circ} I^{\prime}$.

KUKU, an extenlive 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 Bornous. N. lat. $21^{1} 45^{\prime \prime}$. E. long. $24^{\circ} 45^{\prime}$. A river runs from N. to S. by Kuku, and is received into a lake at a great diftance from it; perhaps the lake of Kauga; and the river itfelf 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 ; confequestly to the S.E. of Matthan, and appazentily not far to the northward of Kauga.

KUKUS, a town of Bohemia, in the circle of Komigingratz, famous for is baths; 11 miles N. of Kon: ginn $^{\text {in }}$ gratz.

KUL, or Kool, a Turkifh term, probably fignifying a flave or fervant.

Meninfky telis us, the name is given to all the foldiers in the Ottoman empire, particularly to thofe of the grand
feigniors gurd, and the infantry. The captains of the infantry, and thofe who command the guards, are called kût zabylders, and the foldiers of the guard kapa killtri, i.c. Maves of the court. Others inform us, that alld who hold any places depending on the crown, or reccive wages from it, in a word, all who are, in arfy meafure, the grand feignior's fervants, take the title of hith, cr Rcol, i.e. Jlave, as more creditable than that of fubject; even the grand vizir and the baflaws valuc themflives upon it. A kûl, or flave, of the grand feignior, has authority to abufe any who are only his fervants; but a fubbect, who fauld affront a Eûl, or flave, would be feverely punithec. 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 Gcograpby, an inland of Ruffia, in the Cafpian fea. N. lat. 45 :

KULB, a town of Aufria; 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 Rufla, in the government of Irkuth, on the borders of China; So miles S.W. of Selegink.

KULEBAKINA, a town of Ruffia, in the government of lrkurfk, on the Lena; 20 miles S. of. Kirenk.

KULEbRUN, a town of Pruffia, in the province of Oberland; 12 miles $S$. of Elbing.

KULEBUGAGE, a town of A fatic Turkey, in Caramania; 40 miles N . of Tarfus.

KULICHOW, a town of Aufrian Poland, in Galicia; 10 miles N.N.E. of Lemberg.

KULING, a town of Grand Bacharia, in the kingdom of Balk ; 30 miles N.E. of Balk.

KULLA, DAR, a fmall country of Africa, fituated to the S.W. of Dar-Fûr. The natives of Kulla are partly. negroes, and partly of a red or copper colour. Their language is nafal, but very fimple and eafy. It is faid they worfhip idols. They are very cleanly, to which the abundance of water in their country contributes, and they are remarkable for honefty and even punctilious in their tranfactions 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 fmalleft trefpafs on the property of another is punifhed, in this country, by enflaving the children or young relations of the trefpaffer. The leaft offence in this way is followed, after previous proof, by the forfeiture of a fon, daughter, nephew, or niece of the offender to the perfon aggrieved. Accidents of this kind are continually happening, and produce a great number of flaves. A commiffion to purchafe any thing in a diftant market, not exa ly fulfiled, is attended with a like forfeiture. Dut above all, if a perfen of note die, the family have no idea of death as a neceffary event, but fay that it is effected by witchcraft. To difcover the perpetrator, the poorer natives, far and near, are obliged to undergo expurgation by drinking a liquor, which is called in Dar-Fû "kilingi," or fomething that refembles it; and the perfon on whom the fuppofed figns of guilt appear, may either be put to death, or fold as a flave. The people of Kulia are ftrangers to venercal complaints, but are fubject to the fmall-pox. In that part of the country that is vifited by the Jelabs, there is a king; the reft is occupied by fmall tribes, each of which is ruled by the chief who happens to have moft influence at the time. .The "Kumba," or pimento tree, is found there in fuch

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plenty; that a rotal or pound of falt will purchafe 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 10 perfons. The Jelabs of Bergoon and Fûr fometimes journey to this country in order to procure flaves. The chief article they carry hither is falt, 12 pounds of which are eftimated as the price of a male flave, about 12 or 14 years of age. A female brings three founds 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 eltcemed equal to four of falt. "Hoddûr," a large fort of Venctian glafs beads, and tin, are in great eftimation. Of the latter they make rings, and other ornaments. Brown's Travels in Africa, p. 30, 8 vo.

Kulla, a town of Sweden, in the province of Upland; 17 miles N.E. of Stockholm.-Affo, a town of Sweden, in Abo; 10 miles E.S.E. of Biorneborg.-Alfo, a town of Hindooltan, in Guzerat; 60 miles S.WT of Gogo.

KULLAPOLLAM, a town of Hindooltan, in the circar 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 A frica, E. of Konkodco.
KULLOWGUY, a town of Africa, in the country of Kutlo. N. lat. $12^{\top} 24^{\prime}$. W. long. S $28^{\prime}$.

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 Ragufa.

KULMALAX, a town of Sweden, in Tavaitland; 31 miles N. of Tavalthus.

KULMEETA, a town of Algiers, on the left fide of the Shellif, near its mouth; 6 miles N. of Multygannim.

KULSAGE, or SUGAl-Town, a little Cherokee town in the vale of Keowe.

KULSI, a river of Ruffia, which takes its rife in the government of Archangel, and falls into the White fea, in the diltrict of the town of Mefenfl.

KU-LONG-TCHAT, a town of the north coaft of the ifland of Formofa. N. lat. $25^{\circ} 16^{\prime}$. E. long. $121^{\circ} 34^{\prime}$.

KULSUTANSKOI, a town of Ruffia, in the government of Irkutfk; 100 miles S.W. of Nertchinfk.

KUMADER, a town of Japan, in the ifland of Niphon; ro miles N.E. of Morifa.

KUMALA, a town of Sweden, in the province of Ta. raftland; 65 miles N.N.E. of Jamfio.

KUMANO, a town of Japan, in the ifland of Niphon; 6 iniles N.E. of Ixo.

KUMANT, a town of Japan, in the ifland 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 8 . of Girgé.

KUMEGAN, a town of Pruffa, in the province of Samland; 16 miles N.W. of Konigfberg.

KUMARA, in Hindoo Mythology, a name of Kaltiky, which fee.

KUMBA, and Nikumba, names of fiends, in Hindoo mythological legends, faid by fome accounts to have been deftroyed by Krifnna; according to others, by Kama,

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KUMI, in Geograply, an inand in the Eaf Indian fow, the molt wenterly in a clufter of fix or feven othicrs, from which it is feparated by channels from eipht to ten leagues wide, between luormofa and Japan, feen by M. la Peroufe, who did not land upon it. Thefe iftanders are acither Japanefe nor Chinefe, but feem to be a mixture of hoth people. They were covered with a flirt 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 dayger, the handle of which was alfo gold. Their canoes were made of hollowed trees, and they were awkward in the management of them. Veffels that had been lorg at fea might procure wood, water, and provifions in this ifland, and alfo tiade here in a fmall degree. But as it is fcarcely three or four leagues in circumference, its population does not probabily exceed four or live hundred. N. lat. $24^{\circ} 33^{\prime}$. E. long. $123^{\circ}$ 16'. Peroufe's Voyage, vol. ii.
KUMINGE, a town of Sweden, in the government of Ulea; 1 I miles N.E. of Ulea.

KUMISS, or Koumiss, a kind of liquor made in 'Tartary, ufd by the natives as their common beverage, and often ferving them inftead of all other food. It is faid to be fo falutary and nouriming, that the Bafchkirs, though emaciated in winter, return to the ufe of it in fummer, and become flrong and fat. The Ruffians have borrowed it from the Tartars, and ufe it medicinally. It is made with fermented mare's milk, according to the following receipt, communicated by Dr. Grieve in the Edinburgh Philofophical Tranfactions, vol. i. p. 181, as he obtained it from a Ruflian nobleman, who vifited that part of Tartary where it is made, for the fake of the medical ufe of it :-" Take of frefl mare's milk, of one day, any quantity ; add to it a fixth part of water, and four the mixture into a wooden veffel; ufe then, as a ferment, an eighth part-of the foureft cow's milk that can be got: but at any future preparation, a fmall portion of old koumifs will better anfwer the purpofer of fouring; cover the veffel with a thick cloth, and fet it in a place of moderate warmth; leave it at relt twenty-four hours, at the end of which time the milk will have become four, and a thick fubltance will be gathered on the top: then with a ftick, made at the lower end in the manner of a churn-ftaff, beat it till the thick fubftance above-mentioned be blended intimately with the fubjacent fluid. In this fituation, leave it again at relt for twenty-four hours more; after which pour it into a higher and narrower vefel, refembling a churn, where the agitation muft be repeated as before, till the liquor appear to be perfectly homogeneous; and in this flate it is called koumifs, of which the tafte ought to be a pleafant mixture of fweet and four. Agitation murt be employed every time before it be ufed."- To this detail of the procefs the nobleman fubjoined, that, in order to obtain milk in fufficient quantity, the Tartars have a cuftora 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 takcn from the mare, which is generally about tive times a-day, they always produce the foal, on the fuppofition that fhe yields her milk more copioufly when it is prefent.

To the above method of making koumifs, our author las added fome particulars taken from other communications with which he was favoured by Tartars themfelves. According to the account of a Tartar who lived to the foutheaft of Orenbourg, the proportion of milk and fouring ought to be the rame as above; only, to prevent changing the veffel, the milk may be put at once into a pretty high and narrow veffl; and in order to accelerate the fermenta-

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tion, fome warm milk may be added to it, and, if neceflary, more fouring.--From a Tartar whom the doctor met with at the fair of Macarieff upon the Volgä, and from whom he purchafed one of the leathern bags which are ufed by the Kalmucks for the preparation and carriage of their koumifs, he learned that the procefs may be much fhortened by heating the nilk before the fouring be added to it, and as foon as the parts begin to feparate, and a thick fubftance 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 face of twelve hours. Our author Jearned alfo, that it was common among fone Tariars 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 heceflary. And though it is commonly ufed within a few days after the preparation, yet when well fecured in clofe 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 mills as above, by a four pafte of rye flour, by the rennet of a lamb's ftomach, 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 procefs firft mentioned, however, that all the knumifs which the doctor employed in onedicine was prepared. It has beea found ferviceable in hectics and in nervous complaints; and our anthor relates fome very ftriking cafes which the ufe of it had completely cured. All thofe who drank it, our author informs us, agreed in faying, that, during its ufe, they had little appetite for food; that they drank it in very large quantities, not only without difgult, but with pleafure; that it rendered their veins turgid, without producing languor; that, on the contrary, they foon acquired from it an uncommon degree of fprightr linefs and vivacity; that even in cafes of fome excels, it was not followed by indigeftion, headach, or any of the fymptoms which ufually attend the abufe of other fermented liquors.

The utility, however, of this preparation as a medicine, fuppofing it completely afcertained, would among us, as our author obferves, be greatly circumfcribed by the fcarcity 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 thefe have never been the object, however, of my attention, I will here give the fubftance of what I have been able to learn from others refpecting that which is the moft common, the milk of cows.
"Dr. Pallas fays, that cow's milk is alfo fufceptible of the winous 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 nocre agreeable, and contains a greater quantity of firit ; that koumifs, on diftillation, 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 Oferetfowky, a Ruffian, who accompanied Lepechin and other academicians, in their travels through Siberia and Tartary. He publifhed lately a differtation on the ardent foritit to be obtained from cow's milk.

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"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 conllituent parts taken feparately, nor from any two of them, unlefs inafmuch as they are mixed with fome part of the third; that the milk with all its parts in their natural proportion was the moft productive of it; that the clofer it was kept, or, which is the fame thing, the more difficultly the fixed air is allowed to efcape during the fermentation, (care being taken, however, that we do not endanger the burlting of the veffel, the mare fpirit is obtained. He alfo informs us, that it had a fourér fmell before than after agitation; that the quantity of fpirit was increafed, by allowing the fermented liquor to repofe for fome time before diftillation ; that from fix pints of milk, fermented in a clofe veffel, and thus fet to repofe, he obtained three ounces of ardent fpirit, of which one was confumed in burning ; but that from the fame quantity of the fame milk fermented in an open velfel, he could fcarcely obtain an ounce."
KUMLA, in Georraply, a torn of Sweden, in the province of Nericia; 7 miles S. of Orebro. - Alfo, a town of Sweden, in Ealt Gothland; 10 miles S.S.W. of Nord-kioping.-Alfo, a town of Sweden, in Sudermanland; 25 miles IV. of Stockholm.

KUMLINE, a fmall ifland in the Baltic, between the continent of Finland and the ifland of Aland, with a town uponit. N. lat. $60^{\circ} 17^{\prime}$. E. long. $20^{\circ} 37^{\prime}$.

KUMO, a town of Sweden, in the government of Abo, on a river of the fame name; 23 miles S.E. of Biorneborg.

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 acrofs the conriuent.

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 thefe rivers, as well as the Akfai and Kafma, and the next adjoining mountains to the well. It is under the government of feveral Kumuk Begs, of whom the two moit powerful refide in the cities Akfai and Endors, (called by the Ruffians Androwka,) at the foot of the mountains; and is inhabited by the Kumuk and Nogai Tartars, and by Armenian and Georgian merchants, who dwell in the cities. In winter the Lefgians defcend likewife 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. The length of this province is about 11, and the breadth 8, German mites. The Kumuks are vaffals to Ruffia.

KUNA, a town of Lithuania; 15 miles S.E. of Braclaw.

KUNASSYR, one of the Kurile iflands, 150 vertts long, and 50 broad, and entirely furrounded by mountains with lofty fummits; but in the middle of the ifland 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 fpecies of pearlbearing mufcle in valt abundance; fome of the fize of a de-fert-plate. The ifland has lakes and broad ftreams that abound with fifh. It is inhabited by Kurils, who are rated at 41 perfons.

KUNCKEL, Jour, in Biograpby, a celebrated chemift, was born at Hufum, in the duchy of Slefwick, in the year 1630. He was originally intended for the practice of phar-

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macy; but having applied himfelf with equal diligence to the flndy of chemiltry and metallurgy, he obtained great. reputation for his fkill in thefe departments, and was appointed chemint to the elector of Saxony. He afterwards went to the court of Frederic William, elector of Brandenburg, with a fimilar appointinent; and fubfequently to that of Charles XI. king of Sweden, who gave him the title of confeller metallique; and, in 1693 , granted him letters of nubility, under the name of Kunckel de Loewenttern. He was elelled 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 lifty years, and obtained nextraordinary fkill in the art. His patrons defrayed the expence of all the operations which he chofe to undertake; and, as directer of the glafsworks, he had many opportunities of exercifing his talent of acute obfervation. His theoretical knowledge, however, was very imperfect: for it is allowed that he was altogether d.:ltitute of the leaft tincture of philofophy, and was even faid to have been one of the fearchers for the philofopher's tlone. He is now principally known as the difcoverer of phofphorus, which he prepared from urine, and which bears his name in the fhops. He was the aurhor of feveral works, written in German, in a very bad ftyle, and with as little method as the reft of the alchemifts. His treatife "On Phofphorus" was printed at Leipfic in 16,-8, and his "Art of Giafs-making" in 1689. Two or three of his efliays have been tranllated into Latin. Eloy. Dict. Hift.

KUNDAL, in Geography, a town of Bengal; 20 miles S.E. of Comilah.

KUND $\rightarrow$ LLAH, a town of Hindooftan, in Dowlatabad; io miles E S.E. of Tooliapour.

KUND AWILSA, a town of Hindooftan, in Cicacole; 20 miles S.W. of Cicaco!e.

KUNDERA, a town of Hindoottan; 35 miles W. of Ponuah.

KUNDJEH, a town of Turkih-Armenia, on the Euphrates: 65 miles S. of Erzerum.

KUNDOZERSKAIA, a town of Ruffia, in the government of Archangel ; $12 S$ miles $S$. of Kola.

KUNDRUTCHIA, a town of Ruffia, in the country of the Coffacks, on the Donetz; 68 miles N.E. of Azoph.
KUNGIPARA, a town of Hindooftan, in the fubah of Delhi; 10 miles S.E. of Tannafar.

- KUNGUR, a town of Ruffia, and diftrict of the government of Perm, on the river Sylva; 40 miles $S$. of Perm.

KUNK, Congo, or Cung, a fea-port town of Perfia, in the province of Larittan, ou the coatt of the Perfian gulf, oppofite the ifland of Kiflme; 60 miles S.E. of Lar. N. lat. $26^{\prime} 44^{\prime}$. E. long. $54^{\prime \prime} 50^{\prime}$.

KUNNERSDORF, a town in the Middle Mark of Braudenburg, remarkable for a battle fought between the Pruffians and the united forces of the Auftrians and Ruffians, Augult the 12th, 1759; 3 miles E.N.E. of Francfort on the Oder.

KUNNIPOUR, a town of Hindootan, in Benares; 15 miles E. of Merzapour.

KUNOE, one of the Faroer iflands.
KUNOSY, a town of Lithuania, in the palatinate of Novogrodek; 34 miles E.S.E. of Novogrodels.

KUNOVATSKOI, a town of Ruflia, in the government of Tobolk, on the Oby; So miles S. of Obdorfkoi.

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KUNOW, a town of Poland, in the patatiate of Sandomirz; 16 miles S.S.E. of Radom.

KUN'LE, a town of Japan, in the ifland of Xicoco ; 18 miles S. of Ijo.

KUNTZEN, a town of Pruffa, in the province of Sanland, on the Curifch Nerung; 28 miles N. of Konighery.
KUNZEN, Adolph. CARt., in Biography, born at Wittemburs in 1720 , was an excellent performer on the harplichurd and organ, who in carly youth, about the midule of the laft century, came to Eugland, where his malterly and powerful manner of treating thefe inftrumeuts, both as a performer and compofer, may be fill remembered with pleafure by thofe who heard him. On his return to Gcrmany, he was appointed organift 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 Siveden, firmed into one province under the appellation of Hocdingedorne of Kuopio. The town flands on the weft fide of an extenfive lake; 150 miles S.S.E. of Ulea. N. lat. $62^{\circ} 54^{\prime}$. E. long. $27^{\circ} 8^{\circ}$.

KUORTANE, a town of Sweden, in the government of Wafa ; 52 miles E.S.E. of Wafa.

EUPENKA, a town of Ruffia, 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 bifhopric of Bamberg; 32 miles N.E. of Bamberg.-Alfo, a town of Bavaria, in the bifhopric of. Aichltadt ; 10 miles E.N.E. of A ichitadt.

KUPFER Nicher.. See Nickbr..
KUPFERBERG, in Gcograpthy, a town of Silefia, in the principality of Jauer; 15 miles S.S.W. of Jauer. N. lat. $50^{\circ} 40^{\prime}$. E. long. $15^{\prime \prime} 55^{\circ}$-Allo, a town of Bohemia, in the circle of Saatz; 22 miles W.S.W. of Saatz. N. lat. $50^{\circ} 23^{\prime}$. E. long. $135^{\prime}$.

KUPH, a decayed town of Syria, bearing amongtt its ruins marks of ancient fplendour. Its houles are conftructed of yellow hewn ftone; the walls are about eighteen inches thick, and are neither fattened with iron, nor laid in mortar. The houfes are built round courts, and appear like palaces. Croffes over the doors indicate that they were erected by Chriftians; and from the Ilyle of architecture, Dr. Pococke fuppofes that it was about the fcurth or fifth century; 35 miles S.S.W. of Aleppo.
IUPHE, a name given by Guettard to a petrifaction, the body of which is conical, the ant-rior part blunt, and the poAcrior part forked, while the interior is divided into two hollows or tubes.

KUPINATZ, in Geography, a town of Croatia; if 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 Raftadt.

KUPPOREAH, a town of Hindooftan, in the circar of Sirhind; 50 miles S.W. of Sirhund.

KUPRI, a river of Natolia, which runs into the gulf of Satalia, N. lat. $36^{\circ} 59^{\prime}$. E. long. $37^{\circ}$.

KUPRIBAZARI, a town of Afratic Turkey, in Caramania; 6 miles IV. of Satalia.

KUPSINGA, a town of Hindooftan, in the circar of Gangpour ; 10 miles S.S.W. of Gangpour.
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KUR.

## K U R

KUR, n river of $\Lambda$ fia, the ancient Cyrus (which fee), vifes in the Caucafian mountains, and purfuing a rapid courfe through Georgia, Schirwan, \&e. falls into the Cafpian fea, 70 miles S.S.W. of Baku. In the vicinity of this river the tand is fubjeet to inundations, and overgrown with high rich grafs; towards the fea it is brackifh and barren, but fertile fowards the mountaiss. About if 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 vill.ge, named Dfchawat. After its junction with the Aras, the Kur is about 70 fathoms broad, and only fo far navigrable; the rocks in the bed of the river hindering the navifration higher up. At about four German miles from the fea, it branches out into a number of arms, the rorthernmoft and futhernmolt of which are the mott coufiderable. The iflasds thus formed belong to Schirwan. On the n=rthern main arm lies the town of Sallian, which properly confits of a number of villages extending along the river, and owes its profperity to the uncommonly productive fihery of the Kur; for this river abounds with fturgeon and other fifh. Between the Kur and the Terek lies a tract of land, zlong the Cafpian fea, extending in lencth from the 30th to the $44^{\text {th }}$ degree of N. Latitude, and of various breadth, though for the molt part inconfiderable in proportion to its length. This tract contains fomewhat more than 2500 French fquare miles, and is divided into three provinces, viz. Kumak, Dagbefan, and Shirwan, of which the firlt is now dependest on Ruffia, and the two latter on Perfia. See eanch refpectively.

KURA, a finall ifland in the Cafpian fea, with fteep thores round it. N. lat. $39^{\circ}$.

KURABAD, a town of Candahat; 8 miles W. of A:tock.

KURAGGI, a town of Japan, in the ifland of Niphon; 45 miles N.N.E. of Jedo.

KURCH, a town of Natolia; 34 miles W. of Sinob.
KURDIUMI, a town of Ruffia, in the government of Saratof, on the Volga; 16 miles N.N.E. of Saratof.

KURGAN, a town of Rufia, and diftrict of the government of Tobolils. on the river Kurgan; 68 miles S.W. of Yalatorovk. Alfo, a river of Afia, which rifes in Khorafan, and rans into the Cafpian fea, W. of Aftarabat.

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. Kuniat, Cafe, or Ras Kuriat, a cape on the coalt of Arabia. N. lat. $23^{\circ} 27^{\prime \prime}$. E. lonz. $57^{\circ} 50^{\prime}$.

KURJAUN, a town of Hindooltan, in the circar of Gohud; 35 miles S.IV. of Gwalior.

KURIKK 1 , a town of Sweden, in the government of Wafa; 36 miles N.E of Chrillineftadt.

KURILA, a town of Sweden, in Eaft Bothnia; 20 milcs S.TV. of Brahe?tad.

KURILAUT, a town of Kharafm; 60 miles S.S.E. of Urkorje.

KURILE, or KUricskot, Ifands, a chain of iflands, ruming in a S.W. direction from the fouthern promontory of the peninfula of Kamtfchatka, or the Kurilloy Lopatka, to Japan, extending from N. lat. $5^{\circ} \mathrm{t}$ to $45^{\circ}$. They obtained this name from the inhabitants of the nelghbourbood of Lopatka, who being themfives called uriles, gave their own name to thefe inands, on firit beconing a quainted with them. Some of them are inhabited and wooded, others quite bare and rocky, and a few that are volcaric. According to Spanberg, they are 22 in number, without reckoning the fmall ones. Of the two Kurile iflands that be neareit to Lopatka, the frif accounts were brought to

Ruffia in the year 1713 . The others have been fucceffively known from that period to 1779 , by means of Ruffian mariners, who, at the time, put them under contribution to the crown. The 22 inands are Shoomthu or Shoomfka, Poromuhhir, or Paramoufir, Sherinki, Ma-kan-Kur-Affey, Anakutan, Ar-Amakutan, Syakutan, Ikarma, Thiicinkutan, Mufyr, Rach-koke, Mutova, Ralfagu, Uffaflyr, Ketoi, Semuflyr, Thirpa-Oi, Urup, or Ooroop, Etorpu, Kunaflyr, Thikota, and Matmai. Amakutan is diltant from the fourth illand (in the order of ent:meration) 35 verlts; it is about 100 vertts long and 15 broad; has three elevated fummits of mountains, of which two have exhaufted craters; the wood is ferubbed and fcarity ; red foxes are pretty numerous, but on the coalt are few feabeavers, Scc. Several itrears of hard water flow from it into the fea. From this Ar-Amakutan is dittant fix verits : its length is twenty verits and breadth ten; in the centre of the ifland is a rocky mountain, which was formerly a volcano, and towards the ftrait between it and the fifth ifland, on the eaftern fhore, ftards another, which is reperted to have been a burning mountain. This ifland is uniuhabited, and is only vifited by the Kurils, on account of the chace, as it abounds with foses; and on the fhores are fea-lions and fea-otters. Ikarma is about 12 verlts from the feventh ifland, and is eight verlts long. Upon it is a volcano, which occafionally emits flames; the fhore is fony, prefenting here and there a fulphureous fpring. It has neither lakes nor ftreams; and with refpect to wood and animals, it is in the fame ftate with Syafkatan. For an account of the other iflands, fee the relpective articles. Of thefe 22 Kurile iflunds, the firlt 21 are fubject to Ruffia; and all of thefe d., not pay tribute. The inanders are reported by their miffionary, the paftor of Paratounca, who vilits them once in three years, to be a friendly, hofpitable, generous, humane race of people, and excelling their Kamtfchadale noighbours, not lefs in the formation of their bodies than in docility and quicknefs of underltanding. Of thefe illands it is faid, that four only are inhabited, and their population is eftimated at 1400 perfons. The inhabitants are generally hairy, wear long beards, and live eatirely upon feals, fifh, and the produce of the chace. The more foutherly and independent iflanders fometimes pafs in canoes the channel that feparates them from the Ruffian Kuriles, in order to give fome of the commodities of Japan, fuch as filk, cottor, iron, Scc. in exchange for furs, dried fifh, and oil. The inhabitants of as many of the iflands as are brought under the Ruffian dominions are, at prefent, converted to Chriftianity; and probably the time is not very diftant, when a friendly and profitable intercourfe will be brought about between Kamtfchatka and the whole of this chain of illands; which will be followed by a communication with Japan itfelf. Thefe iflands extend from N. lat. $42^{\circ}$ to $51^{\prime}$... Tooke's Ruff. Emp. vol. i. Cook's Third Voyage, vol. iii.

KURISONDA, a town of Aliatic Turkey, in Caramania; 60 miles N.N.E. of Tocat.

KURISSIMA, a town of Japan, in the ifland of Xicoco; 16 miles W. of Ijo.

KURK, a town of Candahar; 25 miles E. of Cahul.
KURKIN, a town of Bengal; 11 miles N.E. of Ramgur.

KURKUMBA, town of Hindooflan, in the circar of Ruttunpour; 32 miles E. of Ruttunpour.

KURKUNA, a town of Hindoottan, in the circar of Surgooja; 25 miles NE. of Surgooja.

KURISTAT, a town of Sivecen, in the province of Nyland; 18 miles W. of Heling fors.

İURMa. See liogrma.
KURMA

## K U R

KURMAVATARA, in Mythology, the fecond of the ten incarnations of the Hindoo god Vifhnu, of which the follow. ing account is given in the Hindoo Pantheon. "The fecond grand avatara of Vifhnu, in the form of a tortoife, evidently refers alfo to the deluge. In that of Matfya, or the fifh, (fee Matsyavatara,) we find the neceffity of a deluge to cleanfe the world from its finful taints. By the demon Hyagriva having ftolen the Vedas while Bralma was dofing, we inuft underitand the dereliction of mankind from the doetrines and conduct preferibed in the frriptures, and the criminal indifference of their paftors. The preferving attribute of the deity interpofed, faved a remnant of creatures from deflruction, and by recovering the fcriptures, reclaimed mankind to purity of faith and conduct. For the purpofe of reltoring to man fome of the comforts and conveniences that were lolt in the flood, Vifhnu is fabled to have become incarnate azain in the form of a tortoife; in which fhape he fultained 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 Kerv.) Plate 49, of the Hindoo Pantheon exhibits this prozefs, where Vifhnu is feen in his place with the two other great powers oppofed 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 hifory of this avatara forms an epifode in the Mahabarat, and Mr. Wilkins has introduced a fine tranflation of it in his elegrant verfion of the Gita, where, however, the metamorphofis of Vifhnu into the turtoife is not directly mentioned. But fach is the ufual mode of telling and receiving the ftory, which is one of the moft popular, both in recitation and painting, aniong the monftrous mafs of fubjects derived from the copions Pantheon of the Hindoos.

Kurma, or Koorma, is the Sanfcrit appellation of the avatara. Among the Muhhrattas, and others in the weftern 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 wiew 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, Chandia or Soma; 2. Sri or Lakihmi, the goddefs of fortune and beauty; 3. Sura, wine, or Suradevi, the goddefs of wine; 4. Oochifrava, an eight-headed horfe; 5. Kuftubha, a jewel of ineftimable value ; 6. Paryata or Pariyata, a tree that £pontaneoully yielded every thing defired; 7. Surabhi, a cow fimilarly beautifu! ; 8. Ih hanvantara, a phyfician, or the god of phyfic; 9. Iravat, the elephant of Indra with three probofci; 10. Shank, a hell cohferring victory on any one who flould found it; 11. Danufha, 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 Lait obtained, to have been the primary object of this churning procefs; the other gems appear to have been obtained incidentally.
Under moft of the articles whofe foreign names occur in this, fome notice is taken of them, and we refer thither refpectively and generally for farther information thereon.

KURMDYA, in Geography, a town of Bengal; 55 miles S.S.W. of Doefa.

KURMJKI, a town of the principality of Georgia; 305 miles S.E.: of Teflis.

KURMYK, a town of Ruffia, and diftriat of the go.
vernment of Sinbbirf, on the Sura; 104 miles N.W. of Simbirk!

KUROPATNIKI, a town of Auftrian Poland, in Galicia; 45 miles E.S.E of Lemberg.

KUROSAKI, a town of Japan, in the illand of Ximo; ${ }_{27}{ }^{7}$ miles N. of Taifero.
KUROW, a town of the duchy of Holltein; 9 miles N.N.W. of Lubeck.

KURRA, a river of Hinduoftan, which runs into the Beema; 32 miles $N$. of Vifiapour.

KURRABAGEI, a town of Candahar, in the province of Glizzni; 20 miles W.S.W. of Ghizui. N. Iat. $33^{\circ} 30^{\circ}$. E. long. $67{ }^{\circ} 59^{\prime}$.

KURRERA, a town of Hindooltan, in the circar of Gohud; 12 miles S.S.E. of Narwa.

KURRIGOORA, a town of Bengal; 45 miles S.S.W. of Docfa.

KURRYA, a town of Bengal; 30 miles S.E. of Palamows.

KURSK, a government of Ruffia, which was formerly part of that of Bielgorod; comprehending 16 dirtricts: 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 ico 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 grevernment, on the river Tukar, which falls into flie Seim or Sem. N. lat. $53^{\prime} 40^{\circ}$. E. long. $3^{6} 24^{\prime}$.

KURSY, a town of Hindooftan, in Candeifn; 45 miles S.W. of Burhanpour.

KURTACULAC, a town of Afiatic Turkey, in Alzdulia; 25 miles S.E. of Adana.

KURTAPOUR, a town of Hindooftan, in Lakiore; 10 miles S. of Jallindar.
KURTCHI, an order of foldiery among the Perfians.
The word, in its original, fignifies army, and is applied to a body of cavalry, condifing of the nobility of the kingdom of Perfia, and the polterity of thofe conquerors, who placed Ifmael Sophi on the throne. They are in number about eighteen thoufand men.

Their commander is called latibji bafchi, which was formerly the firlt pott in the kingdom; equivalent to a conftable in France.

KURTUS, in Icbtbyology, a genus of the jugulares, confifting only of a fingle fipecies, called Indicus from its being an inhabitaut of the Indian feas. The body in this genus is carinated each fide, the back elevated, and the gill-membrane furnihhed with two rays. The fpecies known fubfitts on crabs and fhells, or teltaceous animals: the body is fhort, flender, golden, and appearing as if covered with filvery plates: the head is large, compreffed, and obtufe; eyes very lurge, with black pupil, and iris above blue, beneath white; mouth large; jaws with numerous teeth; tongue fhort and cartilaginous; lateral line ftraight, and commencing above the pectoral tin; firft ray of the dorfal and ventral fins hard, and two firt of the anal fpinous.

KURU, in Geograply, a town of Sweden, in the government of Abo; 63 miles E.N.E. of Biorneborg.

Kuru, in Hindoo Myythological Legends, was the brother of Pandu, who was the father of the five heroes of the Mahabarat. Kuru had a hundred fons, whofe contefts with the Pardus are the fubject of that poem, which is a continued allegory of the ftruggles between man's virtues and vices, perfonilied in the offspriug of the brothers. Sce Maliababat, and Paxdu.

KURUMA.

## K U S

KURUMA, in Geograpbs, a town of Japan, in the iffand of Ximo ; 16 miles E.N.E. of Ikua.

KURYMA, a town of Hungary; 12 miles N.E. of Szeben.

KUSA, in Botany, the fpecies of grafs poa cynofuroides, efteemed by the Hindoos very faced and myftical, and ufed by the Bralumans in many of their facred or fuperititious ceremonies. Among this race of fabulift fome poctical legend exitts, accounting, in their way, for cvery fubjeet and allufion in their complex mythology and theogony. Of the kufa grafs this is related in the Hindoo Pantheon. "S Some legends make Garuda the offspring of Kafyapa and Diti. (See Kasrapa.) This all-prolific dame laid an egg, which, it was predicted, would produce her deliverer from fome great affiction: after a lapfe of five hundred years, Garuda or Superna (fee Surerna) fprang from the egg, fliw to the abode of Indra, extinguified the fire that furrounded it, co:cquered its guards, and bore off the amrita, (fee Kummavatara,) which enabled him to liberate his mother, at that time afflited in captivity. A few drops of this immortal beverage falling on the kufa, it became a grafs eternaly confecrated; and forne frakes, greedily licking up the anbroffia, fo l.cerated thair tongues with the fharp blades of the grals, that they have ever fince remained forked: but the boon of eternity was infured to them alfo by their thus partaking of the immortality-conferring. fuid. (See Kete.) This caufe of frakes having forked tongues is till popularly, in the tales of India, attributed to the above greedinefs." P. 341 .

KUSAMO, in Geograpby, a town of Sweden, in the government of Ulea; 85 miles $\mathbf{E}$ of Tornea.

KUSBAH, a town of Hindooftan, in lenares; 22 miles V.N.IV. of Benares.

KUSCAN, a town of Perfia, in the province of Segeltan ; 21 miks N.E. of Kin.

KUSCARI, a town of Mingrelia; 30 miles N.N.E. of Anarchia.

KUSCHAIL, a town of Ruffia, in the government of T'obolfk; 28 miles S. of Tomk.

KUSHA, a town of Poland, in Podolia; 32 miles E. of Kaminiecz.
KUSHAL, Kusiel, or Kutbal, a fortrefs of Afia, in Kuttore. N. bat. $35^{\prime} 17^{\prime}$. E. long. $70^{\circ} 39^{\prime}$.

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 Kalifch.

KUS.KHUSER, a town of Perfia, in Farfitan; 31 miles N . of Schiras.

KUSMA, a fmall town of Arabia, ftanding 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 ifland 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 Auftrian goveruor ; Io
mites W. of Schweitz.

KUSSOOR, a town of Hindooftan, in Lahore ; 26 miles W.N.W. of Firofepour.
KUSTANGI, or Chiustengi, a town of European Turkey, in Bulgaria, on the Black fea, formerly called Confantia, N. lat. $44^{\circ} 30^{\prime}$. E. long. $28^{\circ} 37^{\circ}$.

KUSTER, LUDOLPH, in Bicgrapbj, was born in $16 \%$,
at Blomberg, in Weftphalia, of which town his father was a macyifrate. He ftudied under his elder brother at the Joachim college of Berlin, and was afterwards appointed tutor to the two fons of the count Schwering: On quitting that flation, with a penfion, he went to Frankfort on the Oder, and there publifhed, in 1696 , his "Hiftoria Critica Homeri." He was promifed a prufefferfhip in the univerlity of Joachim, and till that fhould be vacant he refolved to travel, and vifited Leyden and Utrecht ; at the latter place he delivered a courfe of lectures on the law of nations, and publifhed his "Bibliotheca Librorum." He then went to England, and thence to France, for the purpofe of collating MSS. for a new edition of Suidas. Having furnifhed 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 univerfity of Cumbridge, 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 inftalled in the profefforfhip promifed to him. The fituation did not anfwer his expectations, he was rendered uncomfortable by difputes refpecting his falary, and by having incurred the fufpicion of being addicied to the principles of Arianifn, fo that in a fhort time he found it expedient to retire to AmAterdam. Here be was reduced to abfolute poverty by the failure of his banker. He afterwards went to Antwerp, embraced the Catholic religion, and was rewarded by a pen. fion from the king, and with an admiffion into the Academy of Infcriptions. He died at the age of forty-fix. He was a great malter of the Latin tongue, and wrote well in it ; but his chief excellence was his ikill in the Greek language, to which he almoft entirely devoted himfelf. Befides the works already referred to, he publifhed "J Jamblicus Porphyrius, et Anonymus apud Photium de Vita Pythagorx ', A new edition of Dr. Mill's Greek Teftament. "Ariftophanes Gr, et Lat." "De vero ufu verborum mediorum," which has been much efteemed as a grammatical treatife.

KUSTUBHA, in Hindoo Legends, is an ineftimable gem, 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 fmall inland, in the fea of Marmora. N. lat. $40^{\circ} 30^{\circ}$ E. long. $27^{\circ} 22^{\prime}$.

KUTAN, a town of Hindooftan, in Oude; 30 miles E. of Kairabad.

KUTATS, a town of Japan, in the ifland of Niphon; 25 miles E. of Meaco.

KUTINA, a town of Sclavonia; 33 miles W.N.W. of Pofzega.

KUTSCHINA, a town of Servia; 16 miles S.S.W. of Orfova.

KU-TSING, a city of China, of the firft rank, in the province of Yun-nan; furrounded with mountains, about which the foil is fruitful. Its jurifdition comprehends five towns of the fecond clafs, and two of the third. The inhabitants are induftrious in cultivating the ground. N. lat. $25^{\prime} 34^{\prime}$. E. long. $103^{\circ} 27^{\prime}$.
KUTSKOI, a town of Ruffia, in the government of Ir-: kutn, on the Kuta, where it joins the Lena; 60 miles E. of Ilimk. N. lat. $5^{6} 40^{\prime}$. E. long. $123^{\circ} 20^{\prime}$.

KUTTENBERG, or Kutna-Hora, a town of Bo. hemia, in the circle of Czaflau, famous for its filver mines, formerly
formerly abundant, difcovered by a monk in 1237; 4 miles N. IW. of Craflau. N. lat. $49^{\circ} 5^{\prime \prime}$. E. long. $15^{\circ}$ 19'.

KUTTOORE, a tract of country between the N.E. part of Cabul, and the N.W. of Cachenire, now fubject to Candahar. This tract borders on the N. of Sewad, Bijore, Puckholi, \&ec. It has obtained from the Mahometans the name of Caferifan, or land of infidels, and is claffed by the people of Hindooitan as a dependency of Cafhgar. It occupies nearly the place of Peolemy's Comedi, and anfwers to it in defcription, being entircly mountainous. An authur, cited by Renuell, ftates that Kuttore contains a great number of towns and villages, and is exceedingly populous Its principal towns are Towkul, called alfo Showkul, and Jourkull; thefe being the refidence 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 flefh; although their country is wellftocked with cows and goats. They have a dittinct language not at all refembling 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 moft part, idolaters; that they are of a robult make, and that their complexion is a mixture of red and white.

Kutrore is allo a town and fortrefs in the above deferibed country; 100 miles N.E. of Cabul. N. lat. $35^{\prime}$ $27^{\prime}$. E. long. $70^{\circ} 17^{\circ}$.

KUTTRY. See Rajpoots.
KUTTUHDUA, a fmall ifland in the bay of Bengal, near the coalt of Aracan, inhabited chiefly by fifhermen. It is well wooded. N. lat. $21^{\circ} 52^{\prime}$. E. long. $91^{\circ} 45^{\prime}$.

KUTUM, a town of Hindooltan, in Benares; 10 miles N.E. of Bidrigur.

KUTZABAR, a town of Perfia, in Mazanderan; 40 miles S.W. of Fchrabad.

KUVA, a fmall town of Perfia, S. of Derbent; the refidence of a khan.

KUVERA, in Hindon Mytho'ogy, is the regent of wealth, correfponding with the Plutus of the weftern Pantheon. He is defcribed, in refpect of externals, as a mere man, gloomy, felfihh, and deformed ; but as a magnificent deity, refiding in the fplendid city Alaka, and borne through the $\mathbb{R} y$ in a grorgeous car, called pufpaka, or flowery. He is alfo called Viteffa, Paulaftya, and Dhanada; and as the fon of a fage named Vifrava, he is culled Vifravana, a name likewife of Ravena, half brother, by the fame father, of Kuvera. (See Ravena.) His fervants and companions are the Yakfhas and Guhyakas, into whofe filthy forms tranfmigrate the fouls of thofe men who in this life are addicied to fordid and bafe paffions, or abforbed in worldly profperity. The term Guhyaka is derived from gub (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 Lakfomi, which fee.

The Hindoos have affigned regents to each cardinal and intermediate point of the compafs. (See Marut.) Kuvera 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 nilcs E.S.E. of Filippopoli,

KUYNDER, a fea-port town of Holland, in Friefland, on the W, lide of the river of the fame name, at its entrance into the Zuyder fee; 23 miles S. of Lewarden. N. lat. $53^{\circ} 4^{3}$. E. long $56^{\circ}$.

KUYP, or Cuyp, Albert, in Biograpby, a painter who ranks among the beft and moft original artilks. He was born at Dort in. 1606 , and was the fon of Jacob Gerritz

Kuyp, a landfcape painter of much merit. From his father he firlt learnt the rudiments of the art; but furpatied him infinitely in his progrefs. He was one of the moll agreeable painters that ever lived; imitating with the greatelt perfection the purity and brilliancy of light. No artilt ever reprefented the atmofphere which furrounds all objects more completely than Cuyp; not even Claude : and in the effect of fun-fline, none ever approached him. The fimpleft fcenes and combinations of objects were fufficient for him to exert his talents upon; and he never failed to give an intereft to them by the Iweetnefs of his colour, and the beauty of his light and fhade.

Little or nothing is known of his life. His works are numerous, and therefore he mult have lived long; for they are of fo highly finifhed a quality that he mult have given much time to them.
In the various collections among the nobility in England, works of his thine with almoit unrivalied luftre; and are not very uncommon. At the marquis of Staffurd's is a very fine one of the landing of prince Maurice at Dort. There are alfo feveral others of great merit.

KUZNETCHICHA, in Geograply, a town of Ruffra, in the government of Simbirti, on the Volga; 16 miles N.E. of Simbirfl.

KUZNETZK, a town of Ruffia, and difrict of the government of Saratof, feated on a rivulet, falling into the Sura; 96 miles. N.N.E. of Saratof.
Kuznetze, a town of Ruflia, and difrict of the goverument of Kolyvan, fituated on the river Tom, oppolite to the mouth of the Kondama; built in 1618 , on a place whither the Tartars generally reforted, and colonized frem Tomfk, and fome other towns. It contains about 300 houfes, and the inhabitants are chiefly employed in the manufacture of iron; 188 miles E.S.E. of Kolyvan. N. lat. $53^{\circ} 40^{\circ}$. E. long. $86^{\prime} 49^{\prime}$.

KUZNETSKOI Moustains, a range of mountains, forming one of the fub-divifions of the Ruffian fhare of the Altaian mountains, the other being the Oby and the Yeniffey. See Altai.

KUZNIK, a town of Ruffia, in the government of Viatka; $4^{8}$ miles S.S.W. of Glazov.

KUZOMEN, a town of Ruffia, in the government of Archangel, on the coalt of the White fea; 124 miles N.W. of Archangel.

KUZREKA, a town of Rufla, in the government of Archangel, on the N. coaft of the White fea; 140 miles S.S.E. of Kola.

KWASSITZ, a town of Moravia, in the circle of Hradifch ; 14 miles N. of Hradifch.

KWdSSOWA, a town of Poland, in Volhynia; 28 miles N . of Zytomiers.

KYANITE, or Cyanite, Wern.; Difthène, Haüy; Sappare, Sauflure. Other names derived from fancied refemblances, are blue-fhorl, blue talc, blue mica, foliated beryl, fapphir fpar, blue feldfpar, \&c. Hauiy's name implies the power this fubftance poffefles of acquiring both vitreous and refinous electricity; all the other denominations are expreffive of its characteritic.

Colour, which is generally azure-blue, light Pruffian blue, or fmalt-blue; but it is alfo feen blueifh-grey, milky, greyifh. and greenih-white, and more feldom feladon, and other thades of blueith-green. Thefe colours are either uniform or mixed : the bluein-grey, flriped or flamed with various. fhades of Pruffian blue, is the moit common mixture.

It occurs mafive, diffeminated in blunt-edged pieces, and cryftallized. The following are the modifications we are acquainted with: 1. The oblique quadrangular primm, (which
(which appears alio to be the primitive form of this fubHance, ) with two oppolite fides very narrow, which give the cryital a contracted tabular form. 2. The lateral edges formed by the acute angles of the preceding cryitals, intercepted each by a plane, or trumeated: this plane is generally very narrow. 3. The lateral edges formed by the obtufe augles of N 1, intercepted each by a plane, or truncated. This modification appears to be very fearce. 4. Four of the terminal edges of $\mathrm{N}^{2}$, intercepted each by a plane, which, if they met in a point, would form a four-fided pyramid. This we have obferved in a fmall cryltal included in rock-cryllal.

Thefe cryllals, efpecially thofe from Mount St. Gothard, are not unfrequently feen as twin-cryttals, or macles.
They are moltly middle-fized, but alfo fmall, and very fmall; and occur imbedded, either fingly, or in groups, interfecting each other. They are not unfrequently feen curved and twilted, as if they had fuitained preffure, when not yet hardened.
The internal, and generally alfo the external luftre of the cyanite is fliming and felendent; it is a perfectly pearly luitte.
The longitudinal fracture of the cryitals is foliated, with two-fold cleavage, one of which is much more diftinct than the other. In the uncryttallized varieties the fracture is broad, Atraight, or curved-radiated, fometimes pafling into foliated. The fragments are fplintery, wedge-fhaped, or even approaching the rhomboidal figure. The wedge-fhaped diftinct concretions, in which it occurs, are often grown together in all directions.

The maflive cyanite is faintly tranflucent; but the cryftals are often perfectly tranfparent: refraction fimple.

It is femi-hard, nearly foft : a ftecl needle eafily fcratches the broad planes of the cryftals, but not the narrow and truncating planes.
It is nightly flexible, but not elafic: and eafily frangible.

Its fpecific gravity is ftated to be 3.517 by Sauffure, 3.622 (the Siberian) by Herrmann, and 3.092 (the bluein-grey var. from Tyrol) by Kirwan.

The following are the refults of the analyfes made of this fubitance.


The two following analyfes differ fiom the preceding, particulariy in the abfence of magt efia and lime:

Laugier.

| Silica - | 38.5 |
| :--- | :--- |
| Alumine - | 55.5 |
| Lime |  |
| Oxyd of iron | 0.5 |
| Lols and water | 2.75 |
| Lol |  |

Klaproth.

$$
\begin{aligned}
& 43 . \\
& 55.50^{\circ}
\end{aligned}
$$

$$
0.50
$$

Soda a trace

Cyanite is infufible before the blow-pipe, a property which, according to Saufure, renders it a convenient fupport for fubitances to be tried by that inftrument.

This fubftance is found only in primitive mountains, imbedded in mica flate and talc flate, accompanied by granatite or flaurolite and garnets, with now and then iron ochre, iron pyrites, calcareous fpar, \&c. In Moravia and Saxony it occurs in fmall groups imbedded in a variety of a primitive rock called weifs-llein, or white-ftone.

Its principal localities are Switzerland (efpecially at Airolo, ons the fouth fide of Mount St. Gothard) ; Saltzburg and Tyrol (in the Zillerthal); Carinthia (on the SauAlpe); Scotland (Aberdcenthire, near Banchory, and in the Mainland, one of the Shetland inlands); France (in the neighbourhood of Lyons); it has alfo been found in Norway, in Siberia, in Brafil, \&cc.

When cut and polifhed it refembles in colour fome varieties of fapphir, and fpecimens of it are fometimes exhibited under this name; but, not to mention the frix always obfervable in the interior of cyanite ftones, their inferior luftre, and comparative foftnefs, will foon clear up all doubts refpecting their nature.

Sauflure has endeavoured to introduce the name Sappare for this mineral, and he tells us, that in Scoiland it is known by that appellation. Some authors lave lately criticifed this name as being derived from the bad pronunciation of the word fapphire, with whith the cyanite is faid to have been confounded by the perfon who pointed it out to Sauflure: 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 inprobable that it may alfo have included the fubject of this article.
KYBAR, in Geograply, a town of Norway; 6 miles S.S. W. of Wardhuy's

KYBURG, a bailiwick of Switzerland, in the canton of Zurich.

KYDREBAD, a town of Hindooltan, in Oude ; $\delta$ miles N.E. of Fyzabad.

KYHOLM, a fnall ifland of Denmark, near the ifland of Samfoe.

KYL, a town of Sweden, in the province of Warmeland ;' 25 miles S.E. of Carltacit. - Allo, a town of Sweden, in the province of Nericia; 8 miles N.TV. of Orebro.

KYLA, a town of Sweden, in Warmeland; 23 miles S.W. of Calitadt.

KYLE of Durnefs, a bay on the N. coalt of Scotland, at the mouth of the river Durnefs: the entrance, W. of Farout head, is in N. lat. $58^{\circ} 40^{\prime}$. W. long. $4{ }^{\circ}+2^{\prime}$.

Kyle of Rhea, a marrow itrait between the ifland of Sky, and the main land of the county of Invernefs. N. lat. $57^{\prime}$ $15^{\prime}$. W. long. $5^{\circ}+0^{\prime}$.

Kyle Scozuie, a bay on the W. coatt of Scotland, and county of Sutherland. N. lat. $5^{\circ} 16^{\prime} . W$. long. $5^{\circ} 5^{\prime}$.

Kile of Tongre, a bay on the N. of Scotland, and county of Sutherland; ${ }^{13}$ miles W.S.IV. of Strathy-head. N. lat. $5^{\circ} 35^{\prime} . \mathrm{W}$. long. $4^{\circ} 13^{\prime}$.

KYLLINGIA, in Botary, fo called by Rottböll, in: metnory of his countryman, Peter Kylling, a Dane, who, in 16S8, publifhed at Copenhagen, the Viridariun Danicum, which is a catalogue in Latin, Dznifh, and German, of the

## K Y L

native plants of Denmark, making 174 quarlo pages. Rottb. Gram. 12. Lint. Fil. Nov. Gram. Gen. 24 . to 1. Am. Acad. v. 10. 2. 24. t. I. Suppl. 11. Schreb. 40. Willd. Sp. Pl. v. 1. 256. Mart. Mill. Dict. v. 3. Ait. Ifort, Kew. ed. 2. v. 1. 125. Brown. Prodr. Nov. Holl. V. 1. 218 . Juff. 27. Lamarck Illuftr. t. 3S.- $\mathrm{Cl}_{\text {ars }}$ and order, Triandria MTonogynia. Nat. Ord. Calamaria, Lim. Cyperoidee, Juff.

Gen. Ch. Flowerrs aggregate, in an oblong fcaly head. Cal. Glume of two unequal valves, compreffed, nearly fingle-flowered, fingle-feeded; valves lanceolate, chann:lled, acute, much fhorter than the corolia. Cor. Glume of two unequal valves, conprefied, larger than the caly geeled, fpreading; the larger lanceolate, folded, very aute, embracing the fmaller. Stam. Filaments three, awl-fhaped, flat; anthers terminal, linear, erect. Pijf. Germen fuperior, obovate, compreffed, gibbous at one of its edges, without any brifles at the baie; flyle thread-fhaped; ftigmas two or three, capillary. 'Peric, none, except the permanent corolla. Seed oblong, triangular, beardlefs. - The fame calyx fometimes contains alfo either a male or a neutral flower.

Eff. Ch. Flowers aggregate, in an oblong, imbricated, head. Calyx of two valves. Corolla of two valves. Seed without briftles at the bafe.
This genus, adopted from Rottboll by the younger Linneus, had by his father been confounded with Schocnus, which its flowers in fome meafure refemble; but the habit, efpecially the aggregate, long, floral leaves, are akin to Cyperus. In the Supplementum four fpecies are defined; Willdenow has eight ; and a new one, K. intermedia, is defcribed by Mr. Brown in his Prodromus, as found at Port Jackfon, New South Wales.-Ther are all natives of warm countries, chiefly in the Eaft or Weft Indies, and moift fituations. Their roots feem to be perennial. Their herbage is nender. Stem fimple, triangular, ftriated, and roughifh. Leaves narrow, roughedged. Heads pale or whitifh, terminal, ufually feffile, among the floral leaves, cither folitary or feveral together, roundifh or oblong, confifting of numerous, fmall, denfely crowded flowers, whofe glumes are more or lefs ribbed or friated, deftitute of awns.

Examples of this genus are,
K. monocephala. Rottb. Gram. 13.t.4. f. 4. (Schoenus coloratus; Linn. Sp. Pl. 64.)-Stem flender, triangular. Head globofe, feffile, folitary. Floral leaves three, very long:-Native of both Indies. Root creeping. Stems-folitary, a fpan high, bearing two or three leaves at the bafe, and three as long at the top, accompanied fometimes by a fmaller one. The head of flowers is fcarcely bigger than a large pea, whitifh, very denfe.-Thryocephalon nemorale of Forfter, from Otaheite, appears to be precifely this plant.
\&. K. triceps. Rottb. Gram. 14. t. 4. f. 6. (Scirpus glomeratus; Liun. Sp. Pl. ed. I. 52. Schrenus niveus; Sylt. Veg. ed. 13. 8I.)-Heads about three together, cluftered, feffile, fomewhat ovate,-Native of both Indies. Rather larger than the laft, of which, in the ad edition of Species Plantarum, it is made a variety, but it is a fmoother plant, and the cluifered rather lefs globular heads dittinguifh the prefent fpecies.
K. insompleta. Jacq. Coll. v. 4. Ior. Ic. Rar. t. 300Umbel compound. Spikes numerous, cylindrica!. Calyx of one valve. - Native of the Caraccas. This is a very large fpecies, with a fharply triangular fems three or four fect high, very long floral leaves under the general umbel, and many fmall leaves under the partial ones. The numerous cluttered beads, or rather fiikes, are oblong, various in

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fize, greenifh, of numerous fpreading foucers, whofe calyx, according to Jacquin, has but one valve.
K. moaoceth, sia, triseps, and umbellafa, are cultivated in the floves at kn, where they flower in fummer or autumn. but probably excite little attention, except among curious botanilts.

KYI, , or Kyela, in Geography, a fea-port on the W. coaft of the illand of Celebes, with a fpacious harbour. S. lat. 1 ' 15 .
KYMIITS, an ifland in the Baltic, near the coaft of Finland: 20 miles long, and from one to two broad. N. lat. 6016.

KYMMEN, a river of Finland, which fows from the lake of Pejend, or Pejana, into the centre of the gulf of Finland.

KYNE, a town of Sweden, in Eaf Bothnia; is miles N.E. of Wafa.

## Kyneton. See Kineton.

KYNTO, a lake of Rufiis, in the government of Olonetz, about 48 miles long, and from 12 to 16 broad. N. lat. $65^{\circ} 40^{\circ}$. E lorg. $28^{40^{\circ} .}$

KYPER, Albert, in Bicgrapby, a pliyfician, was born at Konigfberg, in Pruffir, and probably took the degree ot M. D. at Leyden, where he was fludying in the year 1642 . He was afterwards chofen firlt prof flor of phylic, in the new medical fchool eftabliibed at Breda in 1646: but he quitted this ftation two years afterwards, in order to take poffeffion 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 univerlity. He publifhed feveral works. "Methodus Medicinam ritè difcendi et exercendi," Levden, 1642. "Intitutiones Phylicx," ibid. 1647. "Anthropologia, corporis humani contentorum, et animæ naturam et virtutes, fecundum circularem fanguinis motum, explicans," ibid. 1647, \&c. "Inflitutiones Medica ad hypothefin de circulari fanguinis motu compofitæ," Amfterdan, 1654. "Collegium Medicum, xxvi. Difputationibus breviter complectens que ad Inflitutiones pertinent," Leyden, i655. This volume contained affo fome mifcelianeous and political tracts. Eloy. Dict. Hitt. de Med.

KYPHONISM, Kyphonismus, or Cyphonifmus, an ancient punifhment, which was frequently undergone by the martyrs in the primitive times; wherein the body of the perfon to fuffer was anointed with honey, and fo expofed to the fun, that the flies and wafps might be tempted to torment him. This was performed in three manners; fometimes they only tied the patient to a flake; fometimes they hoited him into the air, and füfpended him in a bafket; and fometimes they ftretched him out on the ground, with his hands tied behind him. The word is originally Grees, and comes from xupx", which fignifies either the fake to which the patient was tied, the collar fitted to the neck, or an infrument wherewith they tormented him ; the fcholialt on Aritophanes fays, it was a wooden lock, or cage; and that it was called fo from xumisu, to crook or bend, becaufe it kept the tortured in a crooked bowing połure; others take the xu $\sum_{w}$ for a log of wood laid over the criminal's head to prevent his ftanding upright: Hefychics defcribes the $x: \hat{q} a v$ as a piece of wood, whereon criminals were itretched and tormented. In effect, it is probable the word might fignify ali thefe feveral things. It was a generical name, whereot there were the ipecies.

Suidas gives us the fragment of an old law, which penifhed thofe who treated the laws, with contempt, with kyphonifm for the fpace of twenty days; after which they were to be precipitated from a rock, dreffed in womea's habit.

KYRA,

KYRA, in Gcograply, a town of Hindooftan, 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 caftle of Hungary ; 12 miles S.W. of Sivat.

KYRANTY, a town of Bootan ; 60 miles S. of Taffafudon.

KYREZYCE, a town of Poland, in the palatinate of Volhynia; 56 miles N.W. of Zytomiers.

KYRIE, in Ecclefiafical Arufic, the firft word of every mals in mufic. It furnifhes, with eleifon, the only articulations of the firft movement of all maffes ancient and modern. Kyrie, the vocative cafe, implics. O Lord, and joined with elifon, is equal to "Lord have mercy on us." Kyrie, in fpeaking of a mafs in mufic, is often ufed fubftantively, as "there is a well written kyrie in that mafs or dervice."

KYRILA, in Geography, a town of Sweden, in Eaft Bothnia ; 36 miles E.N.E. of Chriftiantadt.

KYRITZ, a town of Brandenburg, in the Mark of Pregnitz; 40 miles N.W. of Berlin. N. lat. $52^{\circ} 26^{\prime}$. E. long. $12^{\circ}{ }^{2} 6^{\circ}$.

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 Siweden, in Ealt Bothnia; 12 miles E.S.E. of Wafa.

Kiro, Stor, a town of Sweden, in Eaft Bothnia; 20 miles S.E. of Wafa.

KYSCHAW, a town of Pruffia, in Pomerelia; 32 miles S.E. of Dantzic.

KYSTIS, Kurbs, in Anatomy. See Cystis,
KYTEE, in Gcography, a town of Bengal; 12 miles S. of Burdwan. N. lat. $23^{\circ} 3^{\prime}$. E. long. $88^{\circ}$.-Alfo, atown of Hindooftan, in Bahar; 28 miles S.S.W. of A riah.

KYTEKIEHL, or Kytzbuhi, a town of the county. of Tyrol; 45 miles N.E. of Infpruck.

KYUQUOT, a large found or bay on the N.W. coaltof N . America, having on one fide of it Robert's ifland. N. lat. $50^{\circ}$. W. long. $127^{\circ} 20^{\prime}$.

KZILKAN, a town of Afiatic Turkey, on the 'iligris; 21 miles N. of Tecrit.

KZIKEN, a town of Afatic Turkey; 15 milcs W. of Merdin.

## L.

LEL, a fomi-vowel, or liquid confonant, making the 1. eleventh letter of the Englifh alphabet, and always preferving the fame found.
The $l$ is pronounced by applying the tongue to the palate.

Pafterat obferves, that $l$ was frequently ufed among the ancients for $b$, as in cilliba for cibilla; for $d$, as alipe for adipe; for $c$, as mutila for mutica; for $n$, as arvilla for arvina, belle for bene, colligo for contigo; for $r$, as fratellus of frater, balatrones for baratones; for $f$, as ancille of am and ciffum, equilio for equifio; for $t$, as equifelis, for equifetis, Thelis for Thetis. See D, T, \&c.
The $l l$ is a modern contrivance, and was never ufed among ancient Roman authors: they wrote alium, not alliizm; macelum, not macellum; polucere, not pollucere.

The $l l$ of the Greeks was fometimes changed by the Romans into $l i$, as in $\alpha \lambda \lambda \lambda_{0} u x i$, futio ; $\alpha \lambda \lambda 0 ;$, aliuss ; fun 久o., folium: $r$ has alfo been turned into $l l$; as hira, illa ; furare, fatullare ; \&c. and $l$ into $x$, or sill; as ala, axilla; mala, maxilla; velum, vexillum; $d$ was alfo ufed for $l, n$ for $l l$, and $r$ for $l$. See R, \&c.

L is allo frequently ufed inftead of $d$, as in Ulyfes, from the Greek Oeverus, in that Eolic dialect rivernso Thus
alfo for dautia, we fay lautia; for dacruma, lacryma, \&c. See D.
There are feveral people, for inftance, the Chinefe in Afia, the Illinois in America, \&c. who cannot prowounce the $r$, but always change it into $l$. Thus, when any of them have been baptized by the name of Petrus, Francijcus, \&c. they always pronounce it Petlus, Flancijcus, \&ec. See R.

Among the Saxons the $l$ was afpirated, and the Spaniards ${ }^{\prime}$ and Welfh ufually double it at the beginning of a word, which 18unds nearly the fame with our blor $f l$. 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, wille, fulle, and when the $e$ firft became filent, and was afterwards omitted, the $l l$ 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, fo as to be almolt mute; as table, Jouttle.
The figure of our L we borrowed from the Latins, they from the Greeks, and they again from the Hebrewe, whole
lamed is much like our L, excepting that the angle in fomewhat more acute.

L was alfo a numeral letter among the ancients, and is ftill fo in the Roman cyphering, figuifying fifty; according to the verfe,
"Quinquies $L$ denos numero defignat habendos."
When a dafh was added at the top, thus, $\overline{\mathrm{L}}$, it flood for ffty thoufind.

L was ufed for fifty, being half a C , which fignified a hundred, and was formerly written thus L , which, according to Paiquire, makes two LL, the one upright, the other inverted.

The French Louis-d'ors have a crofs on them, confilting of cight $L$ 's interwoven, and difpofed in form of a crofs. The letter L is marked on the money coincd at Bayonne. The epuchas on Greek medals are ufually written with the ancient lambda, L; which, according to the tradition of the antiquaries, ftands for Avxoうzuvos, a poetical word, unknown in common fpeech, lignifying anno, and which it is probable was more ufed in Egypt than Greece.

L as an abbreviature ftands for Lucius; and LLS. for a fetterce. In Englifh, it denotes a pound iterling.

LA, in $M_{u f f}$, is the fixth found of the Guido fcale. See Gabmux, and Solmigation.

LAAB, or Lava, in Geography, a town of Auftria, on the river 'Taya; 26 miles N. of Vienna. N. lat. 48' $39^{\prime}$. E. long. ' $16^{\circ} 16^{\prime}$.

LAADSTEE, a town of Norway; 112 miles N. of Bergen.

LAAGE, a town of Mecklenburg ; i4 miles S.E. of Rotrick. N. lat. $55^{\circ} 5^{5^{\prime}}$. E. long. $12^{\circ} 30^{\prime}$.

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 molt fertile fpot in the Danifh dominions. It produces variety of grain, particularly wheat, and alfo peafe; and is chiefly appropriated to the cultivation of corn. Its woods, in which it is not deficient, are more frequent in the ealt, than on the weft fide of the ifland. As its fituation is low, the air is damp and the climate is infalubrions. Of all the inhabitants, the clergy are molt liberally provided for, according to their rank. The nobility are numerous, and poffefs large eftates with fine houfes. This ifland, like Tealter, has a peculiar governor; but both are under the fpiritual jurifdiction of the bifhop of Funen. The capital is Nafkow. N. lat. $54^{\circ} \cdot 40^{\prime}$ to $55^{\circ}$. E. long. $10^{\circ} 59^{\prime}$ to ${ }^{1} 1^{\circ} 5^{2}$.

LAALGUNGE, a town of Hindooltan, in Oude; 25 miles E. of Manichpour.

LAARET, an ifland in the Ealt Indian fea, about 50 miles in circuit. S. lat. $6^{\circ} 4^{8^{\prime}}$. E. long. $132^{\circ} 3^{\prime}$.

LAAS, or Loscir, a town of Carniola, with a citadel ; 23 miles E. N. E. of Triefte. N. lat. $45^{\circ} 5^{\prime}$. E. long. $2+25^{\prime}$.

LAASPHA, or Laspa, a town of Germany, in the connty of Witgenftein; 64 miles E. of Cologne. N. lat. $50^{\circ} 53^{\prime}$ E. long. $8^{\circ} 30^{\prime}$.

LAB, a town of Germany, in the bihopric of Wurzburg ; 6 miles I.S.E. of Volkach.

LABAAR, a town of Hindooftan, in the fubalh 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 Celcbes.

Labacean has one native regent, who has the appellation of " Crain."

LABADIDA, a town and diftrict of Africa, on the Guld Coalt.

LABADIE, Jons, in Biography, a celebrated enthufian, was born at Bourg, in Guienne, in the year 1610; when he was fix years old he was fent to Bourdeaux to be inflructed 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 eftemed for piety and learuing, that it was with the utmof difficulty he obtained his difmiffion what he afked for it. At length he quitted the fociety and ber came an itinerant preacher. The aulterity of his maners, his great zcal, and affected piety, procured him many admirers wherever he went. At Amiens he obtaired a canonry, but being detected in fome criminal intrigucs, the bilhop ordered him to be arrefted; he, however, efcaped. and concealed himfelf at Paris. On this and fome other parts of Labadie's conduct, Bayle makes the following remarks, which, in fome degree, are probably applicable to religious enthufiatts of other countries befides France: "I do not," fays the biographer, "warrant the certainty of all thefe facts, but I affirm that it is very probable, that fome of thofe firitual devotces, who make prople belicre that a ftrong meditation will ravifh 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 mure dangerous to the mind than too myftical 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, vir. that the fcriptures. were not neceffary to falvation: that outward worlhip is of no avail : that all prayer ought to be mental ; and that there are two churches, that of Chriltians in degeneracy, and the other regenerate. About the year 1650 , Labadie renounced the Romifh religion at Montauban, at the fame time declaring he had contemplated this meafure more than fifteen years. His converfion excited much converfation and many difcuffions among the Catholics; feveral attempts were made to engage him to return to the bofom of the true church, but without producing any effect on his mind. His licentious practices were now expofed, and probably very much exaggerated: the Proteftants, proud of fo important a convert to their caufe, would litten to none of the accufations, and he was chofen pattor of the reformed church at Montauban in the year 1651 . Here he exercifed the duties of the minilterial office for eight years, and then, on accoount of fome difputes on fubje:ts which he was unable to juitify, he went to Geneva. Here his devout manners and popular preaching gained him a valt multitude of adherents, but by others every means was taken to drive him from the town, and in 1666 , the fe peop's accomplifhed their purpofe, by procuring an invitation to be fent to him from the Walloon church at Middleburgh, the capital of Zealand, which he readily accepted. Hie made many converts is this place, aniong whom was the celebrated Anna Maria Schurman, of Utrecht, whofe great learning rendered her fo famous in the republic of letters during the feventeenth century. Labadie fent difciples to propagate his doctrines, and to gather contributions in different parts of Holland, on which accouvt he was obliged to withdraw to Eirfurt, the capital of Thusringia, and from thence to Altona, where he died at the age of fixty-four, in the year $167+$. Ajter his death, the community fettled at Wjevert, in North Holland, where it

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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 glow. ing imagination. Bayle, Motheim.

LaDADIST'S, or Labbadists, in Escleffafical Hijfory, a fect of religionits, followers of the opmion of Jean de Labadie, who lived in the 17 th century, and was conteniporary with Mademoifelle Bourignon.

Some of his tenets were, that, r. God could and did deceive men. 2. That in reading the feriptures, greater attention fhould be given to the internal infpiration 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 Ghoft; and that the efficacy of the word depended upon him that preached it. 3. That baptifin ought to be deferred till mature age. 4. That the good and the wicked entered equally into the old alliance, providing they defcended from Abraham, but that the new admitted only fpiritual men. 5. That the obfervation of Sunday was a matter of indifference. 6. That Chritt would come and reign a thoufand years on earth. 7. That the eucharit was only a commemoration of the death of Chrift; and that though the fymbols were nothing in themfleses, jet that Chrilt was fpiritually received by thofe who partook of them in a due manner. 8. That a contemplative life was a fate of grace, and of divine union during this life, the fummit of perfection, sic. 9. That the man whofe heart was perfectly content and calm, half enjoys God, has familiar entertainments with him, and fees all things in him. 1o. That this ellate was to be come at by an entire felf-abnegation, ty the mortification of the fenfes and their objects, and by the exercife of mensal prayer. He allo maintained, that the faithful ought to have all things in common, and that there is no fubordination or diftinction of rank in the church of Chrilt. It is faid that the Brownifts, and afterwards the Quakers, offered to connect themietves with this fectary, but were rejected. See Journs des Sçavans for Ottober, 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 Geagraphy, a town of Spain, in the provice of Afturia; 12 nules W. of Santillana.

LABARIFERI, among the Romons, Atandard bearers, who carried the labarum.

LABARIUM, a lonfenefs of the teeth.
LABARUM, in Antiquity, the banner or flandard borne before the Roman emperors in the wars.

The labarum confitied of a long lance, or pike, with a flaff at the top, crofling it at right angles; from which bung a rich ftreamer, of a purple colour, adorned with precoous itones, and curioully inwrought with the images of the reigning monarch and his children.

Till the time of Conftantine, this flandard had an eagle painted upon it; but that emperor introduced in lien of it a crofs. Accordingly, the fummit of the pike fupported a crown of gold, which inclofed the my iterions monogram, at once exprefive of the fi, ure of the crofs, and the initial letters of the name of Chrift, as reprefented under the article Cross. The fafety of the labarum was entrufted to 50 guards, of approved valour and fidelity; their ftation was marked by honours and emoluments; and fome fortunate accidents foon introduced an opinion, that as long as the guards of the labarum were engaged in the execution of their office, they were fecure and invulncrable, amidit the darts of the enemy. This ftandard the Romans took from

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the Germans, Dacx, Sarmatæ, Pannonians, Sce, whom they had overcome.
The name labarum was not known before the time of Conflantine; but the ftandard itfelf, in the form we have defcribed it, abating the fymbols of Chriltianity, was ufed by all the preceding emperors.
In the fecond civil war Licinins felt and dreaded the power of this confecrated banner, the fight of which, in the dittrefs of battle, animated the foldiers of Conflantine with an invincible enthutiafm, and fcattered terror and difmay through the ranks of the adverfe le, ions. Eufebius (in Vit. Conitantin. 1. ii. c. $7,8,9$.) introduces the labarum before the Helvic expedition; but his narrative feems to indicate that it was never fhewn at the head of an army, till Conllantine, above 10 years atterwards, declared himfelf the enemy of Licinius, and the deliverer of the church. The Chrittian emperors, who refpected the example of Conftantine, difplayed in all their military expeditions the flandard of the crofs; but when the degenerate fucceffors of Theodolius had ceafed to appear in perfon at the head of the armies, the labarum was depofited as a venerable, but ufelefs, relic in the palace of Conftantinople. Its honours are ftill preferved on the medals of the Flavian family. Their grateful devotion has placed the monogram of Chrift in the midft of the enfigns of Rome. The folemn epilhets of, fafety of the republic, glory of the army, reftoration of public happinefs, are equally applied to the religious and military trophies; and there is ftill extant a medal of the emperor Conitantius, where the ftandard of the labarum is accompanied with thefe 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, Sc. Itill remain totally unknown; in fpite of the efforts of the critics, who have ineffectually tortured the Latin, Greek, Spanilh, Celtic, Teutonic, Illyric, Armenia, \&c. in fearch of an etymoogy.

Some derive the word from labor, as if this finihed their labours; fome from su入aคเเน, reverence, picly; others from
 barum has afforded very ample matter for criticifm, and has been difcourfed of by Fuller, Alciatus, Cujas, Gyraldus, Lipfius, Meurfius, Voffius, Hoffman, Valois, Du-Cange, \&c.

LABAT, Johx Bartist, in Biggraphy, was born at Paris in 1663: at the age of twenty he entered into the Dosninican order, and made his profeffion in 1685. Having completed his itudies he became profefor of phlofophy at Nantz, after which he was, in r693, fent by his fuperiors to America as a miffionary. 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 cmployed himfelf in drawing up a narrative of his obfervations, which he publifhed at Paris, in 1722, with the title " Nouveau Voyage aux Ines 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 Weflern Africa," 5 vols. : "Voyagcs of the Chevalier Merchais to Guinea:"" "Hiftorical Relation of Weftern IEthiopia :" 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 Huerca.
LABATIA, in Botany, named by profeffor Swartz, in memory of Joha Daptift Labat, a Donuinican monk, who,
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between the years 1700 and 2713 , invelligated the plants of Africa and the Well Indies, of which he drew up numerous deferiptions, colle eting every thing memorable refpecting their economical ufes, and their modes of cultivation and preparation. Haller fpeaks of him as a flrewd man of bufinefs, rather than an able naturalift--Swartz. Prodr. 32. Fl. Ind. Occ. v. 1. 263. Schreb. 700. Willd. Sp. Pl. v. I. 623. (Chetocarpus; Schreb. 75. Poutcria; Aubl, Guian. v. 1. 85. Juff. 156. Lamarck [llultr. t. 72.)-Clafs and erder, Tetrandria Monozynig. Nat. Ord. Bisornes, Linri. Guaizcans, Juff.

Gen. Ch. Cal. Perianth inferior, permanent, of four leaves; the two oppofite ones crect; two finaller ovate, obtufe, concave, internal. Cor. of one petal ; tube fomewhat bell-fhaped, fhorter than the calys: limb in four minute, erect, bluntifh, equal fegments, with two oppofite, fmaller, intermediate, lanccolate ones. Stam. Filaments four, the length of the corolla, erect, awl-flaped, clofe to the piltil; anthers erea, pointed. Pi/h. Germen fuperior, roundifh, minute; fyle awl-fhaped, equal to the famens; ftigma fimple, obtufe. Peric. Capfule large, roundih, rough, of four cells and four values. Seeds folitary, oblong, compreffed.

Eff. Ch. Calyx inferior, of four leaves. Corolla fomewhat bell-haped, four-cleft, with two fmaller intermediate fegments. Capfule of four cells. Seeds folitary.

1. L. feflitiffora. Sw. Fl. Ind. Occ. t. G.-Flowers feffile. Leaves filky- Found by Swartz in bufhy parts of the mountains of Hifpaniola. ' The fem is fhrubby, fix feet or more in height, erect, fmooth, with a greyifh rulty bark; the branches alternate, ftraight, bearing upright, round, rufty finaller branches. Leaves alternate, ftalked, oblonglanceolate, pointed, entire, wavy, rigid, two or three inches long, elegantly ribbed and veined bencath; the young ones thining and filky, with a golden rufty hue; the older more filvery. Footfalks Gort. round, rulty: Flowers axillary, Eeffile, mofly folitary, whitifh, very fmall. Fruit the fize of a nutmeg, roundifl, rough and rulty, the internal partitions vellow. 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 divifions. The flowers appear in May and June; the fruit ripens in December and January.
2. L. pedunculata. With. n. 2. (Pouteria guiannenfis; Aubl. Guian. 8. 33.) - Flowers ftalked. Leaves fmooth Native of woods in Guiana, where it is called by the Indians Pourounn- Pouteri. Aublet found it bearing both fowers and fruit in November. The trunk, according to this writer, is 40 feet high, and a yard in diameter, with a rough reddifh hark, and hard, clofe-grained, white wood; the branches long and fubdivided, leafy at their extremities. Leaves obovate, pointed, entire, fmooth, three or four inches long, on foot-Italks nearly half that length. Flowers fmall, greenifh, on fhort fimple axillary ftalks, two or three together. Fruit oval, hard, rough with rigid thort hairs, red internally, as is likewife the fkin of the feeds.

LA BATIE NEUVE, in Geograpiyy, a town of France, in the department of the Higher Alps, and clief place of a canton, in she diftrict of Gap. The town contains 200, and the canton $313^{\circ}$ inhabitants, on a territory of 125 kiliometres, in cight 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 Jefuits, and became diftinguifhed as a teacher of the languages, of rhetoric, and philofophy, in the college of his native place. He was afterwards profefior of moral sboology at Paris, where he refided till his death, which

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happened in 1606. He was reckoned a man of profound learning, and indefatigable induttry. He was author of many works, of which feveral relate to the hiltory of his own order ; the molt important is "A Gencral Collection of Councils," with notes, in feventecen vols. fol. His grammatical work for the ufe of fludents in the lanouagen, en. titled 6" Eruditæ Pronunsationis Catholici Indices," has been frequently reprinted in this country. The edition by Edward Leedes is well known in our fchools. It object is to point out the quantity of Latin proper names of perfons, places, \&c. Moreri.

Labbe, in Orailbology. See Lares parafiticus.
I.ABBOCK BAy, in Grugrafby, a bay on the N.E. coaft of the illand of Burneo. N. lat. $62^{\prime}$. E. long. $115^{\circ}$ $55^{\circ}$.

LABDACISM, A\% ${ }^{\circ}$ oniono , in Rhetoric, the tor frequent repetition of the letter $L$, as fol et lura luci lucrborit, and alla levi latea.

LabDANUM, in the Materia Medica. See I.adanem.

LABDARA, in Gcostapby, a fmall inland in the gulf of Venice. N. lat. $44^{\circ} 14^{\circ}$ 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 wfed with a tangent line on the edge of a circumferentor, to take altitudes, sc.

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 teltament, is alfo called a label, or codicil.

Among apothecaries likewife, the llip of paper round their phials, containing directions how to ufe the medicine, is called a abel.

Label, in Heraldry, a kind of addition to the arms of the heir or firlt fon, to diltinguif him from the others. See File.
Although the file or label be ufed as a diftinction of houfes, it is neverthelefs properly placed by Holme, as an ordinary, becaufe it is varioully borne and charged.

The label is efteemed the moft honourable of all differences; and is formed by a fillet ufually 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 mult be fpecified in blazoningo. There are formetimes fix.

The label, varioufly charged, is the difference generally affixed on the coats of arms belonging to any of the royal family; when his majefty frall think fit io command that arms be granted them.
labella Leporixa, in Surgery. See Hare-lip.
LABELLED Line, in Heraldry, a term ufed by fome to exprefs the line in certain old arms, called more ufually urdée or champngne. Others apply the fame word to exprefs the patce or dove-tail line, called alfo the indlave line by Morgan. It fomewhat refembles the joint called a dovetait by our joiners, and its points, as they proceed from the ordinary, whether chief or fefs, refemble the ends of labels. See Urdíd and Patee

LABEO, C. Antistius, in Boography, an eminent Roman lawyer, the fon of one of the perfons who confpired againlt the life of Julius Cæfar, was a difciple of Trebatius, and lived under Auguftus. He became a very learned man, preferved a free and independent fpirit under the rule of a defpot, and thewed on various occafions that he had not for-

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gotten, nor was carelefs of the liberties of his country. Iits great rival in jurifprudence was Atcius Capito, and 'Tacitus, fpeaking of thefe two rivals, calls them" the two ormaments of peace in their age:" he however celcbrates the incorrupt freedom of the latter, which was the caufe of his rifing no higher than the pretorfip; while the obfequioufnofs of the former was rewarded with a confulate. Labco divided his time between bufinefs and fudy, fpending fis 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 jurifprudence. Aulus Gellius refers frequently to the commentaries of Labco, on the twelve tables. Suetonius, Lempriere.
labro, in Icbtbyolony, a name given by the old Latin writers to the fifh ufually called cheilon and chelon. See Cyprinus Labeo.

LABER, in Geography, a town of Bavaria, in the principality of Newburg'; nitse miles W.N.W. of Ratifon.

LABERIUS, Decinus, in Biography, a writer of dramatic pieces, fimilar in fome refpects to our pantomines, was a knight by birth. He was fixty years of age when Julius Cxfar, in the plenitude of his power, urged him, by the promife of a liberal reward, to appear on the flage, in one of his nwn pieces. The poet confented with great reluctance, and thewed his refentment during the acting of the piece, by throwing fevere afperfions upon Julius Cxfar, and by broadly hinting at the tyranny and defpotifm of which he was guilty. In pronouncing the following line, he fixed the eyes of the whole affembly upon the ufurper:

> "Neceffe eit multos timeat quem multit timent,"
> "Many he dreads in turn, whom many dread."

Cxfar reltored lim to the rank of knight, which he lad lof by appearing on the ftage, but he could not fo eafily reftore lim to the good opinion of his friends. When he went to take his feat anong the knights, no one offered to make him room, even his friend Cicero farcaltically faid "Recipifem te nifi angulté federem ;" I zwould make you room if I were not fo much crowded: to which Laberius repllied, "Mirum fi angulcé fedes, qui foles duabus fellis federe," I wonder you hoould be crowded, aubo ufually fit upon two feiths at once; alluding to the orator's meannefs and duplicity, during the civil wars between Ceffar 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 sitles of his feveral pieces are preferved in Aulus Gelliuso Horace alludes, but without any refpect to the onimes of Laberius, this was, probably, rather in contempt of the fecies poetry, than the author.

LABES, iu Geography, a town of Hinder Pomerania; 30 miles S. of Colberg. N. lat. $53^{\circ} 39^{\circ}$. E. long. $15^{\circ} 39^{\prime}$.

LABEZ, a province, fometimes called a kingdom, of Algiers, S. of Boujeah.

LaBIA, or Lies, in Anatomy. See Deglutition.
LABIAL, a term in the French kaw, ufed in the fame fenfe with oral.

Labial Letters, anong Grammarians, are thofe whofe pronunciation is chiefly effeced by the motion of the lips. B3y which they fand contradiltinguifhed from palatal, dental, guttural, \&cc. letters.

Labtal Offers are fuch as are only made by word of mouth, or even by writing, where there is no valuable coninderation. In courts of equity thefe are not regarded.

LABIAI.IS, in Afrutomy, an epithet given to certain parts belonging to the lips, as the arteries, veins, glands, $\stackrel{5 c}{ }$.
LABIATE, in Botany; a natural order of plants, fo
called, after Tournefort, from labium, a lip, in allufion to the fhape of the corolla, which refembles the mouth and lips of an animal. This order, the 39 th of Juffieu's fyftem, and the fixth of his eighth clafs, is equivalent to Linnæus's 42 d natural order, Vcricillatio; or to the Didynamia Gymno/pernia of his artificial fyltem; except that the latter neceffarily excludes fuch genera of lalieita as have but two ftamens, and which are therefore referred to his fecond clafs, Diandria.
The characters of Juffieu's cightly clafs are-"Cotyledons two. Corolla of one petal, inferior." (See Gentinnte.) 'He defines the order in quellion thus.

Calyw tubular, either equally five-cleft, or two-lipped. Corolla tubular, irregular, generally two-lipped. Stamens four, two longer and two norter, fituated under the upper lip of the corolla ; in fome cafes only t two, the others being abortive. Germen four-lobed; ftyle folitary, fpringing out of the receptacle, between the lobes of the germen; ftigma cloven. Secds four, naked, erect, affixed to the receptacle by their bafe, and concealed in the permanent calyx. Embryo deftitute of albumen. Stem quadrangular, oppofitely branched, for the moft part herbaceous, but fometimes fhrubby. Leaves oppolite. Flowirs oppofite, often bracteated, or attended by britles, folitary or whorled, corymbole or fiiked, terminal or axillary.

The fections are four.
r. Stamens two fertile, two abortive. This contains Lycopus, Ametbylea, Cunild, Ziziphora, Monarda, Rofmarinus, Salvia and Collinjonita, to which are added by Mr . Brown (Prodr. v. 1. 501.) Wcflringia, Smith's 'Tracts, 27\%. t. 3, Alicrocorys, Hucmigenia 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.- Ajuga of Limmous, (which Juffieu choofes to call Bugula after Tournefort), and Teucrium, with Anifiomeles a new genus of Mr. Brown's.
3. Stamens four, all fertile. Corolla with two lips. Calyx five-cleft.-Sulureit, "Ifyflopus, Nepcta, Perilla, Hypfis, Lavandula, Sideritis, MTeilha, Glecboma, Lamium, Galeob/is, Betonica, Stadyys, Ballota, Mairubium, Leonurus, Pblomis and Molucellla, to which are to be added Eilbolizia (fee that article), and Leucas of Burmann and Brown.
4. Stamens four, all fertile. Corolla with two lips. Calyx two-lipped.-Chinopodium, Origanum, Thynus, Thrmbra, Mrliffa, Dracocephalum, Horminum (now reduced to Melifa), Melittis, Pleitrantbus (which is Germanca of Lamarck and Juflieu), Ocymum, Trichohema, Prunilla, Scuiellaria, Prafum and Phrymat, with Cbilodia and Cryphia of Brown, and Proffanthera of La Billardiere.
The plants of this natural order are, for the molt part, agreeably aromatic, or bitter, none of them poifonous. The root is generally perennial. Flowers of various colours, feldom fragrant in themfelves, except as they partake of the aromatic quality of the herbage. The ftamens and figma are, as Linnæus obferves, fo well fheltered, in moft inftances, from the rain, while the air has free accefa at the fides, that impregnation rarely fails. Mentha, however, forms an exception, the ftamens being prominent, and the corolla open; and as its feeds are fcarcelv ever prolific, no plant has a more ample increafe by the roots.

LABIAU, in Geography, a town of Pruffia, in the province of Samland, with an ancient cafle, on the Deim; 20 miles E.N.E. of Konigforg. N. lat. $54^{\circ} 10^{\prime}$. E. long. $22^{\circ}$. $15^{\prime}$.

LABIEZ, a town of the duchy of Warfaw; $3^{2}$ miles N. of Gnefna.

LABINIE, in Natural Hifory, a term ufed by the authors who have written of Switserland, and other mountainous

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tarous countries, to exprefs thofe val matles of fow, which fometimes fall frotn the hiils and bury houfes, or even whole towns; and when hardened by the frolts, as is often the cafe, into folid fubltances, they overthrow woods, villages, and whatever flands in the way of their courde, as they roll down the fteep fides of the precipices in their way. Sume authors have alfo extended the word to a larger fenfe, and made it exprefs the falling of vall rocks, or parts of moun. tains, and their rolling down in the fame manner into the flat country: this is a mifchief very frequent in the fame places, after frolts, and often very fatal. See Glaciens.

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 תkin which bound the external female organs of generation laterally: (See Generntion.) The edges of the crilla of the os innominatum are called its labia.

Iabivin Leporinum, in Surgery. See Hare-hir.
LABO, in Geograpby, a town on the W. coalt of the ifland of Sumatra, which chiefly trades in pepper. N. lat. $3^{\circ} 20^{\prime}$ 。

LABOMAS, a town of the illand of Cuba; feren miles S.E. of Spiritu Santo.

LABON, a town on the W. coaft of Sumatra, cclebrated for gold duft and camphire; but the inhabitants are referved in their traffic with ftrangers: 150 miles S.S.E. of Acheen. N. lat. $3^{\circ}$ 10'. E. long. $96^{\circ} 40^{\prime}$.

LABOON, a ditirict 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. cualt of the illand of Borneo, feated on a peninfula that projects into the fea. N lat. $5^{\circ} 9^{\circ}$ E. long. $119^{\circ} 5^{\prime}$.

LABOR, a town of New Navarre; 280 miles S.E. of Cafa Grande.

LABORATORY is a place furnifhed with chemical apparatus, and entirely devoted to the different operations of chemiltry, whether on the fcale of chemical manufacture, or for the purpofe of experimental refearch." In the piefent article, however, we fhall contine ourfelves to the latter, fince it is more proper to defcribe the apparatus ufed in the large way under the manufacture of the refpective articles. Although many of the molt diltinguithed labourers in chemical fcience have been content with fuch apparatus as they have made themfelves, or converted from the common domeftic utenfils; it mult, neverthelefs, be obvious, that they would have fucceeded better with well contrived and appropriate apparatus, and their refearches woulds in all probability, have been much more extended.

Every; chemical experimenter will find a confiderable advantage in fo much reechanical talent, as will enable him to make, or repair at leaft, the moft common of his apparatus. For this purpofe he ihould poffefs a fet of mechanical tools, fuch as a lathe and vice, with files and rafps for metal and wood. The tools for making ferews, as well in the lathe as by the forew-plate and tafs, will alfo be neceffary. To thefe hould be added a fmall forge, anvil, and hammer, for the purpofe of forging fmall articles. A fet of brazier's and tinman's tools will be found very ufeful, 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 glafs-blower's lamp and bellows will be of effential fervice for fealing and bending glafs tubes, and other purpoles.

Some of thefe may appear unneceffary, efpecially in large towns, where the different artifts may be found, but it will be ftrongly in the recollection of all who have had occafion to get apparatus made, that they can feldom get them conflrusted to

## 1. $\mathrm{A} B$

their with, although they Rand by the arti?. The want of proper tools, and a little mechanical dexterity, have frequently prevented or put an end to experimental inveftierstions of confiderable importance. Independent of the apartment containins the mechanical apparatus, the chemit will require at leait one diltinct room for a laboratory. Two rooms, however, fhould be employed when it is conveniert. The principal room of the laboratory fhould be on a grould floor, for feveral reafons. A furnace for great heat fhould be in a low room, in order to have the greatext length of chimney. The aft-pit of this furnace fhotald terminate in a cellar under the laboratory, in order that the air may enter perpendicularly, and of the loweft poffible temperature. See Funnace.

That fide of the laboratory allutted for furnaces fhould have an arch projecting into the room about three or four feet, and of fuch beight that a perfon maj freely walk under it. In the ligheft part of this arched portion mutt be an opening into a chimney diftinct from the reft, and built up in the fame fteck.

It will be found more convenient to ufe portable furnaces for moft purpofes, having none fixed but for producing very gret heats, upon a lagerer fcale, and what are generaily denominated melting furnaces.

The iron chimney of the portable air-furnace may be car ried to any height, and placed under or within the chimney, ufed for the efcape of fmoke and vapours.

A chimney with a funnel may, in the fame way, be pleced over the mouth of the portable blalt furnace, invented by: Mr. Aikin. This furnace may be fo contrived that when the body of it is removed, the bafe may from a forge hearth, which will be found very ufeful. For the varietics of furnaces ufed in the laboratory, fee Fursice.

On another fide of the laboratorv mult be placed a ftone trough or fink, joined to a tub or ciltern of water, which can be filled and emptied at pleafure, by means of a itop-cock over it, and a plug in the bottom. Over the fink-llone thould be fufpended a rack for holding betties and glaftes to drain after wafhing. On the fame lide may be placed a. large block of wood or flone, for the purpofe of holding a; mortar or anvil occafionally.

A third fide of this room muf be occupied by cupboards and fhelves, for holding the difierent apparatus of glafs and. earthen ware, and for the d:fferent fubitances hereafter to be. mentioned.

The fourth fide, which flould be the lighteft, mult be provided with a table the whole leagth of this fide, in the front of which, down to the floor, fhould be a number of drawers for holding all the dry fubltances. 'This table is for making the experiments upon, and for holding the appa. ratus in ufe at any time.

If poffible, every laboratory fhould be joined to a fecond room, howerer fmall it may be, in which to perform the very nice and delicate experiments, and for keeping a few books, and choice initruments of metal, lich as balances, \&c.. This room fhou'd be kept very clean and dry, and as free as pofible from feam and the fumes of acids.

If any part of the furniture require to be painted, the paint fhould be made with fulphat of lead, fince it is not acted. upon by acids. This fubltance has been ufed by Dr. Henry not only for this purpole but for repairing broken glals and labelling bottles. The following are the moit particular apparatus with which a laboratory fhould be furnifted.

Mortars.-Thefe are of various kinds, caft-iron, bronze, fteel, and Wedgewood ware. The calt-iron mortar is gene. rally ufed for vegetainle fubltances, and fuch as are not liable to grind off the iropo, The hardoefs. of this inftrument is
much increafed by caftine the interior furface upon a metal mould, of the greater weight the better.

The hardnefs of the bronze mortar, which is generally ofed for the fame purpoles, may be increafed by the fame means.

The fteel mortar is ufed for reducing very hard minerals into fmall bits, fitted for grinding in the mortar of agate. It confilts of a cylinder of hardened iteel, with a flat bottom, and a peftle of the fame made to fic the mortar, accurately, from top to bottom. It is ufed by putting the pieces of the mineral into it, and ftriking the pefle with a hammer. $13 y$ this means it can be reduced into tolerably fmall particles, without grinding off any portion of the mortar.

Hardened fteel mortars of the common fhape would be of great ufe, but it would be difficult to harden fo large a mafs without cracking. It might perhaps be made by welding a plate of calt Iteel upon a thick piece of iron, and afterwards working it into the required thape, and polifhing it in the infide. If the fubftance 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 cafe the agate mortar is much to be preferred; fome ftones are, however, fo hard as to act upon the agate. In this inftance, the matter to be ground fhould be weighed before and after grinding, and the increafe of weight may be fafely deemed filex, and allowed for in the analylis accordingly.

Balance. -This inttrument is of great importance to the analytical chemilt, and ought to weigh ico grains to the $7^{1}$ th of a grain. A very matterly account of the principles and conltruction of the balance will be found under the article Balance.

It will be almolt unnecellary to ob?erve, that fo delicate an inftrument fhould be okept in a feparate apartment from the laboratory where fumes of acids do not prevail. It fhould be clofely thut up in a glafs cafe having a fliding door in the front. The ftrings to which the fcales are fufpended, fhould be of fine gold or filver cord, and the rcales of filver or platina, and very thin. One of the fcales ihould be provided with a loofe pan of very thin platina, and balanced with the other, for the purpofe of holding the fubltance to be weighed. The weights for chemical fubftances fhould be reckoned in, and marked with grains and decimals of grains.

Lamp.- This valuable inttrument 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 moft purpofes. Its greatelt advantage, however, confilts in the facility with which it can be applied or withdrawn without lofs of time. See Lamp.

For nice and delicate purpofes, where the heat of the lamp is required, alcohol, inftead of oil, gives an intenfe and fteady heat, and is not very expenfive when a proper veffel is ufed for burning it. The latter kind of lamp is particularly adapted for a public lecture.

Fig. I. Plate XVI. Chemiffry, is a ftand fupporting the lamp, and at the fame time the fubitance to be heated, and the connecting apparatus A B is a frame of wood. F a pillar of wood or rron, fmooth and cylindrical throughout, fo as to admit of the fliding rings, fuch as ${ }_{o}^{\pi}$, 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 incombuftible fubitance which is a bad cosductor of heat. This contrivance not only economizes the heat, but keeps the outer tube fo cool, that it may be taken hold of with the fingers. In this lamp the wick is raifed by the forew,
inftead of the rack, which is performed by turning the chimney round.

The funnel-fhaped ring D is an improvement upon the common ring ufed for fupporting the retort. It confilts of a number of conical hoops, one fitting upon the other, fo as to hold different fized retorts. The fmalleft hoop is about two inches in diameter, and the largeft, 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 condenfation of the vapour fhould take place: $f$ is a retort fupported by the ring: $g$ is a flider, 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 ufed alone, or with Woulfe's bottles $a, b, c$, hereafter to be defcribed. G is a fland, with three inclined prongs of woed to fupport receivers of different fizes, and which may be placed at different clevations by means of the fcrew $n$.

Retort.-Fig. 2. This is a chemical utenfil of very arcient origin, and is the moft fimple apparatus for ditillation. Retorts are of glafs, earthen-ware, and metal. Thofe of glafs are fometimes of green glafs, particularly when fuch heat is employed in the naked fire, as might foften the more fufible white glafs. 'Thofe of Aint-glafs fhould be as thin as poffible, in order to avvid breating by an unequal expanfion. When the retort is provided with a glafs itopper, as at $a$, it is faid to be tubulated.

This appendage is neceffary only, when fome fluid, fuch 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 procefs is going on, the veflel (fig. 3.) called an acid bolder is made to lit in the place of the ltopper of the retort, the part $d$ being ground to fit the fame. The acid is put into this veflel, and let into the retort, by a little at once, through the glafs itop-cock $c$.

When the retort is ufed for purpofes of diftillation, the neck is fitted or luted into the neck of the receiver (fig. 4) This receiver is ufed for the difillation of liquids, the vapours of which are ealily condenlible, fuch as water or alcohol. When the vapours, coming over, are accompanied with elaftic fluids, which are incondenfible, the receiver ( fg .5 .) is better adapted. If the elaftic fluid be of no importance, and inoffenfive, it may efcape at the conical itopper of the latter vellel every time the preffure is fufficient to raife it. It is, however, fometimes neceffary to collect the gafeous fluid. In this cafe the bended tube (fig. 6.) is put into the place of the dtopper (fig. 5.), the other end terminating in a pneumatic apparatus where the gas is collected. In the diftillation of very volatile liquids, fuch as ether, it is fometimes neceffary to remove the receiver to a diftance 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 diltillation of fubitances, which require a greater heat than glafs will bear, earthen retorts are employed. They are of the fame fhape with thofe already defcribed, and fhould be made of the materials with which crucibles are made. This fort of retort is generally ufed for the dittillation of phofphorus. If its texture be not clofe, the phofphorus will efcape 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 diftiling fuch fubitances as will have no.

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chemical action upon them. Hence they are unfit for diftilling fulphur, phofphorus, and acids, but are extremely proper for ammonis, mercury, and pitcoal. A retort of Icad is ufed for the diltillation of fluoric acid, owing to that acid combining with the filex of glafs.

Woulfe's Apparetus. - In the diftillation of fubftances which are merely to be raifed into vapour by heat and condenfed by cold, the retort, or Atill, with the receiver and the proper means of producing cold, are the only apparatus neceffary. There is another diltinct branch of diftillation, in which the product is a gas, which is incondenfible at the common temperature, and requires to be abforbed by water, or by fome other fubttance diffolved in that liquid.. In thefe proceffes, therefore, the temperature and fize of the receiving veffels are not of fo much importance as the expofure of the gafeous product to the greatelt foffible quantity of the abforbing tiquid. Before the difcovery of this moft ufeful apparatus by Mr. Woulfe, from whom it takes its name, the common retort and receiver were ufed for all purpofes. The elaftic fluids were in confequence either compreffed, and the operator was conitantly in danger of being injured by the burting of veffels, or, to remedy that evil, they were fuffered to efcape, and he was perpetually annoyed by the fuffocating fumes which were fet at liberty.

In fig. I. the retort contains the materials for furnifhing the elaflic fluid to be abforbed by fome liquid contained in the receiver E , and the fucceeding bottles $a$, $b, c$, with their connecting tubes $r, b, t: v$ conflitutes the Woulfe's apparatus. A certain portion of the gas is taken up by the liquid in the receiver E . The excefs paffes 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 paffes along the tube $b$ to the third receiver, which gives the gas a third chance of abforption. In this way it may be made to pafs through any number of bottles, according to the greater or leffer facility with which the gas is abforbed. The lait tube v, which is provided with a column of mercury, conveys the remaining gas, which is prefumed to be unabforbable, into the atmofphere, or it may be collected by a jar in the pneumatic apparatus. When the gas ceafes to be furnifhed from the retort, in a quantity equal to the abforption in the receiving veffels, a retrograde motion will begin to take place. Atmofpheric air will enter at the tube $v_{0}$. The liquid in the laft receiver will be forced by its preffure into the preceding one, and if the abforption were to become complete, the whole of the liquid would be carried into the firt 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 abforption, accumulates in E, till its force is equal to the preffure of fuch a column, the excefs of gas wall bubble through the mercury into the atmofphere. On the contrary, when the abiorption of the gas exceeds its evolution, the preflure of the atmofphere, to refore the cquilibrium, will caufe the mercury to occupy the ball $l$, and common air will bubble through it into the veffel E. Although this ingenious contrivance completely prevents any evil arifug from the inequality of internal preflure, it is very objectionable, owing 20 its delicate ftructure, on which account it is conltantly liable to be broken.

We are indebted to Mr. Knight for a great improrement on the tube of fafety. This confits in having a valse of glafs, fimilar to that of the Nooth's apparatus (dcferibed telow'), placed between the firft and fecond vefiel, to that the liquid in the fucceeding bottle can never have a retrograde motion. To this valve there is no other objection than the

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difficulty of getting it made in places difant from the metro. polis, and its liability to be falt, efpecially in making cryftalline falts, fuch as the oxymuriat or carbonat of potath.

The fame objection which we have made to the tube of fafety, we arc forry to fay applies to the whole of the Woulfe's apparatus. 'The connecting tubes ave with very great difitculty ground into bottles, which makes the apparatur very expentive, and then are fo liable to be broken, as to render it frequently ufelefs.

We have before linted, that the effential part of fuch an ap. paratus, is to expofe the greatelt polible quantity of the sas and the liquid to cach other in a given time. In the Woulfe's bottles, this advantage does not obtain in fo great a degreas might be effected in a fimpler apparatus. We flall here fubjoin a defcription of an apparatus of this kind, anfwering all the purpofes to which the Nooth's and Woulfe's apparatus are feparately applied. Although it has not been before made known, it has been ufed with great fuccefs by the writer of this article, and will no doubt be found an acquifition to the experimental as well as the manufacturing chemitt.

Fig. 9. Plate XVII. Chemifry, is a reprefentation of the apparatus for the abforption of gafes. A is a retort from whence the gas is furnifhed, connected with the firft bottle B, which contains the liquid to be inpregnated, and into which the tube $a$ is ground, reaching near to the bottom, fo that when the gas enters this vefel, the liquid will be raifed into the bottle C ; at the fame time the tube will be conftantly filled, with the exception of the fpace occupied by bubbles of gas paifing through it. If the gas is not all abforbed during its paflage through this tube, the excefs will pafs down the tube $b$ into the bottle D , which aifo contains the abforbent liquid. The fame takes place in this bottle which is obferved in that of B. The liquid afcends into the bottle E, the gas following it as before. The refidual gas, fhould there be any; may either be conveyed into another bottle fituated like D, or may be collected in a pneumatic trough, or efcape through the tube of fafety $e$.

This apparatus was invented for the purpofe of making the oxymuriats of the earths, for which it is admirably adapted. The earths which are mixed with the water being conftantly at the bottom, if not kept in agitation, the abforption is very flow and imperfect. In this apparatus no agitation is neceffary. The earth, which is at the bottom of the veffels B and D , is firft raifed into the tubes $a$ and $c$, and becomes as much expofed 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 molt experiments of this kind. Their diameter is about $\frac{1}{2}$ inch, fo that in the courfe of about one minute, no lefs than about nine ounces are brought in contact with the gas, independent of the circular furfaces in the bottles.

In the cominon fized Woulfe's bottles, the tubes through which the gas enters feldom dip more than three inches into the fluid, fo that we may fafely rate the apparatus propofed as equal to at leaft eight of Woulfe's bottles. Thefe bottles are the fame with thofe of Woulfe's; the tubes are inuch fimpler, and being Atronger are lefs liable to break. Another great advantage is that of its not requiring a tabe of fafety. The great facility with which it can be applied tio all the purpofes of the Nooth's apparatus, as well as the Woulfe's, and with much more effect, will be foon appreciated. Under the article Woulfe will be found the defcription of a differently conftructed apparatus. See Plate V. Chemiffry.

Nooth's Apparatus. - This is reprefented in fig. Io. Plate XVI. it conlitts of three velfels fitted together by Q
grouns

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ground joinings. It differs in its ufe from the Woulfe's, in being folely adapted for impregnating water and other bodies, with luch gafes as are difengaged from their combinations without heat, fuch as the carbonic acid, and fulphuretted hydrogen. The lower veffel A contains the fubtance from which the gas is ohtained, fuch as carbonat of lime; the fulphuric acid being introduced occafionally at $d$; the gas enters the veffel B through the glafs ralve $a b$. This is magnified in fig. 12. The tubes $b$ and $d$ ate at firft in one piece and ground into the part $a e$; the portion $c$ is then cut away, to make room for the hemiipherical 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 defcending into the lower veffel. The air then enters the liquid in B, fir io. through fmall holes to difperfe it as much as poffible. 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 ftill more to prompte the abforption. The air in C , if not abforbed, will at certain intervals raife the conical itopper $e$. This fopper fhould be fo heavy as juft to rife before the veffels would burtt, and fhould be fo conical as not to ftick in the leaft degree. After the liquid is impregnated it is drawn off at the cock D .

Fig. 11 . is a fimpler and better apparatus for this purpofe, invented by Dr. Hamilten. It is fimpler, becaufe the veffels are fewer, and the valve, which is complicated and liable to be falt, is difpenfed with; and it is better becaule the gas comes in contact with more of the liquid in a given time, and confequently the abforption is effected fooner. The gas is furnifhed by the retort $B$, ground into the veffel $A$. From the latter the abforbing liquid is raifed into the veffel C , fiil the air bubbles go through it, and if not abforbed paffes out at $d$. This apparatus wants nothing more than a tube of greater length, for the gas to pafs through, to make it complete.

In comparing the two laft with that of fig. 9, the latter will be found ruuch fuperior even to that of fig. II .

Gufometer and Gas Holder. - The difference between thefe two veffels, conlifts merely in one having the means of meafuring the quantity of gas which it contains at any time, and the other not, while both are employed as gas holders.

The gafometer was made a very expenfive and magnificent apparatus by the celebrated Lavoiner, at the tine he profecuted his experinents upon elaftic fluids. This infrument, much fimplified, we fha 1 defcribe in fig. 3 3. Plate XVII. A is a veffel comtaining water or fome other liquid, which will not be acted upon by the gas to be held in it. $B$ is a veffel inverted in the velfel A , and capable of moving up and down in it. E and F are cords by which the veffel 13 is fuipended, ihe weights and pullies being concealed in the tube C D. Fig. If is a fection to thew the interior parts of this apparatus. K $L$ is an interior veffel of the fame fhape, with the velfel $B$ fuldered to the bottom of the velfel $A$, fo that no water or othor liquid in A can communcate with the infide of it. This is done for the fake of ufing 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 paffing through the middle of the veffel $\mathbb{K} L$, and communicates with the tubes $o$ and $d$. The air is introduced at the foop-cock $\varepsilon$, and pafing along the pipes o and $a$, raifes the veffel 13 , which is counterpoifed by the weights $r$ and $q$. Thefe weights are condacted down the middle of the tube CD , by the fmall pullies $x$ 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 gafumeter at the fop cock $f$, fo that the air paffes through $a$, both in its entry and its exit : 5 , for . 13, is a fexible tube, ferving to con-
duct the air to a pneumatic trough for examination, or for . ufing the blowpipe when the veffel contains oxygen. This apparatus is provided with a graduated fcale G, which tells the number of cubic inches contained in it. It is this feale which coultitutes it a gafometer, without which it would be fimply a gas-bolder.

The mercurial gafometer is on the fame plan with the above, but the materials mult be unfufceptible of the action of the mercury. The veffels are generally made of cattiron. The outcr and the fixed inner velfels may be calt in one piece. 'I'he moveable velicl may be of the fame metal, or of glafs. The pipes mult be of wrought iron, and aecurately ground into the calt iron. Two gafometers with water, and one with mercury, will be indifpenfable in experiments in gafeous chemitry.

A very ingenious apparatus, anfwering the common purpofes of gas-holder and gafometer, and in many inftances the pneumatic trough, has been invented by Mr. Pepys. It confifts of a tin veffel 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 $\mathrm{A}: v$ is another pipe which alfo communicates with the tray, and juit enters the veffel A: $r s$ is a glafs tube cemented firmly into two brafs fockets, which communicate with the top and bottom of the veffel $A$. This tube is graduated, and fhews how high the water ftands in the veifel, and confequently tells the quantity of air contained in it. The veflel A is firlf filled with water by opening the cocks $a$ and $v$, and fhutting that of $n$, C being clofed at the fame time. The tray is now filled with water, which defcends through the tube $a$ into A, while the air in the fame efcapes at the opening into the tray, from $v$. When the veffel A is full of water, the cocks $a$ and $v$ muft be clofed, and the plug may be taken out of C. If the veffel and pipes be air-tight above, no water will be difcharged at C , fince this pipe is inferted at fuch an angle into A, that the lowelt part of the outer end is higher than the highelt part of the inner end. The next thing is to fill the veffel with gas, and for this purpofe the neck of a retort, or other tube from which the gas is to proceed, fhould be introduced at $c$ till it paffes the inner end of the fame. The gas will rife in bubbles into the upper part of the veffel, while the fame quantity of water will run out at the pipe $C$ into an open veffel placed under it. When the water ceafes to run out, and air-bubbles efcape at C , the tube from whence the gas was furnifhed 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 mult be filled with water, and alfo the jar, which muft then be placed over the aperture from $v$. On opening the ftop-cock $\sigma$, that of a being previoufly opened, the air will afcend into the jar, while the fame quantity of water will defcend into the veiTel A , to fupply its place.

This apparatus may be ufed for feveral other purpofes. A bladder may be tied to the flop-cock $n$, which being opened at the fame time $a$ is opened, the bladder will be filled with the gas. A flexible tube may be fcrewed on the fame ftop-cock for making experiments with the blow-pipe: The gafometer, fis. 13 , will be found better for the-blowpipe, on account of the equable preffare in the apparatus lalt defrribed.

Pneunatic Trough - This is a fimple trough or citern made of tin or copper japanned, and is ufed for collecting different gafes. The fize is gencrally about is inches long, 12 wide, and 12 decp. Fig. Y6. Plate XV1. reprefents this trough. A is a fliding finelf which can be taken out. It is formed of two plates laid together; the under plate is made fo concave, that when thic convex fide tonches the upper plate in the middle, they are diltant at the edges about one inch.

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A rim being foldered round the two gives the fhelf the ap. pearance of a folid, concave on the under fide and flat on the upper lide.

Any gas coming from the retort B , paffing under the fhelf in any lituation, mult be determined to the round hole in the middle; which is atout half an inch wide. The trough, when ufed, is filled with water about an inch above the fhelf, the jar C being filled with the fame, and placed over the aperture through which the bubbles afcend. The ftand D, having a foot of lead or iron, will be found very ufefui for fupporting a retort or other veffel in thefe expcriments. When a number of veffels are occupying the fhelf, and frequently fome are very tall, and of frmall diameter; it will be found neceffary to fupport them to prevent their being thrown over. This may be effected by having a number of fupporters of different lizes, fuch as A. This is better reprefented in fig. 17. At $d$ is a focket to fit the pins which furround the fhelf; $n, o$, are fpringing claws to embrace the glafs.

In making experiments upon gafes, a number of veffels, fuch as fig. IB, will be neceffary. Thele are generally called eudiometer tubes, fome of them are graduated into cubic inches, for the purpofe of meafuring the volume of gas ufed, or refulting from any experiment. See Eudiometry.

Befides the trough already delcribed, which is ufed with water, it is necefliary to be provided with one for mercury. Indeed the latter is abfolutely indifpenfible when the gafes, which are the fubject of experiment, are abforbable by water: fuch as the muriatic acid gas, and ammoniacal gas.

Fig. 1g. is a view of the mercurial trough; it is genexally made of a folid block of fome hard wood, or of marble; or it may be made much neater, and with lefs labour, of pieces of wood joined together, clofely and firmly by iron fcrews. The firft cavity, a eb, may be about eight inches long, four inches broad, and one inch in depth : the fecond or lower cavity, $d$, fhould 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, $\mathrm{I} \frac{1}{2}$ long, and one inch deep. The cavity $d$ is intended to receive the glafs jar, $f i g .20$, for the purpofe of filing it with mercury: $a, b$, are fmall cavities in which to introduce the fingers for the purpofe of raifing the jar . when full of mercury. The cavity at $c$ is to place the inverted jar over, for the purpofe of introducing any gas into it. The fide $a c$ anfwers as a fhelf to relt the inverted jars upon: fig. 21. is a ring of iron, with a leg to flip into holes on the hide of the trouch, for the purpofe of fupporting the jars, which would otherwife be liable to fall on account of their fmall bafe.

Eudiometer.- Formerly the ufe of this inftrument was confined to the analylis of the atmofphere. It has now, however, become of great importance in gafeous chemiftry, and bas been conliderably improved within thefe few years.

In order to afcertain the nature of, and to diftinguifh the difterent gafes, chemilts have generally recourfe to fome fubflance capable of abforbing the gas under examination. The eudiometer is the vefiel which contains, or communicates with the fubflance which is to abforb the gas, and the tube being graduated marks out the quantity abforbed, and fhews how much of that particular gas was peefent.

The firlt inltrument of this kind, adapted to general purpofes, was invented by Dr. Hope, of which a defcription will be found under Eunometry; Under the fame article will be found Mr. Davy's eudiometer for the analyfis of the atmofphere.

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 claftic gum bottle inflead of glafs.

A glafs neck is tied into the neck of the bottle, into which the graduated tube is ground. When this cudionieter 13 ufed, the elaftic bottle is filled with the ahforbing liquid (lime water, for inftance), and the fube filled with the gas under examination (fuppofed to be carbonic acid), introduced into the neck.

On agitating the liquid to mix it with the gas, as the abfurption goes on, the chaltic bottle collapfes, by the atmofpheric preflure, and the liquid occupics the place of the abforbed gas in the tube.

The only objection to this cudiometer is its want of flexibility, and this varying under different circumftances, fo 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 oited filk inttead of this elaftic gum bottle. The filk mutt be very well coated, and the coating completely dry.

The eudiometer of Volta, which is found very ueful is the prefence of the eleatric machine, is alfo called the detonating for. It is ufed with oxygen to detect the prefence of hydrogen, and vice vier $\int a ̈$. This inftrument, fig. 22 , corifitts of a very thick glais tube A B, havirg two bits of metal $a, b$, paffing into the tube oppotite to each other, the inner ends being feparated from each other a fnall diftance, fo that an electric fpark paffing between them, may be capable 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 eritered into combination. In the exploficn of thefe gafes the water or mercury is apt to be thrown in various directions by the coniculfion. We are indebted to Mr. Pepys for an ingenious method of preventing this evil. The tube A B is fecured to the iron itand D E by means of a focket' C. D is an iron tube containing a fpiral fpring, fimilar to that of the fpring Aeel-yard. The rod $d$, which acts upon the fpring, is faftened to the foot E, which is fo heavy as not to be raifed by the force exerted upon the fpring. When the detonation of the gafes takes place, the force is exerted equally upon the inftrument and the liquid, in which it is immerfed, when they are both at liberty. Inftead of being all exerted upon the latter, it caufes the tube to rife, the fpring in the focket D giving way; and thus prevents the liquid from being difperfed. All the gafeous bodies containing hydrogen can now be analyfed by this inftrument. Dr. Henry has difcovered that ammonia, which does not appear combuftible, can be exploded with oxygen : its hydrogen forming water with that fubtance. See Eudiometry.
$E$ vaporating $V^{F}$ cffis. - Thefe are of metal, earthen-warè, and glafs. 'They are generally made broad and thallow, az feen in fig. 23, in order to expofe a greater evaporable furface. During the evaporation of any liquid, a current of air fhould conttantly be paffing over its furface. This object can be eafily attained by placing the veffel under the mouth of a chimney into which there is a conliderable draught. By this means alfo the vapour is prevented from coming into the room.

Thefe veffels are of filver for expelling the water from: alkalis, and of glafs, or Wedgewood ware, for acids and forge folutions of falts.

Sand and Water Batbs.-The fand bath, although fuperfeded by the Argand lamp, for dittillations in the fmall way, is, neverthelefs, very ufeful for digefting fubftances fubjected to folution, and for evaporation. Its heat is much more. regular than the naked fire, but it may fometimes be too
hot for fubtances which are liable to be decompofed, fuch as infufions of vegetable or animal matters. The mott ufcful fand bath is made of a plate of caft iron, under which the flame of a fire plays, and a rim of calk or wrought ircn laid upon it and filled with fine Calais fand.

A fand-bath frequently confifts of an iron difh or pan made to fit the mouth of a furnace. Sce Fivneace,

When an uniform heat, not higher than 212 of Fahrenheit, is required, or when it will be fufficient, the water bath is found lighly wfeful. Inftead, however, of placing the fubflance to be heated in a veffel of boiling water, which was formerly the cafe, the bath may be heated with fteam at any diftance from the boiler. This bath may be a veffel of any flape, having a cavity for fteam on the outfide, thickly covered with flamel, or any bad conductor of heat, and the inlide filled with fand. This hath is admirably fitted for the evaporation of folutions of animal and vegetable fubilances, and for drying precipitates and other fubftarices liable to be deconpoled or changed by great hcat.

Mattrus.-This is a veffel ufed for making folutions of fubftances. It is generally of a fpherical form, flattened at the bottom, as feen in fig. 24, having a long neck to allow the fluid to condenfe and return into the veffel. This ufeful apparatus is made of glafs, and thin at the bottom, in order to prevent its breaking. The common Florence flafk is a good fubftitute for the mattras. A fmaller veffel of this kind is ufed for boiling a lefs quantity of any liquid; thefe are called proof glaffes. See fig. 25 .

Precipitating Glafts. - See fig. 26. -Thefe are tall cylindrical veffels, in which precipitations are performed, in order to collect the feparated matter into lefs room. In wa/hing precipitates it is found, that when hot water is poured into the g'afs, if the bottom be thick it is liable to break. This cvil has exifted more or lefs in all the precipitating glaffes in gencral ufe. In making this veffel at the glafs-houfe, the part to form the bottom fhould be blown out thin, like the mattras, and then pufhed inwards to make it ftand firmly. Very fmall veffels in this fhape are ufed for fmall quantities of any fubitance. Thefe are called teft glafes.

Gas bottles, fuch as fig. 27, are vefels for obtaining hydrogen, carbonic acid, and other gafes. 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 efcapes through the crooked tube C , which may be put under the fhelf of the pneumatic trough.

Funnels are ufed generally for filtration; they are commonly, and always ought to be ribbed for this purpofe, in order to form channels between the paper and the glafs, which greatly facilitates the procefs. In lieu of a ribbed filter, it is common to place a number of ftraws, or pieces of glafs, between the paper and the veffel, which anfwers very well.

The feparatory funnel, fog. 34, is ufed for feparating fluids, fuch as water and oil, which do not mix from the difference in fpecific gravity.

The following articles are alfo effential to the laboratory, which it will be unneceffary to defcribe.

Thermometers and a barometer. Bottle for afcertaining the Epecific gravity of liquids.

A common ftill to furninh diftilled water.
A fmall one of filver for nice purpofes.
The different blow-pipe apparatus, with platina, fpoon, and leaf platina.

A filver crucible, and one of platina.

Crucibles and crucible tands of earthen ware. Sce figs. 2g, 30 , and 32 .

Muffels and cupqls. See figs. 28 and 33.
lron retort and jointed tube for procuring oxygen gas. Fis. 35.

Glafs jars of different fizes for collecting gafes.
Filtering paper, and papers coloured with litmus, turmeric, and red-cabbage.

A general affortment of glafles, to filter liquids into, \&c.

An affortment of earthen veffels for common purpofes. Thofe made of the fame materials as the foda water bottles are to be preferred.

Capfules of glafs, and watch-glaffes. The former may be cut ont of broken retorts and receivers with a fimall hot iron.

Glafs tubes of different fizes, and a fpirit lamp for bending them.

Glafs and porcelain rods and fpoons for itirring acids, \&c.
Jars of glafs and earthen ware, with grooves round the top, for luting them clofely from the air. Thefe fhould be ufed for containing falts in cryftals.

Ruled paper for labels; copal varni:h to cover the fame,
to keep off the dampnefs and fumes of acids.
Sheets and wires of different metals.
Silk and thread of different ftrength.
Stands inade of wood or rufhes, for fupporting veffels with round bottoms.

Iron ladles of different fizes.
Hammers, fhears, and plyers.
Corks, bladders, and fponge.
Tongs of various forms.
Files, diamond, and magnet.
Lutes, linen, cloth, and tow. See Lute.
The following philofophical apparatus;
Air-pump for condenfing and exhaulting.
Syringes, microfcope, and burning lens.
Electric machine and Galvanic apparatus.
Zinc plates and wire, for minor experiments.
Hydroftatic balance and hydrometer.
We fhall conclude this article with a lift of the chemical fubftances neceffary to be kept in a chemical laboratory. Thefe are divided into wet and dry fubitances. The firt of thefe muft, of neceffity, be kept in well-ftopped hottles. The latter fhould alfo be kept in bottles, the necks of which fhould be wider than thofe for liquids.

Subftances in common ufe fhould be kept in larger quantity than thofe which are kept as mere fpecimens, or only ufed occafionally and in fmall quantity.

> Liquids in common Ufe.

Sulphuric acid, pure.
Nitric acid, pure.
$\longrightarrow$, common.
Muriatic acid, pure.
Acetic acid.
Water faturated with ammonia.
Solution of potafh.
carbonat of potafh.
potafh.
--. fuper-carbonat of potafh.

- foda, and carbonat of foda.
carbonat of ammonia.
Lime water.
Diftiled water.

Alcohol, pure.
-, common.
The bottles in which the above are kept fhould 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 flopper, a quantity of the liquid which has dittilled up to the Ropper, and been forced out by the expanfion of the air in the bottle. This is very troublefome, efpecially with acids, and may be remedied by giving to the mouth of the bottle a flight funnel fhape, which forms a recefs for the liquid.
The following are the dry fubitances in common ufe.
Oxyd of mangancfe, and common falt.
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 potafh, iron, and lime.
I linglafs and nutgalls.
Brazil wood and turmeric.
Calcined platter of Paris, and bone athes.
Black flux and white flux, See Flux.
Charcoal powder and faw-duft.
Sulphat of lead, as a body for lutes.
Nitre in cryitals.
Borax and alum.
The following are bodies in folution, ufed as tefts and kept in fmall quantities, in bottles from one to two ounces in fize. The bottles fhould be flaped at the mouth as above recommended, and the dianeter fhould be half the height in the cylindric part.


Oxymuriat of mercury. Phofphat of foda.

| Fluat of potafh. |
| :--- |
| ammonia. |
| Borat of foda. |
| Carbonat of potafh. |
| $\quad$ foda. |

Acetat of potalh.
———barytes.
—_frontian. alumine. -_ filver. --C copper Oxyacetat of iron.
Oxalat of foda and ammonia. Succinat of ammonia. Tartrat of ammonia. Pruffiat of potafh and iron. lime and iron.
Pure gallic acid in alcohol. Infufion of galls in alcohol. - of litmus.

Acetic acid, pure.
Hydrofulphuret of potah.

The following fubftances fhould be kept in the folid ftate, and free from the contact of air and moiture:
Sulphat of iron kept in alcohol.
Muriat of lime.
Oxymuriat of potafh.
Barytic earth.
Strontian earth, and all purc earths.
Pure potafh.

- Coda.

Potaffum and fodium, kept in naphtha. See Porassiex and Sodies.

Sulphurets of potafh, iron, and lime.
Phofphuret of lime.
Phofphorus.
Pyrophorus.
It is alfo proper that the chemift fhould poffefs as great a varicty of all the known chemical bodies as polible, both fimple and compound. They are worth poffefing even as a matter of curiofity. But they will be highly valuable in giving a familiar knowledge of the different fubltances which the experimentalift may expect to mect with, and enable hira to diftinguifh them from what may be new.

Laboratory of an Ho/pitah, is a place where the chemical, \&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 fhells and carcafes, make quick-match, \&c.

LABORDE, M. DE, in Bicgraphy, author of an ample and comprehenfive work, entitled "Eflai fur la Mufique, ancienne et moderne," publifhed 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 amafs. It has, however, frequently giver us much concern, in confulting this work, to fee the fipirit of fy ftem operate fo ftrongly on the author, as to affeet both his candour and confiltence. The critique upon mufical writers in the third volume, feems only a vehicle for general cenfure of all that have not fubfcribed to the fundamental bafe of Rameau, the triple progreflion of the Abbé Rouffier, and praife of all that bave. There is no middle ftate, no mufic or mufical merit of any kiad, theoretical or practical, unfanctioned by thefe dogmas. But will M. de Laborde venture to affert, or can he even believe, that till thepublication of Ramenu's "Syftème de la Baffe fondamentale," and the Abbé Rouffier's "Memoire fur la Mufque des Anciens," there was no good mufic in the world, or that all which has been produced fince, by innumerable great mafters in feveral parts of Europe, who never ftudied or heard of either, is execrable? That there are great method and merit in the fyltems of both thefe theorilts, no candid judges of the fubject will deny; and perhaps there are few who will not grant that the principles of harmoay have not been formed into a code, equally luminous and ufeful to ftudents, by any other writers, and yet will not fhut their ears to all mufic not built upon their principles. The inconfiftency of individually praifing Italian compofers in fuch glowing terms, and yet feizing every opportunity to cenfure and fneer at Italians and foreigners in genzral, prove thework to have been compiled by perfons of different principles. What a coil is made (v.iii. p. 690.) about a fharp. fifth ufed merely as an appoggiatura, or note of tafte, with. which the bafe or harmony has nothing to do, and which, therefore, has no effect on the modulation! And yet M. de Laborde can bear the quinte fuperflus, and have patience to give a rule for its ufe in compofition! Can any one fincerely praife the compofitions of Piccini, Sacchini, and Paefiello, who is difgufted by thofe happy licences, in which the wery foul of Italian mufic confifts?
M. de Laborde gives us his mufical creed in pretty plain. terms, (v. iii. p. 639.) in anfwerto a remark of Mr. Jamard, who expreffes his furprife, that "the Italans, without any formal fyttem, compofe better mufic than the French, who are in polfeffion of the true prisciples of harmony." This. M. de Laborde is fo far from granting, that, on the contrary, he is certain the French mufic, with refpect to counterpoint, is infinitely fuperior to the Italian; and that the Italians fur-
pale the French in nothing but dramatic mufic, which is not like other mufic, fubfervient to the laws of counterpoint!"We will allow," continues he, "that the Italians are fuperior to us in melody; but they in return mult granc, that with refpect to barmony we write in a manner fuperior to them in correctnefs, purity, and elegance.". What! fuperior to Leo, Féo, Durante, Abos, Jomelli, Caffaro, aud Manna? But neither melody nor harmony, alone, can conftitute good mufic, which conlifts 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 refpect to all the feuds and contentions lately occafioned by matic in France, they feem to have annihilated the former difpolition of the inhabitants to receive delight from fuch mufic as their country afforded. There are, at prefent, certainly, foo many critics, and too few hearess with a dif. pofition to be pleafed in France, as well as elfewhere. We have feen French and German foi-difant commificurs liften' to the molt exquifite mufical performance, with the fame fang-froid as an anatomitt attends a diffection. It is all analyfis, calculation, and parallel; they are to be wife, not pleafcd. Happy the pcople, however imperfect their mufic, if it gives them pleafure! But when it is an eternal object of difpute; when each man, like Nebuchadnezzar, fets up his own peculiar idol, which every individual is to fall down and worflip, or be thrown into the fiery furnace of his hatred and contempt, the bleffing is converted into a curfe.

LABOUR, in Agriculture, the work which is neceffary to be performed upon a farm, in order to render it fruitful and productive. It is of various kinds, and for the molt part either performed by hired fervants or day labourers. Where proper attention is paid by the farmer, to fee that the labourer underftands his bufinefs, \&c. agricultural labour is probably, in general, beit done by the piece; or what in fome places is termed tank-work. The expence or price of labour varies conliderably in different diltricts, from particular circumftances ; fuch as the fituation, the fate of manufactures, the condition of agriculture, the facility of getting employment, and the manner of living. See LaBOƯRER.

In the Survey of the County of Middlefex, it is ftated, that agriculture may very properly be confidered as the art of manufacturing the foil, and unqueitionably ranks the liigheft in the clafs of manufactures ; fince it not only makes a greater return for the labour beltowed, than all the relt put together, but it is alfo of the firlt necelfity, the demands for its products being urgent and irrefiltible. Any other manufactory, Mr. Diron remarks, may be laid down at pleafure, but agriculture mult be fupported, as it is the hinge upon which both our lives and actions turn; and the ultimate and only certain refource of the itate, both for men and money.

In the above point of vicw the feed-grain, amounting to about 155 , an acre, may be faid to conititute, 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 finifhed manufacture, The additional value above 15 s . is entirely the produce of labour, at leaft, in a conjunction with the affittance of nature; but as not one fhilling could be procured for the natural products of the world, without the application of labour, the whole may therefore be faid to be derived from labour; and amounts to about $9 / .5$ s. an acre, or 1233 l. per cent. on the coft of the raw material. Wheat is Still farther manufactured into bread; but, exclufive of
the operations of the miller and the baker, this is certainls not above the average for the produce of the arable land of this county ; and fome parts of Surrey, Kea*, and Effex, yield in the fame proportion. The raw material, on an average of the arable of the whole of South Britain, amounts to about 16 s - per acre, which is increafed in value by labour to 5\%. or $525 \%$ per cent. Hence the labour beltowed on fifteen millions three hundred thoufand acres, produce a return of $64,260,0001$. fterling.

And the cattle and implements may, it is fuppofed in a manufacturing point of view, be deemed the thock ; the amount of which, on the meadow-land in this county, is about 41 . an acre, and the produce 10l. The labour and profits of ftock, therefore, are $150 \%$ per cent. On a farm purcly arable in this county the bock would be 5l. and the produce $10 l$. or $100 \%$. per cent. There are not any grazingfarms in the county; if there were, their flock would be greater, and they would not yield fo large an increafe. The farming capital of South Britain is 5l. an acre, or 200 millions; anc its annual produce is about 130 , that is, 65 per cont.

He particularizes the annual produce of the foil in this way:
The arable lands, as before itated, - $164,260,000$
The hop-gardens make returns to the amount of $30 l$. 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 procuce of labour will not be lefo than $60 \%$. on 10,000 zeres, is

600,000
The fruit and kitchen-gardens are the mott valuable refources for labour, and make the greatelt return, probably to upwards of iool. per acre, on an average of Great Britain; but he only eftimates 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 $3 l$. on twenty millions of acres,
is

$$
£_{4}, 260,000
$$

$$
60,000,000
$$

The commons, eight millions, at is. $3 \%$ an acre

$$
500,000
$$

Total
$2131,360,000$

It is not prefumed to offer the foregoing ftatement, as one that cither is, or can be made out wih accuracy and precifion. But, under all the circundtances of the cafe, it may, it is believed, be fairly ftated, that the anntial agricultural produce of South Britain is not lefs than one hancred and thirty millions; which mult be allowed to furpafs all other manufactures that can be brought into competition wi:h.it, not only as to the grofs amount, but alfo as to its fuperior ufefulnefs.

And if it be further fuppofed, that there are two millions and a half of perfons employed in agriculture, their average earnings will be, for men, women, and children of all ages, $52 l$. which is a fum fo much exceeding their expences, that It is evident this employment mutt enrich lociety; and it is equally clear, that it contributes at once its furplas, wealth, and population, to make up the deficiencies of the ather departments both in men and moncy. This furely places the importance of rural labour in fuch a point of view, as fhould urge the cultivation of as much land of the kingdom as poffible.

Lamoer,

Labour, in a general fenfe, imports the exertion of human itrength in the performance of any kind of work.

The annual labour of every nation, fays 1)r. Smith in his "Inquiry into the Nature and Caufes of the Weath of Nations," (vol. i.), is the fund, which originally fupplies it with all the necelfaries and conveniences of life, which it annually confumes, and which confift always, either in the immediate produce of that labour, or in what is purchafed with that produce from other nations. As this produce, or its value in purchafe, bears a greater or a fmaller proportion to the number of thofe who are to confume it, the nation will be better or worfe fupplied with all the neceflaries and conveniences for which it has occation. This proportion, in every nation, is regulated by two circumftances, viz. the Akill, dexterity, and judgment with which its labour is gene. rally applied, and the proportion which the number of thofe who are employed in ufeflel labour, bears to that of thofe who are not fo emplojed. Whatever be the foil, climate, or extent of territory of any particular mation, the abundance or fcantinefs of its annual fupply mutt, in that particular fituation, depend upon thefe two circumftances; and chielly upon the former of them, which las ferved to improve the productive powers of labour. This improvement has very materially depended on the divifion of labour, as we may illiftrate and evince by a fingle example taken from a manufacture, that is, on the firft view of it, very trifling; viz. that of pin-making. A workman, not educated to this bufinefs, (which the divifion of labour has rendered a diftinct trade), nor acquainted with the ufe of the machinery employed in it, (to the invention of which the fame divilion of labour has probably given occafion), could fcarcely, with his utmolt indultry, make one pin in a day, and certainly could not make twenty. But as the bufinefs is now condueted, not only the whole work is a peculiar trade, but it is divided into a number of branches, confirting, for the molt part, of peculiar trades. One man draws out the wire, anctber firaightens it, a third cuts it, a fourth points it, a Efth grinds it at the top for receiving the head; and the making of the head requires two or three diftinct operations; the putting of it on is a peculiar bufinefs, and the whitening of the pirs is annther; the putting of them into the paper is a trade by itfelf. Thus the important bufineis of making a pin is divided into about 18 diftinet operations, which, in fome manufactories, are all performed by diltinet hands, though in others, the fame man will fometimes perform two or three of them. Dr. Smith mentions a fmall manufactory of this kind, where 10 men only were employed, and where fome of them confequently performed two or three diltinct operations. But though they were poor, and their machinery indifferent, they could, with exertion, make among them 22 pounds of pins in a day; each pound confinting of upwards of 4000 pins of a middling fize; thefe 10 perfons 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 previoully edueated 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 thoufand eight hundredth part of what they are at prefent capable of performing, in confequence of a proper divifion and combination of their different operations. This exemplification is applicable, in a certain degree, and with fome modifications, to other arts and manufactures; and it fhews that the divifion of labour, as far as it can be introduced, occafions, in every art, a proportionable increafe of the productive powers of labour. The feparation of dif-
ferent trades and employments from onc another, fecms to have taken place in cosifequence of this advantage. The great increafe in the quantity of work, which, in confequence of the divifion of labour, the fame number of people are capable of perforining, is owing to three different circumflances; forl?, to the increafe of dexterity in every particular workman; fecondly, to the faving of the time which is commonly loft 10 pating from one fpecies of work to another; and luflly, to the invention of a great number of machines which faciliate and abridge labour, and erable one man to do the work of many. This invention and introduction of nachinery feem th have been originally owing 10 the divifion of labour. Of machines confiructed for abridging and expediting labour, many have been devifed by common workmen, who have been employed in fome very fimple operation, and whofe attention has been wholly cirected to an ealy and ready method of performing it. Many improvements have alfo been made by the ingenuity of the makers of the machines, when the conftruction of them became the bufinefs of a particular trade; and fome by that of thofe who are called phlofophers and men of freculation, whofe obfervation has enabled them to combine together the powers of the moft diftant and diffimilaz ebjects. in fub-divition of employment in philufuphy, as well is in every other butinefs, has taken place among perfons of this defcription ; in confequence of which dexterity is improved, and time is faved. Each individual, appropriating to himfeif a particular branch, performs more work upon the whole, and contributes in a confiderable degrec to augment the quantity of fcience. It is the great multiplication of the productions of all the different arts, in confequence of the divifion of labour, which occafions, in a well-governed fociety, that univerfal opulencewhich extends itfelf to the loweft ranks of the people. Every workman has a great quantity of his own work to difpofe of beyond what he himielf has occafion 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 grat quantity of theirs. He fupplies them abundantly with what they have occalion for, and they accommodate him amply with what he has occafion for; and a general plenty diffufes itfelf through all the different ranks of the fociety.

The divifion of labour, from which fo many advantages are derived, is not originally the effect of human wifdom, which forefees and intends that general opulence to which: it gives occafion. It is the neceflary, though very flow andgradual, confequence of a certain propenfity in humannature which has in view no fuch extenfive utility ; the propenfity to truck, barter, and exchange one thing for another. As it is the power of exchanging that gives occafion to the divilion of labour, fo the extent of this divifion mult always be limited by the extent of that power, or, in other words, by the extent of the market. When the market is very fmall, no perfon can have any encouragement to dedicate himfelf 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's. labour as he lias occafion for This leads us to obferve, that by means of water-carriage a more extenfive market is opened to every fort of indultry, than what land-carriage alone can afford it; fo it is upon the fea-coaft, and along the banks of navigable rivers, that induftry of every kind natisrally begins to fubdivide and improve itfelf; and it is frequently not till a long time after that thefe improvements extend themfelves to the inland parts of the country. If we

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advert to fact, we fhall find, that the nations which appear to have been firt cultivated, were thofe that occupied the countries around the coaft of the Mediterranean fea. And of all thefe countries, Egypt feems to have been the firf, in which either agriculture or manufactures were cultivated and improved to any confiderable degree. Upper Egypt extends itfelf no where abeve a few miles from the Nile, and in Lower Egypt this great river breaks itfelf into many different canals, which, with the affiltance 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-houfes in the country; much in the fame manner as the Rhine and the Maefe do in Holland at prefent. The extent and facility of this inland navigation, was probably one of the principal caufes of the early improvement of Egypt. The fame obfervation is verified by extending our views to the provinces of Bengal in the Eaft Indies, and to fome of the eattern 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 refpect to the inland parts of Africa; and all that part of Afia, which lies at a confiderable diltance N . of the Euxine and Cafpian feas, 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 ftate in which we find them at prefent. See Canal, Commerce, and Navigation.

When the divifion of labour firft began to take place, the power of exchanging, upon which it chiefly depended, muft frequently have been very much clogged and embarraffed in its operations. In order to avoid part, at leaft, of the inconvenience refulting from this thate of fociety, every prudent man, in every period of fociety, after the firft divilion of labour, mult naturally have endeavoured to manage his affairs in fuch a mamer, as to have at all times by him, befides the peculiar produce of his own induftry, a certain quantity of fome one commodity or other, fuch as he imagined few people would be likely to refure in exchange for the produce of their induftry. Many different commodities, it is probable, were fucceffively both thought of and employed for this purpofe. In the rude ages of fociety, cattle are faid to have been the common inftrument of commerce. Thus we find, according to Homer, that the armour of Diomede cost only nine oxen; but that of Glaucus coft 100 oxen. Salt is faid to be the common medium of commerce andexchanges in Abyffinia; a fpecies of thells in fome parts of the coalt of India; dried cod at Newfoundland; tobacco in Virginia; fugar in fome of our Weft 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 inftead of money to the baker's shop or the alehoufe. Metals, however, have been preferred for this purpofe to every other commodity ; and different metals have been appropriated by different nations to this ufe. See Cons and Moxey.

After the divifion of labour has been once thoroughly eflablineed, it is but a very fmall part of the neceflaries and conveniences of life with which a man's own labour can fupply him. The far greater part of thefe he mult derive from the labour of other people; and he mult be rich or poor according to the quantity of that labour which he can command, or which he can afford to purchafe. The value of any commodity, therefore, to the perfon who poffeffes it, and who means not to ufe or confume it himfelf, but to exchange it \{or other commodities, is equal to the quantity of
labour which it enables him to purchafe or command. La bour, therefore, is the real meafure of the exchangeable value of all commodities. This, however, is not the meafure by which their value is commonly eftimated. It is ofsen difficult to afcertain the proportion between two different quantities of labour. The time fpent in two different furts of work will not always alone determine this proportion. The different degrees of hardhip endured, and of ingenuity exercifed, muft likewife be taken into account. But it is not eafy to find any accurate meafure either of hardihip or ingenuity. Hence it happens, that every commodity is more frequently exchanged for, and thereby compared with, other commodities than with labour. When barter ceafes, and money has become the conmon inftrument 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 itandard by which the value of all commodities can at all times and places be eltimated and compared. It is their ,eal price ; money is their nominal price only. But though equal quantities of labour are always of equal value to the labourer, yet to the perfon who employs them, they appear fometimes to be of greater and fometimes of fmaller value. He purchafes them fometimes with a greater and fometimes with a fmaller 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 cafe, and cheap in the other. In reality, however, it is the goods which are cheap in the ore cafe, and dear in the other. In this popular fenfe, therefore, labour, like commodities, may be faid to have a real and a nominal price. Its real price may be faid to confirt in the quantity of the neceffaries and converiences of life which are given for it; its nominal price, in the quantity of moneyThe 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 meafured by the quantity of labour, which they can, each of them, purchafe or command. Labour meafures the value, not only of that part of price, which refolves itfelf into labour, but of that which refolves itfelf into rent (of land), and of that which refolves itfelf into profit. In every fociety the price of every commodity refolves itfelf into fome one or other, or all, of thefe three parts; and in every improved fociety, all the three enter, more or lefs, into the price of the far greater part of contmodities. In the molt improved focieties, however, there are always a few commoditics of which the price refolves itfelf into two parts only, the wages of labour and the profits of flock; and a ftill fmaller number, in which it confilts altogether in the wages of labour.

The produce of labour conftitutes the natural recompence or wages of labour. In that original ftate of things, which precedes both the appropriation of land and the accumulation of fock, the whole produce of labour belongs to the labourer; as he has no landlord or malter to fhare with him. If this ftate had continued, the wages of labour would have augmented with all the improvements in its productive powers, to which the divifion of labour gives occafion. 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 ftate of things be exchanged for one another, they would have been purchafed likewile with the produce of a fmaller quantity. But this original flate of things, in which the labourer enjoyed the whole produce of his own labour, could not latt beyond the firit introduction of the appropriation of land and the accumulation of ftock.

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As foon as land becomes private property, the landlord demands a fhare of almolt all the produce which the labourer can either raife, or collect from it. His rent makes the firtt 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 almoft 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 ufually made between the two partics, to whom belong the profits of flock, and the wages of labour; and the interefts of thefe parties are by no means the fame. The workmen defire to get as much, the mafters to give as little, as poffible. The former are difpofed 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 befides, the law authorizes, or at leaft does not prohibit, their combinations, while it prohibits thofe of the workmen. But though in difputes between mafters and workmen, the furmer mult generally have the advantage, there is, however, a certain rate, below which it feems impoffible to reduce, for any confiderable time, the ordinary wages even of the loweft fpecies of labour. The wages of a labourer mult at leaft be fufficient to maintain him; and indeed, on moft occafions, they ought to be fomewhat more; otherwife it would be impoffible for him to bring up a family, and the race of fuch workmen could not laft beyond the firt generation. There are certain circumftances, which fometimes give the labourers an advantage, and enable them to raife their wages confiderably above the rate already fecified; which is evidently the loweft that is confiftent with common humanity. When in every country the demand for thofe who live by wages; labourers, journeymen, fervants of every kind, is continually increafing; when every year furnifhes employment for a greater number than had been employed the year before, the workmen have no occafion to combine in order to raife the wages. The fcarcity of workmen occafions a competition among matters, who bid againft une another, in order to get workmen, and thus voluntarily break through the natural combination of mafters not to raife wages. This demand for thofe who live by wages, it is evident, cannot increafe but in proportion to the increafe of the furds, which are deftined for the payment of wages: thefe funds are of two kinds : firft, the revenue which is over and above what is neceffary for the maintenance; and fecondly, the flock which is over and above what is neceffary for the employment of their mafters. The demand for thofe who live by wages, therefore, neceffarily increafes with the increafe of the revenue and ftock of every country, and cannot poffibly increafe without it. The increafe of revenue and fock is the increafe of nàtional wealth. It is this continual increafe, and not the whole amount, of national wealth, which occafions a rife in the wages of labour. Accordingly, it is not in the richeft countries, but in the moft thriving, or in thoie which are growing rich the fafteft, that the wages of labour are the higheit. 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 fo rich as England, it is more thriving, and advancing with greater xapidity to the further acquifition of riches. The molt decifive mark of the profperity of any country is the increafe of the number of its inhabitants. In Great Britain, and in moft other European countries, they are not fuppofed to double in lefs than 500 years. In North America, it has been found, that they double in 20 or 25 years. Labour is
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there fo well rewarded, that a numerous family of clitdren, inftead of being a burthen, is a fource of opulence and profperity to the parents. The labour of each child, before it can leave their houfe, is computed to be worth $100 /$. clear gain to them. The value of children is evidently the greateft of alf encouragenents to marriage. In North America the people generally marry very younc; ; and notwithtanding the great increafe occafioned by fuch carly marriuges, there is a continual complaint in that country of the icarcity of hands. The demand for labourers, the funds deltived for maintaining them, increafe, it feems, ftill falter than they can find litbourers to employ. Another circumitance deferves to be mentioned, viz. that the price of provifions 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 conmand of the neceflarics and conveniences of life which it conveys to the labourer, mult be higher in a fill greater proportion. The liberal reward of labour, as it is the neceflary effect, fo it is the natural fymptom of increafing wealth. The fcanty maintenance of the labouring poor, on the other hand, is the natural fymptom, that things are at a fand, and their flarving condition that they are going falt backwards. The liberal reward of labour, as it is the effect of increafing wealth, is alfo the caufe of increafing population.

It deferves to be remarked, that it is in the progreffive ftate, while the fociety is advancing to the further acquilition rather than when it has aequired its full compliment of riches, that the condition of the labouring poor, of the great body of the people, feems to be the happieft and the molt comfortable. It is hard in the ftationary, and miferable in the declining ftate. The progreffive flate is in reality the chearful and the hearty ftate, to all the different orders of the fociety. The ftationary is dull, the declining melancholy. The liberal reward of labour not only encourages the propagation, but it increafes the induftry of the common people. Where wages are high, we fhall always find the workmen more diligent, active, and expeditious, than where they are low: in England, for example, than in Scotiand; 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 weck, will be idle the other three. But this is by no means the cafe with the greater part. Workmen, on the contrary, when they are liberally paid by the piece, are very apt to overwork themfelves, and to ruin their health and conftitution in a feiv years. Dr. Smith obferves, that if mafters would always Liften to the dictates of reafon and humanity, they have frequertly occafion rather to moderate than to animate the application of many of their workmen: and it will bo found, he fays, in every fort of trade, that the man who works.fo moderately, as to be able to work contantly, not only preferves his health the longef, but, in the courfe of the year, executes the greatell quantity of work.

Although the variations in the price of labour notonly donot always correfpond with thofe in the price of provifions, but are frequently oppofite, we mult not, upon this account, imagine that the price of provifions has no influence upon that of labour. The money price of labour is neceffarily regulated by two circumftances; the demand for labour, and the price of the neceffaries and conveniences of life. The former determines the quantity of the latter which mult be given to the labourer; and the monev price of labour is determined by what is requifiie for purchating this quantity. Though the money price of labour, therefore, is fometimes high, where the price of provifions is low, it would be fill R
higher,
higher, the denand continuing the fame, if the price of provifions were high. It is becaufe the demand for labour ino creafes in years of fudden and extraordinary plenty, and diminifhes in thofe of fudden and extraordinary feareity, that the money price of labour fometimes rifes in the one and finks in the other. 'L'he increafe in the wages of labour neceflarily increafes the price of many commodities, by increating that part of it which refolves itfelf into wages, and fo far tends to diminifh their confumption both at home and abroad. The fame caufe, however, which raifes the wages of labour, the increafe of fuck, tends to increafe 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, neceffarily endeawours, for his own advantage, to make fuch a proper divifion and diftribution of employment, that they may be enabled to produce the greateft quantity of work poffible. For the fame reafon, he endeavours to fupply them with the beft machinery which he or they can think of. There are many commodities, which, in confequence of thefe improvements, are produced by fo much lefs labour than before, that the increafe of its price is more than compenfated by the diminution of its quantity.

Labour is diftinguifhed by Dr. Smith into productive and unproductive: the former is that which adds to the value of the fubject upon which it is beftowed; 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 natter, he, in reality, cofts him no expence, the value of thefe wares being generally reftered, together with a profit, in the improved value of the fubject upon which his labour is bettowed. But the maintenance of a mowial 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 lakour of fome of the molt refpectable orders in the fociety, is, like that of menial fervants, unproductive of any value, and does not fix or realize itfelf in any permanent fubject, or vendible commodity, which endures after the Jabour is paft, and for which an equal quantity of labour could afterwards be procured. The fovereign, for example, with all the officers, both of juftice and war, who ferve under him, the whole army and navy, are unproductive labourfrs. They are the fervants of the public, and are maintained by a part of the znnual produce of the induftry of other people. Their fervice, how honourable, how ufeful, how neceflary foever, produces nothing for which an equal quantity of fervice can afterwards be procured. The protection, fecurity, and defence of the commonwealth, the effect of their labour this year, will not purchafe its protection, fecurity, and defence for the year to come. Ja the fame clafs mult be ranked fome both of the gravell and mof important, and fone of the molt frivolons profeffions: churchmen, lawyers, phyficians, men of letters of all kinds, players, buffoons, mulicians, opera-fingers, opera-dancers, $\& \mathrm{c}$. like the declamation of the actor, the harangues of the orator, or the tune of the mufician, the work of all of them perifines in the very inftant of its production. Both productive and unprocuctive labourers, and thofe who do not labour at all, afe all equally maintained by the annual produce of the land and labour 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 cale and the lefs 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 fpontancons productions of the earth, being the effect of productive labour. This produce naturally divides itfelf into two parts: one of thefe parts, and frequently the largelt, is deftined for replacing a capital, or for renewing the provilions, materials, and finifhed work, which had been withdrawn from a capital ; the other for conltituting a revenue either to the owner of this capital, as the protit of his flock, or to fome other perfon, as the rent of his land. This is the cafe with refpect 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 deftined for conilituting a revenve either as profit or as rent, may maintain indifferently either productive or unproductive hands. The rent of land and the profits of tlock are every where the principal fources from which umproductive hands derive their fubfiltence. And, therefore, the proportion betwcen the productive and unproductive hands ilepends 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 deftined for replacing a capital, and that which is deftined for conftituting a revenue, either as rent or as profit. The latter part is not only much greater in rich than in poor countrie, but bears a much greater proportion to that which is immediately dettined for conitituting a revenue, either as rent or as profit. The funds deltined for the maintenance of productive labour are not only much greater in the former than in the litter, but bear a much greater proportion to thofe which, though they may be employed to maintain either productive or unproductive hands, have generally a predilection for the latter. The proportion between thefe different funds neceffarily determines in every country the general character of the inhabitants as to indultry or idlenefs* The proportion between capital and revenue feems every where to regulate the proportion between indultry and idlenefs. Wherever capital predominates, indultry prevails: wherever revente, idlenefs. Every increafe or diminution of capital, therefore, naturally tends to increafe or diminilh the real quantity of induftry, 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 fubject Smith's Caufes of the Wealth of Nations, paffim.

Ladoun, in Midaiffry. By the tern labour is, meant the aft of detruding a foetus or child from the uterus; and during the time this procefs is going on, the woman is faid to be in labour. The exertion or efforts ufed by the woman, or any other animal, in effecting the expultion of the fectus, are called labour pains, or throes, a Saxon word, meaning fuffering or enduring.

Labour pains return at intervals of longer or fhorter duration. In the commencement of labcur, 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 alinoit continual, one pain being fcarcely finifhed 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 caufe of labour is the exiftence of a feetus, with its placenta and membranes, in the uterus, now ripe, and fit for exclution.

Phytiologitts have in vain attempted to explain why the uterus

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werus fhould bear the burthen of the orum until the contained foctus has arrived at jts maturity, and fhould then attempt its expulfion. The moft general and prevailing 'opinion has been, that the foctus having acquired fufficient fize and ftrength, and fiuding itfelf preffed upon, and ftraightened, it labours to free itfelf from its confinement, and that the pains are occafioned by its kicking againtt the lides and fundus of the uterus. But as pains equally ftrong are excited to expel a dead as a living foctus, or to force away the placenta after the birtio of the child, and as the eggs of oviparous animals are excluded by timilar efforts, it is plain the foctus is paffive in the bufinefs.

If the bulk of the foctus was in any way inftrumental in occafioning labour, then the period of geftation would vary according as the foctus happened to be larger or fmaller, which, we know, is not the cafe; except when it is dif\&urbed by accidental circumftances, as by falls, hurts, fever, or other difeafes. To every animal there is an allotted time for utero-geftation. This law in the economy of nature is fo uniformly attended to, that even when the foctus 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 exclution are excited, in the fame 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 gradualiy loofened, and at length it falls to the ground. When the foctus has acquired that degree of maturity it is intended to attain to in the uterus, the fibres or velfels that connect the ovum, or bag in which the foctus 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 ftraightnefs of the paflage through which it is To pafs. It is for the fame reafon, viz that they are become extraneous bodies, that abortions of two, three, four, or more months, are excluded foon after they ceafe to live.

Labours are divided or diftinguifhed by the terms natural, preternatural, or laborious.

Labours are called naiural, 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 aifo fo adapted to the pelvis of the mother, that the expulfion of it may be effected folely by the powers of nature, or by the pains, and within the fpace of a few hours.

Labours are called preternatural, when any other part of the child than the head prefents to the uterine oribice, as the feet, the breech, a fhoulder, or an arm. In all thefe cafes, more or lefs of manual affiftance 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 pofition, or with an ear, or the face to the uterine orifice, or on account of its difproportionate fize, or from fome difeafe in the os uteri or vagina, or diftortion of the pelvis of the mother, it cannot be brought fafely into the world, without great difficulty, or without the affiftance of initruments.

Progrefs and Managenent of a natural Labour-Two or three weeks before the completion of the term of geftation, the abdomen of the pregnant woman is obferved to fubfide, and become lefs prominent; there is a fecretion of mucus from the glands of the vagina, and perhaps from the cervix uteri. This ferves to foften and relax the paffage, and to render it more eafily dilatable. The uterns finks gradually lower into the pelvis, and the os externum is fre-
quently, from this caufe, in a fmall degree thruf outward: In fome women, flight pains, recurring every three or four hours, are excited in the courfe of this procefs; and milk flows from the breafts. Thefe preliminary fymptoms occur, but perhaps in a lefs degree, in preternatural and laborious, as well as in natural labours.

The term of geltation being completed, the fundus uteri begins to contract, and to propel the foxtus downwards, by which the labia of the os internum, called alfo os tincx, are ftretched, made thin, and at length, forced open, at firtt to the fize only of a fixpence, or fo as fearcely to admit the end of the fore-finger of the affiltant, if he fhould happen to examine the woman at this time. This advance in the labour is ufually announced by the difcharge of a thicker mucus than what had been difcharged before, and often tinged with blood, effufed probably by the fmall veffels which had contributed to conneet the membranes to the cervix uteri. This difcharge of mucus tinged with blood is by the woman called a Joecu.

Though it may be proper, and is ufually expected, that the accoucheur or midwife fhould examine into the flate of the uterus, early in labour, by palfine the fore-finger of his right hand, anointed with lard, into the vagina, in order to difcover what part of the child prefents to the os uteri, and to repeat the examination every hour or two, to afcertain the progrefs of the labour; yet having found it is the head of the child that prefents, and that there is no unnatural obftacle to the birth, he muft be careful to do this in fo gentle a manner as to give no pain to the woman; and he is on no account to attempt to haften the dilatation of the os internum, or any part of the paffage, that being only fafely to be dose 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 Auid in which the foctus is fufpended. This bag, which is gradually cenlarged, contributes materially in opening the uterine orifice, until it becomes fufficiently extended to admit the vertex of the head of the child, when it ufuallyburts, and the contained fluid rufhes forth generally with violence. The women call this the breaking of the swaters. and they expect the birth of the chuld will foon follow; and if the bufinefs has been entirely left to the agency of the pains, this ufually happens in the fpace of one or two hours.
After the burfting of the membranes, there is ufually a fufpenfion of the pains for the lpace of ten or fifteen minutes, when they are again rencwed, and the head of the child is forced down, until it preffes againft the perinæum and the es externum, or outward orifice. In defcending to this pofition, 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 perinæum of the woman becomes now fo much diftended, that the diftance from the edge or frynum 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 fufficiently opened to allow a paffage for the head of the child, which is at length forced into the world, when it is ufual to fay the head of the child is born. The pains are now again fufpended for the fpace of ten or fifteen minutes, during which time the fundus uteri gradually contracts, until it comes again into contact with the breech of the fectus. Two, three, or more pains are required so expel the fhoulders; and as many more to bring the re-

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mainder of the body of the child into the world. The child being born, the woman now enjoys a degree of happinefs, of which, if it be her first child, the had never been confcions before. But her trouble is not completely over; for at the end of fifteen, twent $y$, or a few more minutes, frefh pains arife, but not fo violent as thofe the had before experimend. By thefe the placenta is gradually loofened 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 conliderable difcharge of blood, particularly from the placenta, but, principally, from the uterus. This is called the lochia, and it continues flowing, in greater or lefs plenty, for five, fix, or more days; dimimlthing every day in quantity, and becoming thinner and paler, and is at length colourlefs. This is occafioned by the gradual contraction of the veffels of the uterus, which contnues until that vifcus is reduced to nearly the fize it was before the woman conceived.

With firt children, and, in a few inflances, with fubfequent births, this contraction of the uterus goes on almolt imperceptibly to the woman, moreordinarily pains are excited, fimilar to labour pans, and are called after-pzins. As they are not attended with dayger, and qenerally fubride, and entirely ceafe by the end of three or four days, it is not often found neceffary to atempt apoeain.; them by medicines; but when they are unufudly frequent and violent, preventing fleep, they may be quieted by opening the bowels with fome purging medicine, as caltor oil, an infufion " of fenna, with fome of the neutral falts, or by an emollient and opening clyfter, and at night giving a draught with ten, fifteen, or twenty drops of the tincture of opium.
The above is the ufual progrefs of a natural labour, but there is a great variety in the number, trength, and frequency of the pains required for the expulfion of the child in different women, as well as in the time taken in completing the labour, which in fome women is effected in a few minutes, and with very litt'e pain; more ordinarily, it takes from two to fix, eight, or ten hours. In fome cales, 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 fome affitance will be required to halten the barth, left the foft parts of the mother fhould be hurt, or the itrength of the child exhaufted, by its too long continuance in a ttraightened fituation.

During the progrefs of the labour, the woman is to be allowed to be fitting, walking, or lying down, as fhe feels herfelf moft difpofed. The friends about her, and perhaps the nurfe, generally advife her to hold in her breath, and to prefs down as ftrungly as the can with every pain, and to enable her to do this, they are inceffant in offering her caudle, or other heating drinks. But thefe things are not only unneceffary, but likely to do mifchief. The accoucheur or midwife will therefore interpofe his advice. They mult take care to keep the room $\mathrm{coo}^{\circ}$, and not permit more than one or two of the friends of the woman to be in the room toge'ther. They may affure the parturient woman, that the pains are of themfelves fufficient for the expulfion of the child, and that by endeavouring to increafe their force, fhe will only unneceffarily fatigue herfelf; and that by taking warm fpiced drinks, fhe will become hot and feverifh, the parts will become more irritable and tender to the touch, whence fhe will indeed fuffer more pain, but the birth of the child, initead of being accelerated, will be retarded, and rendered mone difficult.

To affuage her thisft, if that fhould be troublefome, toant
and water, baum-tea, or any fimilarbeverage, will be much more ufeful than wine or other heating drinks.

If the is coftive, and feels uneafinefs from that caufe, an emollient and gently opening clytter may be advantageoufly adminitered. When the pains become more ftrong and frequent, and from the complaints of the woman it is apparent that the head of the child is falt defcending, 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 nurfe has ar-. ranged it. The ufual and molt convenient pofture for the soman is, that of lying on her left fide, her head and Thoulders raifed, her knees drawn up to her belly, and with her feet fupported on the knees of an affiltant, or prefling againit the bed-poit. She is now to be covered with fuch a portion of the bed-clothes, as the feafon of the year, or the temperature of the air, may feem to render neceflary. 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 fuppofed, he will find on the full fretch, and the perinrum much diftended. This is the only part in which the affiftant need or ought to give any manual affittance in a natural labour. It will now be his duty to endeavour, with the : greateft care and diligence, to prevent a rupture of the frenum, and of the perinæum, which may happen if the head of the child fhould be alowed to pafs into the world with too much rapidity. This diftreffing accident, which, when the rupture is confiderable, extending to the anus, is hardly remediable by any art, rarcly happens but with a firft child, nor often perhaps with firlt children, but when means have been ufed, early in labour, to accelerate the birtho. With the view of preventing it, if, on examination, the os externum and the perinæum fhall be found to be ftrongly prefled upon, and diftended during the pains, and yiclding with difficulty, the accuucheur mult ferioully admonifh the woman to moderate her exertions, affuring her, at the fametime, that the child will fpeedily be born. During the pains he mult furround the part of the head of the child which protrudes, or is in the voorld, with the fingers and thumb of his right hand, the points of them relling on the edge of the os externum. In this poftion, the end of his thumb will touch the fronum, the part likely to give way frit. If he, finds that part fo much diltended as to be in danger of burtting, he will refilt the further defcent of the head during the pain. This operation will be affilted, by keeping his left hand, covered with a cloth, firmly preffed upon the diftended perinxum. 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 ufual with midwives to draw the fhoulders and the reft of the body foon after But experience has fhewn, that it is fafer and better to wait for the return of the pains, as during the fufpenfion of them, which lafts, as has been before mentioned, fifteen or twenty minutes, the fundus of the uterus contracts and defcends until it comes again in contact with the breech of the child. By this means the finufes and veffels of the uterus are gradue ally emptied, and diminifhed in fize, whence one of the caufes of inordinate hamorrhage is removed, at the fame time the placenta is loofened and prepared for its exit. The firk two or three pains occurring after the birth of the head of the child, are ufually expended in giving a favourable turn to the fhoulders, 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 rell of the body

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the accoucheur ufing the fame precautions in fupporting the perinzum, as has been recommended during the paffage of the head.

The child ufually announces its birth, by crying more or lefs violen!ly according to its Itrength. This ferves to open the veffels, and to facilitate the circulation of the blood through the ungs. The child may be allowed to lic fome minutes under the clothes, before feparating it from the placenta, taking care that none of the clothes lie upon its face, which might impede its refpiration. In that interval the affiftant will lay his hand upon the abdomen of the mother, which, if there flould be another child, he will find nearly as much dittended as it was in the commencement of the labour. In that cafe, it will be necelfary, having previoufly difpofed of the firlt child, that he make a ligature on the end of the funis, which hangs nut 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 ufually found to be adherent to thofe containing the twin. As foon as the pains re-commence, which they ufually do at the end of three or four hours, (though fometimes they do not return until fix, eight, ten, or more hours,) the accoucheur will pafs the fore-finger of the right band into the os uteri, to difcover the pofition of the feetus. If the head prefents, he will conduct the labour in the manner above defcribed, but as the parts have been previourly completely opened, there will be lefs difficulty to the woman, and lefs danger of any accident happening to the perinæum. If the face, or any other part than the head of the child ghould prefent, it will be neceffary that he immediately proceed to turn the chiid, and deliver it by the feet, in the manner to be defcribed under the article Labour, Preternatural. If there fhould not be a fecond 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 affiltant will now make a ligature upon the funis umbilicalis, or navelftring, about five inches from its infertion into the navel of the child, and having done this he will, with a fharp pair of fciflors, divide the navel-ltring, about an inch beyond the ligature, leaving the other end of the funis hanging out of the vagina. Having then examined the child to lee that it is perfect, and that no blood efcapes through the ligature or the funis, he will place it in a proper receiver (a flannel cap being firft put upon its head) and deliver it to the nurfe. By this time, or foon after, the woman will have a bearing pain, preffing down the placenta, or perhaps, at firf, only forcing away a clot of blood. During this and fubfequent pains, the alfiftant will aid their effect, by drawing down the funis. If, after waiting twenty or thirty minutes, the placenta fhould not come away, he will palis his fingers, or, if neceflary, lis hand, into the vagina, until he gets hold of the placenta, and by this means he will ufually eatily extract it. It fometimes happens, though rarely, if the labour has been properly conducted, that the cervix of the uterus contracts, and prevents the defcent of the placenta, and fometimes the plasenta continues adherent to one fide, or to the fundus of the uterus, long after the birth of the child. In either cafe, the accoucheur mult pafs one of his hands, gradually and flowly up into the uterus, until it reaches the placenta, when the lingers, and by degrees the whole hand, muit be infinuated between the placenta and the uterus, until it be completely feparated; ; it mult then be brought down to the vagina, whence it will be cafily extracted by the funis.

In this cafe the difcharge of blood will be fometimes fo great, as to endang the life of the woman. This accident rarely happens but when the birth haw been improperly and prepouterouffy accelerated, by givng affillance, as it is called, in the carly 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 ttinulating drinks to increafe the pains, and by advifing her to bear down ftrongly during the pains. As the uterus may from exhauttion have becone torpid, and not difpofed to contract, fo as to leffen the caparity or lize of the blood. veffels, large flannels wrung out of cold water, to which about a fourth part of vincegar has been pdded, fhould be laid over the aldomen, and over the os externum of the woman. Thefe applications muft be ret. wed every five or fix minute, or as often as they becom" warm, and they will ufually have the effect of ex siting ti action of the fibres of the utcrus, on which the cur: entrely depends. In the mean while the woman is to L kej, if practicable, in a quiet and eafy polture, her head onlw moderately raifed, and covered with a fingle blanket, the cucr, or one of the windows of the room being opened, and every five or fix minutes fhe fhould take a fpoo ful or twa of a mixture, confifting of fix ounces of difilile 3 water, half an ounce of fpirit 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 falate. By thefe means the heat of the body will be diminifled, and the rapidity of the circulation checked. When the pulfe, which was fcarcely to be perceived while the difcharge was violent, begins to acquire ftrength, 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 fhe may then be placed in the bed in fuch a pofition as may be moft agreeable to herfelf.

The procefs by which a child is produced, or brought into the world, is with great propriety called labour, as it is rarcly effected without confiderable exertion, which has the ufual effect, that of exhaufting the Itrength and firits of the woman. Thefe are to be recruited in the fame manner as if the wafte had been occafoned by any other kind of exercife; viz by reft, and by taking a moderate portion of plain and fimple food at fmall intervals. In the choice of their food, the women may generally be allowed to confult their own taltes, which will rarely, at fuch times, incline them to fpiced meats, or to drinks that are heating. It will be proper that they be kept in a recumbent pofture for the firlt four or five days, only leaving their beds fo long as may be fufficient to open and refreff them. By that time the veffels of the utcrus will be fo much contracted, as to remove all danger of hamorrhage, or of an inconvenient defcent of that vifus, which is fometimes the confequence of leaving the bed tuo early. It is proper alfo, on the fecond, or at the latell, on the third day after being delivered, to procure flools, either by fuch purging medicines as have been before defcribed, or by giving a clyfter. By this means the fever which is ufuaily excited by the fecretion of the milk will be moderated. This, which is called the milkfever, is of fhort 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 driaks, taken warm, with the view of inducing a gentle perfpiration. The child fhould be put to the brealts a few hours after the completion of the labour, that it may get fome mouthfuls of the thin whey-like fluid which is at firt fecreted. This will ftimulate its bowels, and enable them to difcharge the meconium, or black

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wifcid excrements with which they are always filled. It will alfo keep the brealts of the mother from being too tnuch diftended, the pain occafioned by which, if it is not the caufe, yet it certainly tends to increafe the milk-fever.
Bat 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 thate, the puerperal-fever. Its commencement is almoft always marked by a ftrong faiyering fit, which is followed by a quick pulfe, headeache, laffitude and dejection of the fpirits. It fometimes makes its attack during the labour, more frequently ou the next or fubfequent day. It is fometimes millaken for the milkfever, but belides that its attack is earlicr than that of the riik-fever, which never comes on until the third day after delivery, the fecretion of the milk is in this fever interrapted, and the breafts, inftead of being full and turgid, remaiy flacid. From after pains, with which it is fometimes confounded, it is to be diftinguifhed by the quicknefs of the pulfe, arifing very foon to 120 frokes in a mmute, by the head-ache, nauffea, and other concomitants of fever. Tendernefs of the abdomen, increafing to extreme forenefs and pain, foon come on, which are increafed by drawing in the breath, and are rendered almoft intolerable by coughing. As there is always a high degree of inflammation of the peritoneum prefent in this fever, and perhaps of fome of the eontained vifcera, we cannot be too early in taking away eight, ten, or twelve ounces of blood from the arm, according to the ttrength of the patient. If the abdomen appears diltended, attended with forenefs and pain, fix or cight 3ecches may he advantaggeounfy applied to that part, which may be afterwards fomented with flannels wrung out of a decoction of camomile and marrh-mallows moderately heated, and then covered with a poultice made with linfed-meal. A draught with infufion of fenna and fome neutral falt may be given to procure two or three ftools. The bowels may aftervards 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 cafes that will require or bear a repetition of the bleeding. If, however, the pulfe fhould appear to be ftrong, and the pain, with the difficulty in breatling, require it, that may be done on the fecond or third day, and a bliter may be applied over the part of the abdomen which is mold diftreffed. A blilter applied to the nape of the neck, fucceeds remarkably in relieving the pain of the head. There is rarely delirimm, at the leaft not to any confiderable degree, attending this feyer. The patient fhould be nourihled with light broths, panada, and fuch like mild food, and drink barleywater, gruel, baum-tea, toall and water, or, where preserred, table-beer. By perfiting in the ufe of thefe remedies, the fever is frequently fubdued by the end of four, five, or fix days, when recourfe may be had to a light decoction or infufion of Peruvian bark, Columbo, or fome other tonic taken twice in the day to recruit the ftrength. Too often, however, thefe and all other means that hiave been devifed prove infufficient, and the patient dies, fometimes 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 fouely the confeguence 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 kitury and treatment of it here, rather than at the end of this differtation.
Puerperal fever occurring in lying-in-hofpitals, or where a
great number of fick or wounded perfons are confined, at fome times, that is, under certain difpofitions and temperatures of the atmofphere, becomes infectious, almoft every perfon delivered in the ward where the fever rages partaking of it in a greater or lefs degree. At fuch times, a larger proportion than ufual of thofe who are delivered in their own houfes are fubjected to it. When it has made its way into a lying-in ward, the wormen flould be removed, and feparated, where it can be fafely done, and no more perfons admitted until the ward las been well ventilated and purified. It is recommended, that the floors be fcoured, the walls and cielings fcraped and lime-wafhed; that the beds be taken down, and the bed-cluthes, and the whole room be expoled to the vapour of burning fulphur, or fumigated with the vapour of the narine or nitric acid. All this may with fafety and propriety be done, but experience dues not warrant us in laying that they have any effect in extinguining the fever, which, like the yellow fever, or the plague, does not, it is prchable, quit the places where it has made its appearance, until the tomperature, or other quality of the atmofphere, to which, perhaps, it owed its origin, is changed.

I: fometimes happens that women are troubled with hremorrhage, or difcharges 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 firt, fecond, or third month of geftation, ufually terminate in abortion, which fee. When the hæmorrhage makes its firft 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 caufe of the difcharge is a partial feparation of the placenta from the uterus; and it may be occalioned by taking too much exercife, by reaching down any article placed at an inconvenient height, by frequenting affemblies or crowded rooms, by dancing, alfo by any ludden fright or alarm, or by falls, blows, or other accidents. To whatever caufe hemorrhage may owe its origin, it is only to be reftrained, and the ill effects of it to be prevented, by reft and retirement, and by avoiding all occafions of exertion; by keeping the air of the room of a moderate temperature, and uling a diet that is plain, fimple, and cafy of digettion. If coltive, the body fhould be kept open by the ufe of mild cathartics, or glyfters. When a contrary habit of body prevails, and the patient is ditturbed with purging and griping pains in the bowels, a dram of any purging falt diffolved in two or three fpoonfuls of water, with three or four drops of the tincture of opium, given every two or three hours, rarely fails of appeafing the tumult, and of reftraining the homorrhage. But though the difcharge may by thefe 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 fhould be fuch as to bring it under the clafs of natural labour, yet it will be neceffary, in conducting it to its termination, to deviate confiderably from the rules that lave in thofe cafes been recommended.
On examining, it will be found that the os uteri, in the earlieft ftage of the labour, is more open, foft, and yielding, than in ordinary cafes; the pains are alfo gencrally kef bearing and efficient. It whll therefore be proper to affilt 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 difcharge of blood is not conttant, or very confiderable, it will be belt to let it come in that polture ; continuing, at intervals, to affift in dilating the os uteri. When that orifice is completely dilated, fo as to ado

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mit the head of the child, the membranes may be opened, by fcratching them with the nail of the fore-finger, that the waters may be difcharged. This will enable the uterus to contract, and prefs the placenta againit the head or body of the child, and fo itop the further effufion of blood. 'The completion of the labour may now be effected by the pains, as in common cafes. The placenta being in part detached, ufually comes down foon after the birth of the child. If, however, it fhould be delayed, and the difcharge of blood continue, it may be brought away in the manner before deferibed. But when the difcharge of blood is fo confiderable as to endanger the life of the woman, (and this will be the cafe when the placenta is placed near to, or, as it forretimes happens, part of it lies over the os uteri,) then it will be neceflary, even althou th the child is coming down in a natural polture, as foon as the os uteri is fufficiently dilated, to break the membranes, or to pierce through the placenta, and gradually and flowly to pars firft the fingers, and then the whole of the hand shirough the rupture into the bag, and to take hold of the feet of the child, and bring them down into the vagina. Tinse mult then be given that the uterus may contract, fo as to prels upon the head and fhoulders of the child, when the lahour mult be completed in the manner defcribed under the next article.

It fometimes happens that, on the burfting of the membranes, the funis umbilicalis or navel-ltring falls down into the vagina, before the head or other part of the child that prefents. In this cafe, it has been ufial to recommend that the prolapfed funis be folded in a piece of foft linen, and returned into the uterus: but experience has fhewn, that however carefully this be done, it contlantly returns in a few minutes. If the accoucheur fhould be prefent at the time of the rupture of the membranes, or foon after, and find a pulfation in the navel-flring,--a fure fign that the child is living, he will then, in whatever pofture the child may happen to prefent, treat it as a preternatural labour; that is, he will pafs his hand into the uterus, and turn the child, and bring it by its feet: for if the butinefs be left to nature, the preffure on the funis will put a flop to the circulation of the blood, and the child will die long before it would be expalled by the pains.

In fome irritable conftitutions, the women become convulfed in the courfe of the labour. This accident more frequently occurs with firlt than with fubfequent clildren. 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 fubfequent day. In very mild cafes, the brain feems but little affected by the convulfions, which partake of the nature of hyiteric complaints. Thefe cafes are ealily curable, or give way fportaneoufly when the labour is completed. More commonly the convulfions are attended with coma, and other affections, indicating oppreffion on the brain. Thefe are of more difficult management, and often prove fatal even under the molt cautious and judicious treatment. Of whatever nature, or from whatever caufes puerperal convulfions may proceed, they affilt 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 talk away fix, eight, ten, or twe've ounces of blood from the $\mathrm{a}=\mathrm{m}$; and in the fpace of two hours after, (unlefs the child is coming into the world,) this thould be followed by a clyter to empty the bowels. After the operation of the cly lter, from twenty to thirty drops of the tincture of opium may be advantageounly given, which will generally fucceed in making the fits lefs frequent and violent. The labour mult now be conducted in the fame manner it would have
been, if it had not been interrupted by the convulfions If the child prefents in a natural potture, and the polvis of the woman is of the natural form and dimenfions, it will be found that the eonvulfions 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 oifice is fufficient?y dulated, the accoucheur will pafs his hand into the uteruc, and turn the child, and brinz it by its feet. If, on the other hand; the birth of the child thould be retarded, rendered difficult, or impoffible, without the aid of inftruments, from diftortions of the bones of the pelvis, the accoucheur will ule the lever, forceps, or crutchet, whichever fhall be required, in the manner directed under the articie Linbour, difficult.

Labour, Preternatural. In all preternatual labours, the defcent of the uterus and the cilatation of its orifice prow ceed more flowly than in natural labours: hence it often happens that the part of the child prefenting cannot he diftinctly perceived, even though the woman has been feveral hours in pain. If, therefore, on examiting a woman in labour, during a pain, whofe pelvis is of a proper form and cimenfion, no part of the child can be perceived, the accoucheur may be aflured that it is fome other part than the head that is coming down. Nothing, however, will be neceffary to be done in this cafe, until the child is fo far thruft down by the pains, and the os uteri is fo much dilated, as to enable him to perceise the prefenting part through the membranes, or until, by the burfting of the membrares, and the difcharge of a part of the liçuor 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 cuming down, the operator will leave the expulfion of the child principally to the effects of the pains, only criving the affiftance directed under the articles Breech and Feet Preferitations. But if the fhoulder, arm, breaft, or any portion of the upper part of the trunk of the child fha! be found to have entered the os uteri, by the general cunfent of practitioners, the child muft be turned, and extracted by the feet. To effect this, the accoucheur will immediately, and tefore the whole of the waters are drained away, pafs his hand fowly and gradually into the uterus, until he comes to the fect of the child, which will often be found at or near the fundus, and grafping them in his hadd bring them down into the vagina; then pauling a little while, itill holding the feet in his hand, he will, by another effert, bring them through the os externum, or into the world.
This operation, if undertaken foon after the burfting of the membranes, will generally be pe-formed with great eafe and fafety, and with little pain to the woman: but if it be not begun antil the waters are entirely evacuated, and the uterus is contracted, and come into clofe contact with the body of the child, it will require a much greater degree of force to introduce a hand fo 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, difficultr, and hazard.

From a due confideration of the ce circumilances, the following practical inference may be drawn, viz that whenever, on examining a woman in the commencement of $13-$ bour, no part of the child can be felt, or, if felt, not fo diftinctly as to enable the accoucheur to decide whether it is the head that is prcfenting, he fhould by no means leave the woman, or be far abfent from her, that he may be at hand to turn the child, if neceffary, foon after the burting of the membranes. But fuppofing 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

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the uterus has contracted fo as to come into contact with, and trictly to embrace the body of the child, yet, even in thefe cales, if the pelvis of the woman is of the proper form and dimenfions, and the child is not difproportionably large, by proceeding flowly and cautionfly in the manner about to be deferibed, the refistance of the uterus may be overcome, and the delivery effected with perfect fafety to the mother and child.

Method of turning a Cbild in the Uterus, in preternatural Labours, and bringing it by the Fech.-. The woman being laid acrofs the bed, on her lefr fide, with her knees drawn up to her belly, a woman litung on the fide of the bed, to hold her feet, and keep her tteady, the accoucheur mult introduce, firlt one, then a fecond, 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 fill further dilate the paffage. Then, paufing a little while, until the ftraining, on the part of the woman, which the intrutiuction of his hand will have occafioned, Shall have fublided, he mull again puif his hand gently upwards, until it has paffed the brim of the pelvis and entered the uterus; then, again pauling until the woman ceafes to ftrain down, he muft again pufh his hand upwards in the intervals between the pains or ftrainings 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 paffage.

When the refiltance 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 clild. In that cafe, he mult flowly and gradually withdraw his hand, and wait fome minutes until he has recruited his ftrength, and the woman is a little refrefhed, and then re-introduce the fame, or his other hand, with whichever he thinks (from the knowledge he has now acquired of the pofition of the child in the uterus) he thall be beft able to complete the delivery. This re-introduction of his hand he will be able to effect much more eafily than before, the uterus being fomewhat itretched and loofened by his former effort. He will now feduloully endeavour to get hold of, and bring down, both the feet of the child; but if that is abfolutely impracticable, he mult 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 mult then withdraw his hand, and, after recruiting his ftrength, 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, puft up the noofe until it paffes the ankle of the child, by which means he will have a double purchafe; then drawing down with the end of the fillet that hangs out of the vagina with one hand, and with the other grafping and pulling down the foot, be will ufually, in a few minutes, fucceed in bringing the leg of the child through the external orifice.

The operator may now again pafs his hand up into the uterus to fearch for the other foot of the child, and bring it alfo down; or, not fucceeding in this attempt, he will wrap the leg that is in the world in a foft cloth, and draw it downsward ikeadly with both his hands, and with fufficient force to bring the breech of the child into the vagina. He will now paufe a few minutes, both to allow the woman to recover her ftrength and fpirits, and to give time for the uterus to contract, and come agrain in contact with the head and
trunk of the child then, renewing his efforts, he will cortinue drawing down the thigh, until the breech has freed the extermal orifice. He mult now examine the polture of the child, and if the fore-part of the shild lays to the pubes of the mother, he will turn it round to the facrum: then taking liold of the breech with both his hands, he will continue drawing downward fteadily, at the fame time moving it from fide to fide, until the whole of the body is born; he will then pafs a finger firlt 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-ltring, he will haften the birth, drawing down fteadily and ftrongly by the Thoulders: If he finds niuch refiftance, with a view of accelerating the birth of the headd, he mult pais the fore-finger of his left-hand along the brek 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 Moulders 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 prefcribing the pofture in which the woman fhould be placed as moft convenient for the operator in turning a child, which they think fhould vary according to the pofition of the child in the utcrus, as whether the face or foreparts of the child be turned to the back, belly, or one of the fides of the mother ; they alfo, from the fame circumftances, determine which hand will be moft proper for the acconcheur to ufe in performing the operation. But as the exact pofition of the child can rarely or never be known until the operator has actually introduced his hand into the uterus, there feems no neceffity for embarraffing him with regulations of this kind. The moft convenient pofture will generally be found to be that in which women are ufually placed in a natural labour, and, as has been now defcribed, viz. ly. ing on her left fide, with her knees drawn up towards her belly, her feet in the lap of an affiltant. In refpect to which hand the operator fhould ufe, he will be guided by circumflances, or by his habit or cuftom: moft perfons ufing one of their hands more dextroufly than the other. The moft important rule is, that the whole operation be performed flowly and gradually. Other writers have advifed 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 fhould be ruptured. But as, at every pain, the vterus contracts, becomes thicker, embraces the body of the child clofer, as well as thrufts the prefenting part lower into the pelvis, it is evident that by waiting the difficulty of performing the operation will be increafed. It will be fufficient, in addition to what has been faid of the neceffity of proceeding nowly and leifurely, to warn the operator only to pufh his hand on in the intervals of the pains.

It was fuppofed, by the carly practitioners of midwifery, that when an arm of the child prefented, and became confiderably fiwelled, which it always is, when it has continued long in the vagina, that it fo filled up the paffage, as to add very much to the difficulty of paffing a hand into the uterus, and fometimes even rendered it impoffible to be done, until the arm was removed; and, accordingly, it was pretty much the practice in the beginaing of the laft century, firlt to attempt returning the arm into the uterus, but as that was rarely or never practicable, it was ufual in thefe cafes to make an incifion through the integuments, under the arm-pits of the child, with a pair of fcifors, or a fcalpel, and then twit off the limb; and in this mutilated fate the children were fometimes born alive. This practice has long fince been abolifhed; expericnce having fhewn, that the

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obfacle oppofed by the tumid arm is rery inconfiderable, only affecting the firlt part of the operation, and by perfeyerance is calily overcome.

We have been lately told, by a practitioner of eminence, that when an arm or fhoulder prefents, and, by the continuance of the pains, has been thrult fo low into the pelvis, that it is abfolutely 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 ftrongly to fcparate the vertebre of the nock, and then twitting the hook round, the integuments of the neck will break, and the head be diffevered 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 perfuns of lefs fill and fagacity than the writer here alluded to, may be tempted to try the experiment on children fuppofed to be dead, but which are not fo, or when there is fufficient room in the pelvis to bring away the child without mutilating it, and thus fone lives be lof that might otherwife be preferved. This operation, therefore, fhould never be performed but in confultation.

It has in a few cafes happencd, when an arm or fhoulder prefents and enters firlt into the pelvis, and the woman has becn neglected, or the affiltant, 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 floulders receding and mounting upwards, and in this polture, viz. breech foremnft, 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 evilution 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 obferves, to know thefe facts, as in fome extreme cafes it may afford confolation both to the patient and the attendant; but the exittence of the uterus muit 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 cafes the child would be loft, and not uncommonly the woman would lofe her life alfo.

It fometimes alfo happens, in cafes where the arm, fhoulder, or breaft of the child prefents, and the expulfion 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 foft and putrid, and inftead of making the evolution defcribed, is thruit down through the pelvis, and into the world doubled, the head lying on the breatt or back, and yet the woman has furvived.

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 the fe periods, particularly at the two firlt, it will generally be right to let the foctus come into the world in whateser pofture it may prefent; as both the limbs of the foctus are then too tender to bear any confiderable degree of force or extemfion, and the capacity of the uterus is too ftraight to admit the introduction of the hand of the operator to turn the factus, and deliver it by the feet.

Labours of the third and laft clafs are thofe which are called difificult or laborious. Thefe vary much in degree, according as the caufes vary. When the difficulty is folely occafioned by a mal-prefentation 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 pofture by the pains, and very little more affiltance will be neceffary than what is given

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is naturad labours, from which it will only differ by its re. quiring a greater number of pains, and taking up a longer fpace of time for its completion. The fanne will hapien when the birth is retarded by a difpropotion hetween the head of the child and the pelvis through which it is 10 pafs ; that is, when a woman whofe pelvis is finall, but perfect in its form, produces a large child, or when the head of thee child is more than ufually offified. By the continued force of the pains, the bones of the heads of the generality of chis. dren, whioh do not ordinarily meet, or come in contact uith each other, will be preffed together until they ride, or lap one over the other, and fometimes until the bead aflumes a conical form, the vertex being the apex or poime of the cone, and in this fate it will come into the worts. The midwives are accultomed to call the heads of claldiren that have been fo preffed, and altered in their thape, montld-flot heads, or horfc-fhoe moulds, and are bufy, whien dreffing the children, in forcing the bones back into their placef.' B:: this is not neceflary, the heads never failtng, in time, to aftume their proper figure. Children who have been fubjected to fuch a degree of preffure as to occafion an alteration in the flape of the fkull, fhould they be born alive, will generally be found to be fo much weakened by the injury they have fuffered, as not to be prefersed without great care and dithculty.
It has here been fuppofed, that the expulfion of the liead of the child has been left, as in natural labours, to the power of the pains, which will generally be fufficient for the purpofe; but this will not happen, in fome cales, until, by the long detention of the head of the child in the paffare, the foft parts of the woman fhall be fo bruifed and injured, by the preffure they have fuffered, that fuppuration or mortification of the vagina fhall enfue, penetrating into the bladder, or rectum, and fometimes into both, making the vagina the common channel for the urine and the flools. To avoid thefe diffrefing accidents, which, when they occur, admit no remedy, or are only in a fmall degree alleviated by time, various contrivances have been invelited to bring away the head of the child, when it is enclavéc, or fixed in the pelvis, earlier than it would be forced away by the pains. Thole which have been preferred, and which are now almolt univerfally ufed, are the forceps, the invention of Dr . Hugh Chamberlen, and the lever of Roonhuyfen, (fee the articles Forceps and Lever,) the time and marner of ufing which will now be defrribed.

In all cafes requiring the affitance of inftruments to complete the delivery, the progrefs of the labour will be found, from its commencement, to be flower than in thofe labours which are denominated natural. The obfervation of this circumftance will induce the practitioner to be careful that the woman be kept cocl, and that no efforts be ufed to accelerate or itrengthen the pains; that fhe be encouraged fron time to time to void her urine ; that her bowels be kept open br clyfters, or by giving her a gently purging medicine, and that ten or trelve drops of the tincture of opium be given at night to procure fleep. By thefe means, (which misit be purfued the fecond day alfo if neceffary,) her Atrength will be preferved, and the will be enabled to meet the dificulties fhe will have to encounter, Before the end of the fecond day it will generally be found that the of uteris is completely dilated, that the bafis, or largeit part of the head of the chuld, has been fored into the brim of the pelvis, that the membranes have burit, and that the greater part of the waters has been difcharged. At this period, as if nature was tired with the conflict, the pains uffally remit, both in frequency and Arength; it now, therefore, becomes neceffary to watch over tbe fafety of the woman, and if, at the end of two or S
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three hours, the head continues fill unmoved, to proceed, (having previoufy informed the woman and her friends of your intention,) to the ufe of the proper neaus for expediting the delivery.

Nanncr of ufing the Forceps.-Having laid the woman on the bed, in the ulual pofition, the accoucheur will fit down behind her, and will introduce two or three fingers of his right hand into the vagina, and continue pufhing them gently upwards, until he feels an ear of the child, which will generilly be found under, or near, the os pubis; he will then take a blade of the furceps, previoully anointed with lard, and introduce it between his fingers, and the head of the child, continuing to pufh it upwards until it pals 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 oppointe w the firit. He will then bring the handles together, and lock them, and that they mase not Ilip, he will conline the handles together with a handkerchief, or any appropriate ligature. It generally happens, that the force ufed in applying the forceps gives frefh ftrength to the pains. During each pain the accoucheur will nowly, and gradually, draw the handles of the forceps downwards, with his right lrand, moving ther, at the fame time, from fide to fide, keeping his left hand againft the perinæum of the woman, which he will, through the whole procefs, carefully guard, to prevent, if pofialle, its being ruptured, an accident more likely to occur in firft, than in fubfequent labours. Having in this cautious manner extracted the head of the child, the semainder of the delivery will be conducted as directed under the article Labour, Natural.
Many prafitioners in thefe cafes prefer the ufe of the levcr, which may be contidered 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 cliild, as before cirected, and pufhed on until it paffes 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 perinæum 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 infrument, and the greater facility with which it is ufed, have given it a deferved preference over the forceps. For a fuller account of the manner of ufing 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 hiltory of the invention of the inftruments, to Dr. Bland's Account of the Invention and Ufe of the Lever of Roonhuyfen, publifhed in the fecond volume of Medical Communications, in the year 1790. It is proper to obferve, that in all cafes in which it becomes neceffary to have recourfe to the ufe of infruments to finifh the delivery of the child, and, in fact, in all lingering labours, the operator fhould pay particular attention to the litate of the urinary bladder, and if the urine has been fupprefled, he mult draw it off with a calheter, before he begins to operate.

In the cafes that have been defrribed, where the labour has been retarded, and rendered difficult by the caufes above eaumerated, the methods recommended will generally be found to be competent to bringing it to a conclufion, withont occafoning much injury to the mother or to the child. But when the obftacle atifes from diftortion of the boaes of the pelvis of the mother, altering the Mape of the pelvis,
and dimininhing its capacity, means muft then be ured to leffien the volume or bulk of the head of the child, otherwife both the mother and child muft inevitably perifh. The perfons in whom this defect in the pelvis is found. are ufually fhort and delicate women, whofe growth had been checked in infancy by the rickets, or who had been confined, too rigidly in their youth, to a fedentary polture, in order to acquire a proficiency in mufic, drawing, or fome other accomplihment, and liad thence been prevented taking that portion of exercife in the open air, which is neceffary for the growth and ftrength, as well as for the health of the body.
When called upon to atterd a perfon labouring under this infirmity, the accoucheur will find, on examising, 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 itraighteming the capacity of the pelvis, and changing its form from an oval to a triangular figure. On his difcovering this derangement, it will be his duty to irform the friend to the woman of the manner in which he propofes to conduct the labour, and of the necefity he belic ves 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 neceffary that the avoid all heating drinks, and that fhe manaje her itrength and her fpirits in the belt manntr fhe is able. The bowels muft be kept fupple and open by clyfters, the urine malt be drawn off, if furprefled, 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 lefs fevere, 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 clild, a fmall portion of the vertex, or prefenting part of the head, or perhaps only of the tumid fcalp, will be found to be thrult through the brim of the pelvis. As no farther affiltance can be expected from the pains, which now would only tend to exhaut the ftrength of the woman, and to excite fuch a degree of heat and fever, as might not afterwards be extinguifhed, it will be neceffary 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 befure defrribed, and the accoucheur placed behind her, he will introduce two or three hingers of his left hand into the vagina, and pafs them upwards until they touch the protruded part of the head of the child, and cindeavour 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 lkull fufficiently large, he will withdraw the perforator, and allo the fingers of his left hand, both to give a refpi e to the woman, and to allow the pains to force a larger portion of the fkull, now yielding more eafily to the preliure, through the brin of the pelvis. At the end of two or three hours he will re-commence the operation, and will pals his left hand, or as much of it as he can, into the vagina, aud introduce one or two of his fingers into the aperture of the fkull of the child; this will ferve as a guide to the crotchet, which he will now ufe. 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 ufeful

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to keep the left hand, or two or three fingers of it, in the paffage, that if the crotchet thould fio, they may prevent any injury being done to the vagina. Having paufed ngain, for the fpace of an hour, to give the uterns opportunity of contracting, he will cafily bring the head of the chidd, now emptied of its contents, into the world, and the remainder of the labour wiil be conducted as in ordinary cafes.
In labours of this clafs, that is, in difficult labours, as the progrefs of them is always flow, giving opportunity to the uterus to contract, the expulfion of the phacenta is ufually performed fooncr, and more eafily, than in natural labours.
laboured Accompaximiny. See Accompaniment.

LABOURER, in Agriculure, a perfon who performs the manual or moft laborious part of the bulinefs of a farm. Lubourers are moftly fuch perfons as live in cottages, or fmall houfes in the vicinity of the farms, or in the houfes of the farmers themfelves.
The author of Modern Agriculture, after premiing that in all civilized ftates, the great body of the people live by labour; and that, of whatever nature it may be, the wages received mult be more than fufficient to maintain the labourer, as, were it otherwife, he could not bring up his family, and confequently this clafs of men would foon become extinct ; obferves, that in every county or diltriid, where the ufeful arts are-in a flourifhing ftate, and where thofe employed in carrying them on are moft fuccelsful -in accumulating riches, the rate of, wages, or price of labour, is highef. Luxury is a never-failing attendant on riche;, and the number of fervants always increafes with the means of maintaining them. Therefore an ircreafing demand for ferrants or labourers, whether for carrying on agriculture, the purpofes of trade, or for adminiffering 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 Lanarl, Renfrew, Perth, Angus, Fife, \&cc. amounts, it is fuppofed, to the moft pofitive evidence, that commerce, manufactures, and improvements in agriculture have rapidly increafed. The ftill low price of labour in the counties of Caermarthen, Pembroke, Cardigan, \&cc. in Wales; and Nairn, Inverners, and the other northern counties of Scotland, notwithtanding the great emigrations of labourers to thofe parts of the ifland, where they are more certain of finding employment, is a fure fign that in thefe remote diftricts the arts have fcarcely ever been introduced. It flews alfo, that litile attention is beltowed by the proprietors to improve the fituation of the peafantry, either by inuring them to habits of induftry, or inflrutting them in the advantages to be derived from a proper divifion of labour. In thofe 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 profferous flate, are at prefent flationary, and that a national exertion is neceflary, in order to fet them again in motion.

And further, that the wages of farm-fervants, and of labourers, who are occafionally engaged in the operations of hußandry, vary nearly as much in the different diffricts of Great Britain, as they do in the feveral kingdoms of Europe. In the counties in England, where commerce and manufactures are carried on to the greateft extent, as Middlefex, Surrey, Kent, Lancafter, Chefter, the welt-riding of Yorkhire, \&c. the wages of farm-fervants and day labourers may, it is conceived, be flated as follows :

Where agriculture is the chief employment of the people. as in Hertford, Buckingtiam, Rutland, Northampton, Worcefter, Northumberland, \&cc.
A ploughman's wages may be fated from

| Average. |  |  |
| :---: | :---: | :---: |
| 9 | 0 | 0 |
| 4 | 5 | 0 |
| 0 | 1 | 6 |
| 0 | 1 | 1 |
| 0 | 2 | 0 |
| 0 | 2 | 0 |

A female fervant, from 3 l. tos. to $5 \%$.
A labourcr in fummer, without board, fro:n
Is. 4 d. to is. 8 d .
Ditto in wister, ditto, from is. to is. $2 d$. A warafon, ditto, fron. 1s. rod. to 2s. 2 d . -
A carpenter, ditto, from 1s. $8 d$ d. to $25.4 d$. -

In thofe counties in Wales, where improved modes of hufbandry are little practifed, and where there are fcarcely ans commerce or manufatzures,
A ploughman's wages are from 4l. IOs. Avirage. to $7 \%$
A female fervant, from 2l. 10 s. to $4 \% .4 \mathrm{~s}$. $\begin{array}{lll}5 & 15 & 0 \\ 3 & 7 & 0\end{array}$
A day-labourer in fummer, without board,
froin 8 d to s s.

- 010

Ditto, in winter ditto, from 6d to $8 d$.
$\begin{array}{lll}\circ & 0 & 7 \\ 0 & 1 & 0\end{array}$
A mafon, ditto, from is. $6 d$. to 25.

| 0 | 1 | 9 |
| :--- | :--- | :--- |
| 0 | 1 | 6 |

It has been obferved, that the rate of wages has advauced very rapidly of late years, in many countics in Scotland. In that part of the kingdom fouth of the Grampian mountains, the rife in the price of labour has, he lays, been general, and is now nearly double what it was twenty years ago.

A ploughman's wares is from 7l. to 12 l. Average. A female fervant, from $3 l$. to $4 l$ l. 10s. $\quad 910$. A day labourer, in fummer, without board, from 1 s .2 d . to 1 s .6 d . -

315 o
Ditto in winter, ditto, from rod to IS. $2 d .0 \begin{array}{ll}0 & 4\end{array}$
A mafon, ditto, from $1 s .6 d$. to $2 s .4 d . \quad$. 0 it
A carpenter, dizto, from 1 s .4 d . to 2 s , - $\quad \mathrm{o} 8$
In the northern divifiona of the kingdom, where there is little commerce or manufactures, and where improsements in agriculture are only partially introduced,

|  |  | Aver |
| :---: | :---: | :---: |
| A ploughman receives from 3 3. to 61. A female fervant, from 2 l .2 s . to 3 l . 145. |  |  |
|  |  | 2 IS 0 |
| A day labourer, in fummer, without boar from 8 d. to is. |  |  |
| Ditto, in winter, ditto, from 6d. to 8d. |  | - 07 |
| A mafon, ditto, from 1 s, to 1 s .6 d . |  | $\bigcirc 1$ |
| A carpenter, ditto, from ns. to |  |  |

From the above averages, the following table, which may be confidered as containing pretty nearly, he fays, the medium rate of agricultural labour in thefe kingdoms, at the prefent period, is formed:

General Averdire. £. s. d.
A ploughman
A female fervant
A day labourer, in fummer, without board
Ditto, in winter, ditto
A mafon, ditto
$A$ carpenter, ditto
In the above fatements, the difference in the rate of wares does not, it is fuppofed, appear fo confiderable (except in TVales, and the north of Scotland, compared with the better cultivated parts of Great Britain), as, had it been poffible to afcertain the price of labour in each particular county, would have been evident; local circumitances fiequently operating to augment or deprefs the rate of wages in particular diftricas, which is not difcernible when numbers are clafed together.

But the rates of wages, or prices of labour, have increafed in the propertion of, from a quarter to a half, fince the perind in which the above was written, which is only a very fow years. Theif are, he conceives, affected by fome or all of the tollowing caufes, viz, ift. The increafe of commerce and manufactures: 2 aly. The depreciation in the value of money, and its prefent nominal value, compared with the price of the ordinary articles of provifions: 3 dly. The ges:cral introduction of improvements, and of new modes of cultivation; whereby, although fewer hands are neceffary, thole ponfefling fuperior fkill become more in requeft: 4thly. The eafe or difficulty of finding conftant or regular employment : and, 5 thly. The mode in which a farm-fervant, or labourer, maintains his family.

With refpect to the firft, it is fuppofed, that the increafe of commerce and manufactures of the towns has contributed to the improvement of the country, as well by affording a ready market for the prodtuce of the foil, as by various other means, will not be denied; but that the rapid increafe of them within thefe few 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 againtt the increafe of propulation, but alfo againft longrevity. There are befides feveral forts of manufactures, which are well known to be deftructive of the human conititution; not to mention the many accidents to which thofe employed in the various branches of commerce and manufactures are expofed, tending to fhorten life, and from which thofe engaged in the oporations of hubandry are exempted. For thefe reafous, there is a conttant demand for pcople 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 clafs in the councry (particularly in Scotland), are throng inducements, it is contended, with many of the peafantry, either to remove to the towns, or fead their children thither: while others, in confequence of the too general practice of adding farm to farm, and demolifhing cottages, are forced to feek that alylum in towns which is refufed them in the country. The demand for labourers from the towns being complied with, the country is thereby drained of ufeful hands, and the price of agricultural labour advanced. This mult neceffarily happen, it is thought, in every kingdom during the period that its commerce and
manufactures are on the increafe ; and more efpecially in thofe nations where the legiflature turns its attention to fupport commerce and manufactures at the expence of agriculture.

The fecond, the depreciation in the value of money, is alfo another and fubftantial reafon for the apparent rife in the price of labour. The increafe of commerce and manufactures, which has been gradually taking place in this ifland ever fince the beginning of the reign of queen Elizabeth, and the immenfe additions which have been made almof every year to the national debt within the prefent century, feem to have rendered it neceffary to increafe, nominally, by means of bank-notes, promiflory-notes, bills, Sc. the quantity of money in circulation. That thefe fubftitutes for fpecie 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 prefent day requires of courfe a greater quantity to carry to market than his predeceffors, to purchafe even fuch articles as are confumed in the particular diftrict where he refides (whether right or wrong), as indifpenfib'y neceffary for the maintenance of a peafant's family. Whether the Middlefex labourer goes to market to purchafe beef or mutton, or the Aberdeenfhire cottager oatmeal, it will, it is conceived, be found that nearly double the fum is required to purchafe the fame quantity now that it did thirty years ago.

After this, fome facts are ftated in order to thew that, however much the nominal price of labour has increafed, its real price, compared with that quantity of provifions it will purchafe, remains all over the ifland nearly the fame, except only where a variety of circumftances combine; fuch as contiguity to large towns, or extenfive manufactories and public works; and the want of due attention to the providing of work, from improved modes of hufbanday, not being introduced to raife or deprefs it beyond its ordinary level.

In regard to the third, it is oblerved, that befides forming canals and turnpike-roads, which may be confidered equally beneficial to the interelts of commerce and manufactures as to thole of agriculture, there have been many improvements introduced in hufbandry, which, while they have contributed to advance alike the profperity of the nation, the proprietors and farmers have aifo 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 necefary for carrying on the various operations of inclofing, draining, planting, erecting farmbuildings, digging marle, quarrying and burning lime-ftone, hoeing potatues, turnips, and other green crops, mult firit have had the effect of giving full employment to the people in thofe diftricts where fuch improvements were introduced, and gradually to advance the rate of wages, in confequence of the increafed demand for labouress. The general introduction of new modes of cultivation, whereby, alchough fewer people are neceflary, thofe pofieffing fuperiot fkill become more in requeft, is another reafon of the advance in the wages of the farm-fervants. This obfervation will be confidered as well founded by all thofe who recollect the period, when ploughing with a man and two horfes, without a driver, became common in Scotland. The number of horfes or oxen formerly worked in the plough varied in fome cafes, according to the nature of the foll ; but was more frequently regulated either by the cuftom of the diftcich , or the fancy of the farmer. When, in confequence of the fpirited exertions of fome individuals in feveral counties, the practice of ploughing with two horfes was pretty generally introduced, the farmers found themfelves thereby

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relieved of a very great flare of the annual expence of cul. tivation; 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 requelt, it was no difficult matter for them to bargain for ard 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 refpect to the fourth, it is fuggefled, that the eafe or difficulty which labourers frequentl) have in tinding conltant and regular employment ; or, in other words, when labourers are only partially employed, the rate of wages mult be affected by that circumltance. It has already been obferved, that thofe who live by labour muft reccive fuch a compenfation as is more than fufficient for their fubfiltence. When a labourer has conltant employment, whatever be the rate of wages, as it mult be equal to the price of the ordinary articles of provifons in whatever part of the ifland be is lituated, lis 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 tise days in the week, he mult receive the fame fum for the fe three, four, or live days that in the other cales he would do for the labour of fix; otherwife his incomings mult be lefs than he is neceffarily called to expend. When that happens, labourers are often obliged to remove occafionally to another quarter, or betake themfelves to forre mechanicalemployment; and in either cafe, their fervices are loft to the farmi.g part of the community where they refided. The want of conftant employment, therefore, it is conceived, operates in two ways to raife the price of labour ; firlt, by the neceffity the labouser is under while he continues in that capacity of demanding as mech for the work of three, four, or five days, as is fully equal to his fubfitence for a week; and fecondly, many of them being obliged to betake themfelves to other means for providing for themfelves and fannlies, the number of labourers becomes greatly diminifhed, and the remainder of courfe more in requeft.

And on the laft point, it is fuppofed that the various modes in which farm-fervants and labourers maintain their families muit neceffarily have a very great influence on the expence of agricultural labour in different parts of the ifland. 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 indifpenfible articles of cottage houfc-keeping: while in Scotland, oatmeal, cooked in various ways, veg?tables, and now and then a little butcher's-meat, are the chief articles which conilitute the food of the people employed in hußandry, even in the beft cultivated parts of the kingdom. This effential difference in the mode of living mutt, it is conceived, be a great additional expence in the article of labour to the Englifh farmer beyond what thofe in Scotland are fubject to, and might induce fuch as are not acquainted with the various circumitances conneeted with the hufbandry of both kingdoms, to give a decided preference in favour of Scotland. It fhould, however, be remembered, that this kind of additional tax paid by the Englifh farmer more properly affects the landlord, and is one of the principal reafons why lands in England are rented lower than thofe of the fame quality in Scotland; it being an indifputable fact, and which, in Scotland, daily experience proves avell-founded, that a great proportion of what the farmers fave in the article of labour, or by the introduction of more improved and lefs expenfive cultivation, fooner or later finds its way into the landlord's pocket.

And a very refpectahle author, Dr. Smith, in his work on the Nature and Ca! $\int s$ of the Wealth of Nations, vol. $i$. has obferved, that "the difference in the mode of labourers' fubfiltence is not the cauie, but the effect, of the difference in there wages; although, by a llrange mifapprchenfion, I have frequently heard it reprefented as the caufc." It is farther eided, that " it is not becaule one man $k$ ceps a coäch. whilc his neifhbour walks a-foot, that the one is rich and the other poor; but becaufe the one is rich he keeps a coach, and becaufe the other is pour he wailis e-foot."

The author of Modern Agriculture thints it will be admitted, that at the period when a general alteration has taken place for the better in the eftablifled mode in which: labourers maintain their families (as in the fonth of Scotland, where the price of labour has nearly doubled within thefe twenty years), the expence at which a cottager's family is maintained has advanced in the fame proportion. 'They eat better food, wear more expenfive cluthes, and live in more comfortable dwellings,-all which, he fays, no do: bt, as Dr. Smith obferves, is the effect, not the caufe, of the secent increafe in the price of labour.

But that in Eugland, where the mode of maintaining a labourer's family has undergone litile alteration for ages, it is prefumed, that although the difierence in the modes of living was, at firft, 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. 'Thofe articles which with that clafs ware once deemed the luxuries, are now confidered only as the bare neceffaries of life, and the prices have advanced in nearly the fame proportion as their wages. For inltance, thofe who in that country require labourers, mult either pay them fuch an advance of wages as will enable them to fublit according to the general mode eltablifhed in the country, whatever the additional price of the ordinary articles of provifion may be, or compel them to make ufe of more fimple and lefs expenlive kinds of food, which were afed by that clafs of men a century or two ago. Asevery perfon who ftands in need of labourers, will adopt the firt of thefe alternatives, it follows of courfe 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 caufe for the advance in the rate of wages.

It is ftated, 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 caufes before-mentioned, it has adranced in many diltricts to a degree unknown in any former period of the hiftory of thefe kingdums, is a fact well k'own. Thofe 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 themfelves with the refiection, that this never happens in any fate which is not increafing in wealth and profperity. It is owing to that caufe, and to no other, that the working-people in any nation are more liberal $y^{3}$ 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 themfelves a greater ibare of the comforts of life. At the fame time, let it be obferved, that thofe who have occafion to cmploy labourers pay attention. to the advice of the author of the Scafons.
"Be mindful of the rough, laborions hind,
That finks you fofi in elegance and eafe."

They flould alfo confider, that there are bounds beyond which they ought not, in prudence, to pafs.

But the mode of maintaining farm-fervants in many places of England is both abfurd, and, it is conceived, expenfive in the extreme, and calls as loudly for reform as any error in the whole range of Britifh hufbandry. In Northamptor:flire, the breakfalt confifts of cold meat, with cheelé, bread, and beer; for dimer, roafted or boiled meat, with pudding ; and for fupper, the fame as at breakfalt; and befides ale, which is allowed on extraordinary occafions, they have fmall beer at command at all hours. And in the Rural Economy of the Midland Comnties, after noticing that the beer and ale are brewed unreafouably ftrong, and that the quantity allowed to a man is unneceffarily great, it is ftated, that, in hay and corn harvelt, the cuftomary allowance is a gallon (upwards of five bottles) of beer a man per day; and that, during winter, the quantity of fmall beer ufed is not much lefs chan in harve?. 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 caules. So:ne few farmers in every county, either from a miltaken 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 clafs of people, lead the way, while their more fenfible neighbours, and even thofe whofe fituations in life but ill accord with fuch 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 fuggetted, that the wrages paid for agricultural labour, either to lervants by the year, or to labourers by the day, throughout the better cultivated parts of Great Britain, although confiderably different, are, neverthelefs, much lefs 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 expenfive manner in which the farmfervants are maintained in the greateft part of England, when compared with that of the more improved parts of Scotlend, creates a much greater addition to the expence of cultivation in the former kingdom, than that ariling from the difference in the money-price of labour. In forming a juft eftimate of the difference which takes place in the expence of cultivation, in particu'ar diftricts, beyond that in others, it is neceffary, it is faid, to confider not only the fum of money paid as wages, and the expence of maintaining fervants, but alfo the quantity of work performed, and the number of men and horfes which, according to the practice of particular dittricts, are confidered as neceffary to eultivate the fame quantity of land. The following ttatement will thew at one view the difference of keeping a team by the year, and of ploughing an acre of land, in Gloucefterfhire, in England, where five horfes are commonly ufed; and in the county of Angus, in Scotland, where only two are confidered neceffary.

The County of Argus.


Gloucefterniire.


It is ftated, that if thefe men and horfes were employed in ploughing the whole year, and that they ploughed an acre a-day, they would each have plougher? 313 acres in the courfe of the year. The expence to the Gloucefterfhire farmer would be Ss. each acre, while the Angus farner would have the fame extent of labour performed at about 3s. 4d. per acre. There is allo as great a difference in the expence of thrafhing grain. Since the introduction of thrafhing-maclines in Scotland, the grain can be feparated from the Araw upwards of 50 per cent. cheaper, and to better purpofe, than is to be done in England by manual labour. This comparifon might be made to include other operations, which are more or lefs expentive to perform, in confequence of the peculiar cuftoms and practices of particular diftricts. But all that is propofed here is to give an idea of the proper mode of calculating the expence of agricultural labour, and an inflance or two of the faving which every farmer has in his power to make, by ufing well-conftructed implements of hufbandry, and performing the various operations with as few men and horfes as poffible.

It is added, that the fcarcity of farm-fervants and daylabourers has of late been confiderably felt in many parts of Great Britain, and feems to be gradually increafing. The principal caufes to which this evil is to be afcribed are, in the opinion of the above writer, the inclofure bills in England, the enlarging or engrofling farms in both kingdoms, and the general increafe of commerce and manufactures. But a more ferious and certain caufe of this evil is probably to be found in the conitant ftate of warfare in which this country has been engaged for almoft the whole of the lalt half century. The deficiency of labourers is an evil of fo ferious a nature, (from whatever caufe it has originated,) as ought to induce proprietors and farmers of all defcriptions to adopt fuch meafures as appear molt proper for infuring a future and more abundant fupply. That which feems the moit likely to effect this defirable object with the greateft certainty is the building of cottages on every farm, in numbers proportioned to the extent of hands neceffary for its cultivation. Experience has proved that cottages are the bef nurferies for ufeful farm-fervants and labourers; and while nothing would tend fo fpeedily or fo effectually to fupply this defect as affording the labouring clafs of the people the means of living comfortably in the country, it -would alfo be the means, in a great degree, of filencing the rifing clamour againft enlarging or engroffing farms. In this view it is fuggelted, that a tax on every proprietor and farmer in Great Britain, who had not as many cottages erectied 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 impofed for the exprefs purpofe of increafing the population:

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of the country, and thereby keeping the price of all kinds of labour moderate, could not fail in time, it is fuppofed, to have the wifhed-for effect.

However, it is obferved alfo, that the practice of juining 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 defeription of fervants employed in hufbandry: as, inflead of employing married men living in cottages contignows to the farm, and paying them partly in neceffaries of life, young men, brought up in towas or villages, are employed, and their wages paid wholly in money, 一from which many bad confequences proceca. From the advantages to be derived by employing married men, who have families refiding on fome detached part of the farm, as ploughmen, as well as from the acknowledged fearcity of labourers, may, it is fuppofed, be inferred the propriety and even neceffity of improving, by every proper means, the lituation 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 neceffary articles of provifions : he would then be prevented from the neceffity of having recourfe, for every article he requires, to thofe worfe than pawn-brokers, the keepers of little paltry chandler's fhops; a fet of people who, without remorfe, appropriate to themfelves, under the name of a reafonable profit, a great proportion of the hard-earned wages of the laborious peafant. And next to getting the great article of provifions on reafonable terms, the allowing every cottager the means of keeping a cow, and of planting a reafonable quantity of potatoes and other vegetables, would tend, more than any other circumltance, in the writer's opinion, to his happinefs and comfort ; as it would enable him to procure a couliderable fhare of the futtenance of his fanily, without the expenditure of money, or the rik of impofition. It would alfo, it is imagined, be a great fpring to the indultry of the labourer, to fet him all his labour by the great, or piecc. He would be induced to labour with more Itedfaftnefs and perfeverance, when he was fatisfied that it was in his power to apply the fruits of his extraordinary exertions to the benefit of his family. And, laftly, to encourage, by every proper means, the eitablifhment of friendly focieties among the labouring clafs of people, as a means of provifion againit accidents, ficknefs, and old age.

Farm labourers, Mr. Marfhall thinks, as being the molt valuable clafs of men that a populous country poffeffes, fhould have every comfort provided for thern that is compatible with their fituation, and conformable to the general interelt of the community :- that their wages ought to be every where, and at all times, fufficient for the maintenance of themfelves and families while in health, with a furplus to provide againtt the day of ficknels, without their being under the debafing neceflity of making application to their neighbours for relief. Perlons fo effentially ufeful to fociety fhould not merely fupport exiftence, but have the comforts of wholefome habitations, with fufficient fpaces of ground to furnifh them and their families with changes of proper vegetable food, without much expence. It is, after all, this clafs of men that conftitutes the great bafis or prop of a country.

Labourers confpiring together concerning their work or wages, fhall furfeit $10 \%$ for the firft offence, $20 \%$. for the fecond, \&c. and if not pais, to be fet on the pillory. (Stat. 2 \& 3 Edw. V.I. cap. 15.) Juftices of peace, and tewards of leets, \&c. have power to hear and determine comphaints relating to non-payment of labourers' wages. (4) Edw. IV. cap. 1. 2 ê.Geo. II. c. 19: 3 I Geo. II. c. 15.)

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And labourers taking work by the great, and leaving the fame unlinihed, uuleds for non-payment of wages, or wiven they are employed in the king's fervice, \&c., are to fulfer one month's imprifonment, and forfeit $5 \%$. The wages of labourers are to be yearly affeffed for every county, by the Sheriff and juftices of peace, in the Eafter feffions; and in corporations by the head oficers, under penaltics. ( 5 Eiliz. cap. 4.) And the fleriff is to caufe the faid rates and affeffments of wages to be proclaimed. (I Jac. I. cap. 6.) All perfons fit for labour thall be compelled to ferve by the day, in the time of hay or corn harvelt; and labourers in harvect 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 murning till feven or eight at might, being allowed two hours for breakfaft and dinner, and half an hour for fleeping in the three hot months; and all the reit of the year from twilight to twilight, excepting an hour and a half for breakfait and dinner, on pain of forfeiting one penny for every hour's abfence. ( 5 Eliz. c. 4.) By flat. 6 Geo. III. c. 25. artiticers, labourers, and other perfons, abfenting themfelves from the fervice of their employers, before the expiration of the term contracted for, flall be punifhed by imprifonment, for not lefs than one month, nor more than three. If any labourer fhall make an affault upon his mafter, he fhall fuffer as a fervant making fuch a affault. ( 5 Eliz. c. 4i) See Manufacturers and Servaijts.

LABOUREUR, Jonn Le, in Biography, was born, in 1623 , at Montmorenci, near Paris. Ai the age of nineteen he difplayed a turn for hiltorical refearches by publifhing "An Account of the Tombs in the Church of the Celeftines at Paris, with brief Memoirs of the Perfons 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 marflallefs of Guebriant, on a miffion to Ladiflaus IV, to whom the duchefs of Nevers was contracted. After his return he publifhed a narrative of this embaffy. He next entered into the ecclefialtical profeffion, 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 "Hiftory of the Marihal de Guebriant:" and he was editor of a new impreffion of the "Memoirs of Michael ise Caltelnau," with feveral genealogical hiltories, in three vols.folio, 1731: this performance is reckoned to throw much light upon reveral parts of French hiftory:"Hittory of King Charles VI. tranflated from the Latin of a MS. in the Library of de Thou," two vols. folio; "A Treatife on the Origin of Cuats of Arms." He left many MSS. among which is "A Hiftory of the Peerage." Mureri.

LABOURSOME, among Seamen, implies a violent rolling or pitching motion of a fhip át fea, by which the mafts and even the hull are in great danger. By pitching fuddenly the malts are likely to be carried away, and by the heavy rolling motion the mafts frain upon the fhrouds, and, confequently, upon the fides, with an effort which increafes as the fine of their obliquity, and the continued agitation of the veffel gradually loofens her joints, and makes her extreme. ly leaky.

LABRADOR; in Geography, an extenfive country of North America, fo called by the Portuguefe, who firt difo covered its coaft, comprehended in New Britain. It is bounded on the N. by Hudfon's ftrait, on the S. by part. of Lower Canada and the river St. Lawrence, on the W.: by Hudfon's bay, on the N. E. by the ocean and Davis's ftraits, and cn the E. by the ftraits of Belline and the gulf
of St. Lawrence. 'The extent of this country has been but imperfectly afcertained : for our knowled re of the eaftern coa't and of its inhabitants, we are chiefly indebted to lieutenant Roger Curtis, from whof a papers extracts were made and communicated $t$ the Royal Socicty, in 1774 , by the honourable Daines Barrington (Phil. 'I'runf. vol. G4; part 2,) and to Mr . Cartwright, who relided, at difierent intervals, for fixteen years, in this defolate country, and whofe account of it was publinted at Nexark in 1793. But the knowledge thus obtained priocipally relates to the coait; for the ioland territory rewains ftill unexplored. 'Ihefe 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 condiderable eleration. From the fea the fouth coalt 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 coarfe plants, which might ferve for deer and goats, but was not proper fir horfes, kine, or fleep. 'T'o the improvenent even of this part, the depredations of the bears and wolves furnifh a formidable impediment? and the cattle, on account of the feverity of the climate, mult be houfed for nine months in the year. The whole of the eaft coalt exhibits a very barien appearance: the mountạins rifing fuddenly out of the fea and being compofed of rocks, which are thinly covered with black peat earth, that produce itunted fpruces and a few other plants The adjacent fea, however, the rivers and lakes, which are numerous, abound with filh, fowl, and amphibious animals. Springs are rare, and the water is chiefly fup. plied by melted frow; neverthelefs, it is wholefome, and thofe fwelled throats which frequently occur in the Alpine regions of Europe and Afia, are unknown in this country. On the coaft are feveral fpacious and fafe harbours; and at a fmall ditance, and within its capacious bays, there are thoufands of iflands of different fizes, on which eider-ducks breed in large flocks, and which are focked with a multitude of fea-fowl. On fome of the larger iftes there are deer, foxes, and hares. All kinds of filh, belonging to the Arctic feas, abound on this coait; and the rivers are frequented by falınon and fea-trout, pike, barbel, river-trout, eels, and other kinds. At a fmall diltance from the coaft in the inland territory, the air is milder; the foil is more fertile, and trees, fome of which are of a large tize, are more numerous. The ground is covered with fpruces and firs, with an intermixture of larches, bireh, and afpens, particulagey near the fhores of the bays, rivers, brooks, and ponds, where alone they arrive at any degree of perfection. Other trees are mere flurubs, and they are the alder, ofier, do :berry, pears, currants, rafpberries, and a few others. The fruits coalit of vari us kinds of bervies, wiz. currants, rafpberries, partridge-berries, cranberries, applos, pears, whoralc berries, and a finall berry, the plant of which refembles the Itrawbery, each producing only a fingle fruit, of a bright pink coluur, granulated like a mulberry, and having a delicate flavour. The vegetables fit for food are wild ce'cry, feuryy grafs, the young leaves of the ofier and of the ground whortle-berry, Indian fallad, red docks, and an Alpine plan', of which the rein-deer are very fond. The foil, though of a light kind, is not dellitute of clay; no ores, execpt thofe of iron, have been difcovered; but thefe are plentifti. White fpar is common, and feveral famples of that cailed 1,abiador 〔par, have been picked up by the Efquimaux. The birds of the country are the whitefailed eagle, falcons, hawks, and owls of various kinds, the raven, white groufe, ptarmigan, fpruce game, whitting cublew, grey plower, sarious fpecies of fandpiper, and other
waders, reefe, ducks of various forts, thags, gulls, divers, fwaliows, martins, fome few fpecies of fmall birds, fnipes and doves, the two latt being very fearce. The bealts are white and black bears, rein-deer, wolves, wolverines, various fpecies of foxes, martens, lynxes, otters, mink, beavers, mufquafh, raccoons, hares, rabbits, and moles, and probably other kinds. The climate, though fevere, is falubrious; there is litlle appearance of fummer till about the middle of July, and in Seprember winter indicates its approach, fo that this latter feafon is long and the cold is fevere. In fummer the heat is fometimes unpleafant, and in that feafon the weather is very moderate, and remarkably ferene, without thofe fogs which are more prevalent in New: foundland, and thofe violent gales of wind, to which fome other parts of the globe are fubject. At this feafon, the mofquitoes and fand-flies, which are very numerous, are intulerably troublefome. The winters are faid to be lefs fevere than formerly. The greatelt heat obferved at Nain (N.lat, $57^{\circ}$ ) in the jear 1780, was $84^{\circ}$, ard this was ia July ; the greateft cold in 1779 was - 36 . On the fea-coalt it is much cooler than farther inland, more efpecially when the wind blows from the ocean, on account of the immenfe quantities of ice that are contiguous to the coalt; and which, together with the inands already mentioned, render the navigation dangerous. Thefe thoals of ice fet in from the north in fpring and fummer. It is not an unknown phenomenon in thefe northern and colder climates, that leveral beafts, and fome of the birds, change their colour with the feafons. It the winter, the prevalent colour is white; and againft the rigour of the cold, molt animals are furnifhed 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 clofer contexture than thofe of milder countries.

On the coalt of this defolate country there were only a few factories, till the Moravian clergy formed finall fetrle. ments, particularly at Nain, about the year 1964. Upon barren rocks, covered with fnow for more than half the year, and where the winters are fo rigorons, and of firch long continaance, we cannot expect to find that the inhabitants are very numerous. The native inhabitants of this country are mountaneers and Efquinnux, between whom there fubfits an insincible averfion. The mountaineers inhabit the inte. rior parts of the country, towards the north, and with refpect to colour refemble our gypties, which is probably acquired by their being. expofed to the weather, and to the fmoke of their wigwams, 'They are of a robult conttitution, though their limbs are fmall, and their frame is well adapted to the rocky comntry, which they are continually travering. They have no hair except on the head; and for many years they have drefled their food, which they boil to a jelly,? whereas the other Indians eat every thing raw. They chiefly fubfit on rein-deer, which they are very dextrous in killing, They alfo kill foses, martens, and beavers. As they live a wandering kind of life, they never build honfes; but they conltruct a kind of tents, covered with deer-fkius and birch, and called wigwams; the $\mathbb{R k i n s}^{2}$ which they ufe for this purpole, as well as for clothes, are tainted in order to take off the hair, then wathed in a lather of brains and water, and afterwards well dried and well rubbed; but for winter ufe they have jackets of beaver, or deer-fkins, with the hair on. They traverfe the country by the affiltance of canoes in the fummer; and of rackets, or fnow-fhoes, in the winter. Their canoes are covered with the rind of birch; and though they are fo light as to be eafily carried, they are large enough to contain a whole family, and the ma:erials of their
traltic:

## L A B

traffic. By means of the numerous ponds which are found in this country, they thus convey themfelves to a great diftance in a thert time ; travelling by water or by land,'as circumilances requirc. They bear fatigue with incredible refolution and patience ; and will travel two days fucceffively, without taking any fort of nourifhment. They are efteened an indultrious tribe; and for many years they had been known to the French traders. Their chicf employment is to procure fur, and the neceffaries of life; they are very illiterate, but generally good-natured, and faid to be lefs ferocious than other Indians; and this foftnefs of manners they have probably acquired by their long intercourfe with Europeans. They come every year to trade with the Canada merchants, who have feal fifieries on the fouthern part of the coait, and they bear the character of jult dealers, fays Curtis, though Cartwright charges them with a pronenefs to theft. They are, without doubt, immoderately fond of fpirits, for which, blanketiag, fire-arms, and ammunition, they truck the greateft part of their furs. With regard to religion, they profefs themfelves Roman Catholics; but know no more of it than merely to repeat a prayer or two, count their beads, and fee a prieit whenever they go to Quebec. It is their cultom, fays Curtis, to deftroy the aged and decrepid, when they become ufelefs to the fociety, and burthenfome to themfelves. This practice they vindicate from their mode of life: alleging that thofe who are unable to procure neceflaries, fhould not live merely to confume them.

The $E$ fquimaux (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 fesv of them who are of a good ftature. They are flat-vifaged, and have fhort nofes; their hair is black and very coarfe; their hands and feet are remarkably fmall. The women load their heads with large ftrings of beads, which they fatten to their hair above their ears; and they are fond of a hoop of bright brafs, which they wear as a coronet. Their drefs is entirely of fkins ; and confits of a fort of hooded clofe fhirt, breeches, flockings, and boots. The drefs of the different fexes is the fame, except that the women wear sery large boots, and their upper garment is ornamented with a tail. In the boots they occafionally place their children; but the youngelt is always carried at their back, in the hood of their jacket. They have no fort of bread, but live chiefly on the flefh of feal, deer, fiff, and birds. In the winter they live in houfes, or rather caverns, which are funk in the earth. In the fummer they occupy tents, made circular with poles, and covered with fkins. They have no fort of beverage among them except water, and are not fond of firituous liquors. They feem 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 fuperior to another, but as he excels in ftrength or in cquage, and in having the greatef number of wives and children. They have no marriage ceremony ; a wife is confidered as property; and a hulband 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 difeafes, and are confequently without phyficians; but they imagine, that tying to their neck or writts the par--ticular part of fome fifh or animal, according to the complaint, will effect a cure. They have never been vifited with the fmall-pox. Thefe Indians cannot reckon numerically beyond fix; and their compound numbers reach no faro

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ther than 21; every thing beyond this is a multitude. Their dread of the mountainecrs makes them live always upon the fea-fhores. Their canoes are extremely long in proportion to their breadth, being upwards of 20 feet by two, and contain only one perfon; they are covered with fkins, and extremely light, fo that they are cafily overfet, and yet there is not one among thefe people who can fwim. They navigate their fhallops without a compais, in the thickelf forgs, and are very good coafters. Their dogs, of which they have a great number, ferve as a guard, and as food: their fkins fupply them with clothing; and in winter they draw their fledges. They cannot bark, but make a molt hideous howl; they are large, and have a head like a fox, whereas the dogs of the mountainecrs are very fmall. The weapons of thefe Indians are the dart, and the bow and arrow, but they are not very expert in the ufe of either. Their number cannot be accurately afcertained; Mr. Curtis made fome at. tempt for this purpofe by counting the number belonging to each tribe, eftimated by the number of boats, and by that of the men, women, and children belonging to each boat ; eftimating them in this way, he reckons their number to be 1623. Mr. Cartwright fays, that thefe Efquimaux were the beft tempered people he ever met with, and the molt docile; nor, as he fays, is there a nation under the fun with which he would truft his perfon and property in preference to them; although till within thefe few years they were never known to have any intercourfe with Europeans, without committing theft or murder, and generally both.

The bufinefs carried on by the Englifh with Labrador is the fame with that on the ifland of Newfoundland. The exports are cod-fifh, falmon, oil, whalebone, and furs; but the latter are much better than any of the fame kind obtained upon that ifland, nor do ferv parts of the world produce better. N. lat. $50^{\circ} 30^{\prime}$ to $62^{\circ} 30^{\prime}$. W. long. $55^{\prime \prime} 30^{\prime}$ to $77^{\circ} 30^{\prime}$.

Labrador Lake. See St. Peter's Lake.
Labrador Spat, 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 Ledum.

LABRISULCIUM, a term in Surgery, derived from labrum, or labiurn, a lip, and fulcus, a deep fore, and fignifying fometimes a chap of the lip; but frequently the difeafe well known under the appellation of the cancrum or gangrena oris. See Gaygriena Oris.

LABRIT, in Geograpby, 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 II inhabitants, on a territory of $497 \frac{1}{2}$ kiliometres, in nine communes.

LABRUS, in Icbthyology, a genus of the thoràcic order. This tribe of fifhes is'extremely numerous, and comprehends many fpecies of peculiar beauty and variety both in form and colours; their general afpect is rather more diflinguifhed for elegance than fingularity, but the diverfity of thofe brilliant tints with which nature has embellifhed them is almolt endlefs. We are little acquainted with their manners of life; fuch as have occurred to our own obfervation appear to be thofe of the natural inhabitants of the marine clement ; fome delight to refide in the fhaliows and rocky bottoms of the fea contiguous to the boldell fhores, but the far greater portion of the fpecies are fo widely difperfed through the inamenfity of feas as to rarely occur to notice; and ferr, or indeed fcarcely any, are known in the regular finheries in any part of the globe. The Alefh of thofe cocalionally introducct for the table are of an agreeable and excellent favour, fuch as

## LABRUS.

as the "old wife," and fome others. The fmaller kinds are nted chiefly by the finhermen as bait.

The confufion prevalent among authors refpecting this family of fifhes is inconceivably great ; a circumitance the more remarkable in our ideas, fince the ohvious character of the genus does not appear ambiguous. The confution arifes from that want of precifion in the definition of the true character which is too perceptible in the writings of ichthyologiits in the carly part of the laft century, and which led them to admit indiferiminately with the Labri many kinds that ought not to have been included in the fame genus. Some of thefe crrors have been progreffively detected and amended by ceferring the fifhes improperly claffed as Labri to other genera. But for others apparently not lefs exceptionable, we muft place our trult in their defcriptions only, the ohjects defcribed being unattainable; and while this uncertainty continues, it will be concluded the whole of the prcfurned fpecies of Labrus can never be reduced to very fatisfactory order.

On a retrofpective view we need not perhaps refer beyond the 1oth edition of the Linnxan "Syttema Naturx;" in this we find the genus Labrus with the following eflential character. Teeth acute ; gill membrane with fix rays, and the covers fcaly; and the dorfal fin with a filiform fkin extending beyond the end of the pofterior rays. This is the Linnæan character in its lateft tate of inprovement, excepting only that it is added, with a laudable degree of caution, that the two genera Labrus and Sparus are fo clofely allied, as to render it difficult to diltinguifh them: "Labri et Spari genera ob affinitatem etiamnum difficilius diftinguuntur." Linnzus defcribes altogether about forty feccies, fome of which had been defcribed in his former works as of the Labrus, Sparus, and Sciæna genera, and for thefe, with the exception of a few new kinds in Muf. Ad. Fr. he ftood indebted to the labours of his friend Artedi, or to thofe of Gronovius, Ray, and Catefby, by whom fome were called Labri and others Spari.

Gmelin endeavoured to amend the effential character of Labrus by rendering it more comprehenfive, and for this reafon adds to the character before-mentioned that the lips are fimple; the pectoral fins pointed, and the lateral line ftraight. Stili this was found infuflicient, and is, in our ideas, confefledly inferior to the very exceilent and concife character by which Bloch dillinguifhes the genus, namely, the lips large, the upper one double and extenfile: the genus poffeffes other characters, but this is the moft material. Another attentive obferver of nature, Monf. Commerfon, has offered fome improvements in the inflitution of the genus Labrus, and has added to the genus many new feccies. One of the lateft and moft copious writers on this fubject however remains to be noticed, namely, count Lacepede, a naturaliit who undertook the taik of reforming the whole fyttem of claffification, and one to whom fcience is indebted in a great meafure for the number of new fpecies introduced of late years to the knowledge of the worid.
'To the Linnzan naturalit, the arrangement propofed by Iacepede will rather, we apprehend, appear an innovation, than improvement. In this refpect, confidering the very eoncife view the limits of our article will allow us to take of this fubject, we are not difpofed to exercife much critical remark, or we conceive it would not be impoffible to afcertain that it partakes of the character both of improvement and innovation. Our own opinion is, that the Limmean definition, though extremely ufeful, is inadequate, and that the character affigined by Bloch, though still more concife, is betser. We allow, moreover, the neceffity of reformation; srany of the Linnzan Labri belong to other genera, and
there are, befides, fpecies more recently referred to the genus Labrus which rather conititute new genera. Hence the neceflity of forming a larger number of gencra, by dividing the Labri, is admitted; but in allowing this, it itill remains a queltion, whether Lacepede has not fallen into a greater error than that he endeavours to reform; for inftead of permitting them to remain in a fingle genus, he conftitues no lefs than feven new genera of the Labri, and their immediate dependencies. In extenuation, it may be indeed obferved, in the language of one of his continental admirers, "this iutelligent writer found the genus (Labre) fo vitiated, that he was under the neceffity of forming fo many now gencra, This increafe of genera might feem to have diminifhed the number of fpecies in the Labres to a trifling amount, but, on the contrary, by the introduction of the new kinds very recently difo covered, they are again advanced to the number of one hundred and thirty fpecies."

The genera into which Lacepede divides the Labrus of Linnens, and other authors, are Labrus, Hiatula, Osphimenemes, Cherlinus, Lutjanus, Trichopodus, 'and Cheilodipterus.

Labres, according to this writer, is characterized by having the upper lip extenfile; neither incilive teeth nor grinders; gill-covers deftitute of fpines and denticulations ; dorfal lin one, extending nearly from the nape almolt to the tail, and compoled of rays terminating in a filament. This genus (which Lacepede feparates, chiefly according to the furcated or rounded form of the tail, into three fections) includes a great number of the Linnæan genus Scimna, as the fpecies capa, lepifma, unimaculata, gibba, cinerafcens, armata, and fufca, with many others; and, on the contrary, the number of Linuran Labri is lefs extenfive than might be imarined, it includes his fecies lunaris, venofus, and guttatus: but the genus conlitts principaliy of new lifthes.

Hiatula is a genus eftablifhed for one feecies (Labrus. hiatula) of Linurus, which, being deititute of any anal fin, cannot, fays Lacepede, remain with the reft. This he calls. Hiatule gardenienne.

Ospmbonemus is a genus inflitutea by Commerfor, from whom it was adopted by Lacepede. Its character conlifts in having five or fix rays in eacl thoracic fin, the firf of which is a fpine, and the fecond terminated by a long flament. This genus contains only the fpecie3 Gorany and another.
Cherlinus is a genus eftablifhed for the reception of the Linnxan Labrus fcarus, and a new fpecies obferved by Commerfon, the fpecies trilobé. The upper lip is extenfile ; gill-covers deffitute of fpines or teeth, and a fingle dorfal fin.

Lutusaves was originally eftablifhed by Bloch, from whom it was adopted by Lacepede ; this forms a mott extenfive genus, and comprehends feecies from feveral of the Linnean genera, as Perrat tligna, itriata, argentea, and nobilis ; Sparus virginicus, and Cbatodn araums, together with the Labri Itriatus, fcina, lapma, ramentofus, ocellatus, adriaticus, \&cc. Its character is, that one or more plates of the gill-covers have a fmall tooth; the back a fingle dorfal fing. and fometimes a beard to the jaws.

Tricnoponus includes part of the Linnæan Labri; the character confints in having a fingle ray longer than the body to each of the thoracic thas, and one dorfal fin.

Chenlodipterls. The upper lip in this genus is extenfile; it has neither incifive teeth, nor grinders ; the gillcovers are deftitute of fpines or tecth, and the back is furnifhed with two fins. This laft genus contains nine fpecies.

Having thus far ftated the moft material alterations that bave taken place in this extenlive geaus, it only remains to
enumerate the fpecies, the order of which, in confurmity with our original plan, will be reduced as nearly to the arrangement adopted in the Ginclinian fythem, as the introduction of the more recently difcovered hinds will permut.

## Species.

* Tail forked.

Scarts. Tranfverfe appendages at the fode of the tail. Eimn. Scarzs Autlorum, Arted. Cikiline fiare, Lacepede.

A native of the Mediterrancan, where it appars in thoals, and feeds chiefly on fuci, and other marine plants. The length is about twelve inches, the ficales large and thin, and the front teeth broad and blunt. 'Ihe fleth of this fpecies was eftecmed a delicacy amung the ancient Romans, and in their days of luxury, obtained, if we may crudit Oppian, the moft extravagant price. It feems to be molt abminant near the fhores of Greece.

Asimins. Body entirely reddifh. Art.
Inhabits fouthern Europe and Ammerica. Gmelin conceives, from the ferrated operculum, it may be a perca. Bloch conltitutes of it a dillinct granus, under the nare of Anthias.

Cnetensis. Teeth four, body greenif. Art.
Inhabits Candia, and the adjacent places.
Hepraves. Lower jaw longer; body with tranferfe black lines each fide. Ârt.

An European \{pecies found in the Mediterranean fea, and fometines in the rivers adjacent. The dorfal fin has ten fipinous rays, and twent $y$-one foft ones, and behind the former a black fpot.

Gmseus. Tail fub-bifid; body fomewhat greyifh. Gmel . Turdus pinnis brancbialibus carens, Catefby:

A native of America. Catefloy has figured this fpecics svithout pectoral fins, fays Gmelin, and ditrults his accuracy; from a reference to the preliminary obfervations, it will be however remarked, that Lacepede admits its corre:tnefs, and inftitutes a new genus of this feccies only.

Luxamis. Tail-fin truncated in the middle; dorfal and anal with a purple line; lips folded. Gmel. Labrus oblongus, \&ec. Gronov. Lie croiffant, Bonnaterre.

An inhabitant of the South American and Indian feas. The body is oblong-violet, weth bands of yellow difpoled tranfverfely; the dorfal and anal fin yello:r, except the violet line.

Gallus. Caudal fin truncated in the middle ; dolfal and anal with violet lines at the bafe; lower lip with a doubling each fide. Gmel. Scarus ral':us, Forlk.

Defcribed by Forfeal amung the fighes of A rahia: the body is dalky green, with violet lines all over the body, the belly with two blue ftripes, and an intermediate ore of grves; feales lax, ftriated, membranaceons at the edre, and marked with a tranfyerfe purple band; eyes remoie, with red pupil; teeth in one row; tail yellow in the middie, violet towards the lides, and edged with blue. The fleth of this kind is accounted poifonous.

Punpureus. Caudal fin truncated in the middle; dorfal and anal with a longitudinal purple repandate ftripe at the bafe. Gmel. Scarus purpureus, Forfk.

Inhabits the fhores of Ardbia; the length eighteen inches; body fomewhat lance-flhaped and truncated, colour duckygreen, with three purple ftripes each fide, beneath blue; fcales broad, rhombic, ftriated, and loofely imbricated; crown convex, naked and brown, wth a purple triangle each fide before the eyes; gill-covers naked, with a fquare purple fpot; lateral line ramofe. The fleth of this wifn is elteemed grood.

Patrracus. Caudal fintruncated in the middle ; edge of
the fins, abdominal frion, and mastes on the imat bien Gincl. Scarus plitacus, forlt.
The body of this fuecies is greenifh, with yellowith linues cyes fmall and remote; jaws of two bones, the hower one with one tooth each bide, the nuper three; gill-cower. with toofe foales; lateral line fomewhat ranofe, and dubll. the firlt near the back, the other in the midule; lims pumpto A native of Arabia. Perhaps of the fcarus gerus?
Pistarclus. Green, with three longitudinal red ftripes on each fitw; dorfal fin ycllow, with longitudinal red lard. L.: Ampubk, I acepede. Parrakect lubrus, Shaw.

Deferibed from a drawing by Plumicr. The fpecies u!hahits the American feas. Over each eje is a black treak; tail yellow, with four or fise curved bands of blee and red.

Nigern. Trail truncated in the middle: down the chitr ? dafky green longitudial fripe. Gmel. Scurus nis . Forlis.

An Alabian Species found near the fhores of the fea. Thas jaws are bilid, the blotehes on the bead and outer margna of the fins blue green : lips edged with reth, and then grees.-inh-brown; tecth in the upper jaw two, canine and white; fins villet-brown; pectoral oblcure, ferruginous and brownifh at the bate; tuil greenifh, the angles lanceolate.

Chisus. Hend with three blucifh rivilets each fide, under the eye a blue fquare fpot. Gmel.

Colour above brown, beneath white; lower jaw longer, between the eyes two furrows diverging belind ; anterior gill-covers ferrated at the back pari, pollerior tridentate ; pectoral, ventral, and anal fins yellow; dorial and caudal foozted with red. Inhabits Turkey, near Conftantinople.

Operculatus. Body with ten brown bands; gill-covers with a brown fpot. Linn. Amoen. Acad.

A native of Aria.
Paro. Body varied with green, blue, fanguineous red, and hoary. Gmel. Labrus pulicire varius, finnis pelloralibus rotundatis, Art. Labrius pıwo, Haffelquit. Peacook labrus.

Length twelve inches. Inhabits the Mifditerranean fen, near Syria.
Auritis. Gill-covers fin-haped. Gmel. Perca furviatilis gibbofa, ventre luteo, Catelby.

Nutive of the freh waters of North America; the iris is yellow; gill-cover with a long, obtufe, black membrane at the tip ; the tall bllubate.

Theropmenes. Ventell fins with one ray. Pallas, Sparis, Sec. Koclreuter.
Length four inches, the body casinated behind, firghty modulated with bros:a and pale, the midde of the thes and bale of the tail with a romd brown black ?pot, furrounded by a paler circle. An Indiantpecies of the marine kivd.

Fucurcs. Dorian and and lins falcated, the five firat ravs unarmed. (imel.

Inhabits America, the colour Givery, and length of the brean; the tecth are acute, and the ventral fins imall.

Refes. T'ail lanaze; body entirely tawny. Loef. Turdus flavurs, Catelby.

An American fpecies.
Zexlanicle. Tail lunate; body above green, beneath pale purple. Ind. Zool.

An edible fill. It inhabits Ceylon. The head is blue, the gill-covers green, with purple lines; pectoral fins witha purple fpot in the middle, and edged with blue; ventral bine; dorfal and anal blueih-purple edged with green; tail in tire middle yellow, each fide ftreaked with red, at the bafe blue.
Ayext. Body filvery : rays of the dorfal fintwo-fire, and neany unarates. Forls.

## LABRUS.

thluabits the fandy flores of Arabia. The length fix inches; body oblong; belly flraight, and fometimes marked with interrupted ftripes; the lips are equal, the upper protractile; teeth numerous and very fhort; lateral line nearer the back, and almoit parallel; tail bilobate, the lobes lanceolate, and the fins glancous.

Catenula. Lower jaw longer; back elevated; on each fide eight feries of very fmall equal fpots, and two tranfverfe bands upon the nape. I.e labre chapelet, Lacepede.

Obferved by Commerfon in the Indian feas. This and Several of the following new fpecies are probably fpecies of the Linnzan Sciena.

Lovahostris. Snout much advanced; gill-covers of two pieces. Le lalre lonz-muficiu, Lacepede.

Found wit' the preceding.
Melipterus. Fins black; head bare of feales. Labrus wh-lipterus, Bloch. Le libure ì nagoires molles, Buff.

A native of Japan.
Seminuber, Four teeth in the upper jaw larger, anterior half of the body red, the pulterior yeilow. Le labre demi-rouge.

Obferved by Commerfon in the Indian feas. The bafe of the poiterior part of the corfal fins ficaly.

Punctulatus. Upper lip large, thick, and pleated; three longitudinal rows of black dots on the dorfal fin, and one on the polterior part of the anal fin. Le labre tetracanthe, Lacepede.

Native country unknown.
Semidiscus. Pale, with numerous black tranferfe bands; tail terminated in a clear pale crefcent. Le labre demi-cifque, Lacepede.

The bands acrofs the body of this fifh are about nineteen in number, and the dorfal fin feltooned. A fpecies found in the Indian feas.

Doliatus, Grey, with about twenty-three tranfverfe brown bands; caudal fin crefcert-fhaped. Le labre cerclé, Lacepede.

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 bériffé, Lacepede.

Inhabits the Indian feas.
Furcatus. Lower jaw longer; teeth fmall; lobes of the caudal fin pointed and very long. Le labre fourchu, Lacepede.

Found in the fame feas as the former.
Sex-fasciatus. Opening of the mouth very fmall; lower jaw longer ; body with fix tranfverfe bands. Le labre ffix bandss, Lacepeje.

Obferved with the preceding by Commerfon.
Octo-vittatus. Teeth in the upper jaw much longer ; on each fide the body four fomewhat oblique rays. Le labre buit raiks, Lacepede.

Fuund in the Indian feas. The tail in this kind is crefcent fornicd.
Lazvis. Lower jaw longer ; teeth large, recurved, and equal; lateral line nearly Itraight; body with five large tranfuerfe if ots or bands. Le labre liffe, Lacepede.

A native of the Indian feas.
Gounnir. Each gill-coper compofed of three plates, and terminating in a large rounded projection; lateral line obfolete; between the thoracic tins a pointed procels. Le labre gouan, Lacepede.

Country unknown.
Macrorterus. A black foot oa the pofterior angle of
the gill-covers; nearly all the rays of the fins terminating in filaments. Le labre macroptere.

A fpecies met with in the Indian feas by Commerfon, in his voyage round the world.

Plumieri. Head rayed with blue; body filvery, with fpots of blue and golden-yellow, and curved tranfverfe band on the tail. Le labre plumiericn, Lacepede.

Found in the American feas.
Exneacasthus. Lateral line interrupted; body with fix tranfverfe bands, and two on the tail. Le labre cnníacanbe, Lacepede.

Each jaw is fursilhed with two or four large and very flrong teeth, and the fcales are confiderable in point of fize. Its native place is unknown.
lismina. Head with feven fmall blue rays each fide, and four larger of the fame colour each fide of the body; tail crefcent-haped. Le labre Lijmira, Lacepede.

Native of the Red fea.
Ins. Gill-covers compofed of four plates, and ending in an angular prejection; a large oval black fyot with white annulation at the potterior part of the dorfal fin.
'Inhabits the frefh waters of Carolina, where it is very common, and is etteented as an edible fill.

> ** With, tail entire.

Hiatula. Anal fin none; body with fix or feven black bands. Linn.

Communicated to Linnæus by Dr. Garden. The fpecies inhabits Carolina, and conflitutes the genus hiatula of Lacepede. Whether L. grifeus before mentioned be really of this genus, or is defective only in the reprefentation, appears uncertain. Should it actually be deftitute of the anal fin, as defcribed, it mult probably be placed in the fame genus (hiatula) as this fpecies, notwithiftanding the diference in the form of the tail.

The lip in the prefent fifh is retracti'e, and wrinkled within ; jaws befet with flarp teeth, thofe in the palate orbicular; gill-covers punctured at the edge; /pinous rays of the dorfal fin equal, on the potierior part hiack.

Marginalis. Subfufcous; edges of the ecoffal and pectoral fins tawny. Loeh. it.

Inhabits the ocean.
Ferrucinevs. Sides blueih, with a longitudinal, tawny, indented fripe each fide. Gmel.

An Indian fpecies.
Iulis. Body above fufcous and green; beneath white, wish a fulvous dentated fripe cach fide; two fore-teeth longelt. Donov. Brit. Fifhes. Labrus iulits; fapra fufus viridffue fulutus albus viita fulva utrinque s'mtata, dentibus duobus primoribus fupra longiorilus, Ibid. Labrus iulis, Linn. Lalrus iulis, Bloch?
"Difcovered on the coaft of Cornwall in the year 1802. As a native of the Mediterranean fea, this fifh is mentioned by various writers; but as a Britih fpecies it is perfectly new, not having been recorded as fuch either by Willuglby, Ray, Borlafe, Pennant, or any other writer on the zoology of this country."-"This fifh has arrefled the attention of many ichthyologilts among the aricients as well as moderns, the former of whom pronounced it the molt beautiful of European fifhes. It may be collected from the works of Elian, Ariftutle, Salvian, Aldrovardus, and others, that this finh is common at certain feafons in the Mediterraneañ, 不lian fpeaks of it, however, as a poifonous fifh, and of fuch a venomous nature that it would be unfafe to eat it, or even the fefl of any other fifh that had been touched by it. Galen mentions it, on the contrary, as wholefome food. The male of this fpecies is dittinguihed,
guifhed, according to fome writers, by having the back of a black colour, inttead of green, as in the female; but it appears in this and other refpects to be an extremely variable fpecies. Neither are its habits and manners correctly known. It is generally afferted that it fwims in fmall fhoals: Ariftotle feaks to this etfect; but this is contradicted by Salvian and others, who defcribe it as a more folitary filh, \&ce" Vide Brit. Fifhes.

The ufual length is about feven or eight inches.
Paroticus. Lateral line curved; fins rufous; gillcovers exrulean blue. Liun. Muf. Ad. Fr.

Native of India.
Suillus. Dorfal fin filamentous; above the tail a black fpot; dorfal fpines nine. Linn. Fn. Suec. Sparus berg Jbyltra, It. Wg.

Inhabits the fhores of Europe.
Striatus. Dorfal fin filamentous; body with white and brown lines. Ling.

Native of America.
Guaz.i. Fufcous; tail rounded, the rays extending beyond the membrane. Loetl.

Inhabits the ocean.
Oceldarts. Dorfal fin filamentous; an ocellate fpot at the bafe of the tail. Linn.

Country unknown.
Punctates. Dorfal fin filamentous; body with longitudinal lines fpotted 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, Haffelq.

Inhabits Egypt.
Ossifragus. Lips doubled; dorfal fin with thirty rays. Linn.

An European fpecies.
Rupestris. Dorfal fin filamentons; tail with a brown Spot at the upper edge. Gmel. Sciana, \&̌c. Linn, Curadje, Ströem.

Found on the rocky fhores of Norway.
Onims. Dorfal fin hiamentous; belly fpotted with cinereous and brown. Limn.

Country unknown.
Viridis. Green, with a blue line each fide. Alt.
Inhabits the Mediterranean.
Lineitus. Fins greenifh, the dorfal one ramentous; body green, with numerous yellowifh longitudinal lines. Donov. Br. Fithes.
"A new and highly interefting fpecies, defcribed on the authority of an example found by captain Bray on the coalt of Cornwall. 'This fpecimen, which is in our poffeffon, is feven inches in lengeth; the prevalins culour greenifh, with the belly yellowifh," \&xc. Vide Br. Fithes.

Luscus. All the fins yellow; usper cye-lid black. Lins.

Country unknown.
Livers. 'Tail rounded; dorfal fin filamentous; body livid brown. Linn.

Exoletus. Dorfal fin filamentous; body lineated with blue; anal fin with five 〔pincs. Miill. Zool. Dan.

Inhabits the Atlantic and Norway feas, and alfo Green. land, though rarely.

Sinengis. Dorfal fin filamentous; boly livid; crown retufe. Gmel.

An AGatic fpecies.

Jaronices. Fine yellow. Hontuyr.
length fix inches, and imhabits Japan.
Boop's. Lower jaw longer; dorfal in two. Houttuyn. Found in Japan with the latter.
Tisca. Dorfal fin ramentaceous; body yellowifh, variegated with blue and red fpots; fins red, with fiffous margins, and dotted with white. Donov. Br. Fithes. Pinna dorfoli ramentaciz, corpore flizerfente cerulco variegato rubroque maculato, pinnis rubris fufco marginatis albo-guthatis, Ibid. Labrus tinca, Linn. Labrus vetula, Block. Tirchus vulgatifimus, Whll. Trielle, peulle de mer, gallet, Belon. Wrafle, or old avife, Kay.

Molt writers concur in admitting the labrus tinca as a fift almolt, if not exclutively, peculiar to this country. " Habitat in maris Britannici profundis feopulufis," Gays Gmelin; and this opinion is fanctroned by the conntenance of Lacepede and others. Hence it cannot be improfer to regard it chiefly as a Britith production; and as fuch, it will not be amifs to repeat fome obfervations that have been already delivered by us on this fubject, in the volumes of b-itifh lintes to which we have before adverted. "Th:is charming fpecies of wraffe cannot but be conlidered as one of the moit beautiful of the fihh tribe obferved to this tiase on the coatt of Britain," \&e.-" We have obtained this fpecics from Scarborough, and other ealtern coalts of England, more than once; we have received it alfo from Cornwall, from the Skerry illands, nerth of Anglefea, and from Scotland; but have been uniformly led to believe it a fpecies not very common on either of thefe coalts, except near Scarborough. The ufual length of this fpecies is about fifteen or eighteen inches, and its form rather bulky in proportion to the length, The prevailing colour is yellowilh, inclining to greenifh or olivaceous on the back, and white towards the belly; the markings variahle in form, and diff ring much in colour. The whole of the back and fides are fpoited with red, varying in different ipecimens from a deep or purplifh crimbin to a reddifh-orange, and even in fome varieties almolt to fulvous, a:d curiontly marked with irregular lines, dots, and fpecklings of crerulean blue, efpecially about the head; the fins are red, with a broad duflsy border inclining noore or lels to purple, and clegrantly marked with numerous roundifl dots of white. Bloch confiders the dukky border of the lins (which in the fpecimen he delineates is black) as a fufficient indication of the fpecies. In his fifh, the black border was dittinct only in the ventral, anal, and caudal fins; to which may be added, that the dorfal fin is commonly dufky or purplifh, as well as thofe before mentioned.
"Block defcribes this fifh under the title of labrus vetula, and as a native of the coaits of Britanny, Normandy, and the North fea; from the lalt of which he received it through the medium of his friend, M. Spengler. Gmelin, as before remarked, fpeaks of it as an inhabitant of the Britifh coafts, probably on the authority of Ray and Willughby. But the fpecies is not confimed to Europe: a fpecimen of it, taken among a varicty of other fihes by captain Cook in the South feas, is at this time in our collection.
" The haunts of this lifh are deep waters on the boldeftrocky fhores, where it fubfilts on crabs and teltaceous animals; for the maceration of which, the three tuberculated bony procefles of its throat are admirably conftructed, This fifh takes bait engerly, and is more commonly caught. with the hook and lise than in the net, or by any other mode of capture.
" It appears Mr. Pennant had not confidered the varieties. of this fifiattentively, or, we think, the ballan wraffe would not have been delcribed as a fpecies diftinct from the labrus, tinca.

## L A BR.US.

tirca. The ballan wraffe of that writer is certainly the fame as our fith, from, which it differs only in being of a paler colour, and $m$ having the body marked with yellowifh inHead of orange or red. Such pale coloured varieties occur pretty frequently, and are indeed more common than thofe of deeper or more lively colours. Dr. Turton fufpects the ballan wraffe to be a variety only of the labrus tinca of Linnaus, though he deferibes it as a fpecies with this diftinctive character: " Body ycllow, fpotted with orange; above the nofe a deep fulcus; farther gill-cover with a deep depreffion radiated from the centre." In thefe particulars Dr. Turton was mifled by the account given by Mr. Pennant, without reflecting that the fame characters apply precifely to labrus tinca. Mr. Pemant informs us, the ballan wraffe "was the form of the common wraffe, only between the dorfal fin and tail was a confderable filiking; above the nofe was a deep fulcus; on the fartheit cover of the gills was a deprefion radiated from the cenre." It is already fhewn that the fuots on this fifh vary confiderably; to which may be added, that the finking between the dorfal fin and tail is confpicuous in all the varieties of labrus tinca, and fo alfo is the fulcus above the nofe. With regard to the laft characteriftic, the radiated depreffion on the gill-covers, one, two, or more fuch deprefiions are apparent on thofe parts, when divelted of the large fcales that adhere to them; every fcale, of which there are feveral on the gill-covers, leaving fuch a radiated depreffion on the thin menibrana e us $k$ in, when taken off. Thofe particulars inclined us to believe Mr. Pemnant was in fome meafure deceived by the imperfect ftate of the Scarborough fpecimen he examincd; and our opinion has been lince confirmed by various circumitances. Mr. Travis, the fon of the medical gentleman who furaifhed Mr. Pennant with the fecimen he defcribes, informs us the ballan wraffe is the individual fifh conmonly known by the nane of old vuife among the lifhermen on the Searborough coalts, where it appears in froals during fummer, and that there is only one fort found in thofe parts. This kind we have examised, and have no hefitation in ftating it to be the ballan wrafle of Pemant, and the labrus tinca of every other ielho thyolngit." Vide Brit. Fittes, vol. iv.

In the details ahove mentured will be found fome further arguments on this fubject, which the linits of our article camot permit us to repeat. For the length of the prefent digreflion we mult indeed offer an apology, and this will doubtlefs be accepted on the following grounds. The Eallart wraffe of Mr. Pennant has been alnoot uniformly admitted as a fpecies by the belt writers; when the accomnt from which the preceding extracts were taken was publifhed, we were atware it was received as a fpecies by leveral yefpectable writers, and lince that period, we have obfe:ved it included as fuch by a modern continental weiter, Miefo. Bole, under the name of le labre ballan; be fpeaks of it on the authority of Euglifh 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 defrribe the ballan wrafle, to explain our motives for fuch omiffion.

Vamegates. Red, with ahout four irregular parallel olive Aripes on the fides, and an equal number of blue ones, Donov. Br. Fifhes, Latrus zarirysatis, Gmel. Striped ruralfo.
A.very elegant and local Britihh filh. To Mr. Pennant we are indebted for an account of this fpecies; he was fo fortunate as to difcover it fome years ago; he found it on the coalt of Auglefea, off the Skerry inlands. The length of his fpecimen was ten inchee, but we procured both fexes at the fame place, and of a fize rathor larger, the formale
meafuring fourtecn inches in length, and the mate twelve. Brit. Fithes, vol. i.

Croms. Dorfal fin rearly united: fecond ray of the anal fin very large, thick, and compreffed. Limn. Brown, Sc. Coracinus Srafilienfis, Ray. Guatucupa, Marcg.

## Native of Carolina.

Lasenus. Oblong; all the rays of the dorfal fin fpinous, except the latt. Limu.

Inlabits South America and India.
Perdica. Tail even; back ftraight; crown fmooth: body with indenred yellowifh fripes each fide. Fork:

This and the two following fpecies inhabits the fea about Contlantinople.

Scras. Body greenifl, with white and ycllow waves: between the eyes an impreffed hollow, and before the hollow a groove. Forfk.

The middle teeth large; anterior gill-covers flightly ferrated behind, polterior unarmed; lateral line interrupted: pectoral fins yellowith and without fpots, the reft obfcure, Jcllow, fputted with blue.

Lapisa. Pectoral fins yellow; ventral blue, the relt villet fpotted wish blue. Furl.

Body oblong-nval, above brown, beneath whitifh, the fides greenihh-yellow, with three lines each lide, each compofed of a double row of red fpots.

Ramestoies. Greenifh-brown ; filament of the firf dor. fal fpincs twice as long as the ray. Fork.

Native of Arabia; the body lanccolate, fpotted with violet on the fins, crown, and under the eyes; or fometimes fine green; fcales large, rourded, entire, and difpofed in sine rows from the belly to the back.

Ocellates. Greenifh, with a fcarlet ccellate foot behind each eye. Fork.

Inhabits th: flores of Syria; the body fuboval, back yellowina-brown, and the head marked with blee irregular lines.

Luxelates. Greenifh-brown with darker bands, feales with each a ferruginous band; brealt fpeckled with red. Forf.
Length one foot; fceles broad and entire. This fpecies inhabits Arabia.
Thinacclates. Red: on each fide at the bafe of the dorfal hia two dark fpots, and a third between the dorfal fin and tail. Donov. Br. Fifhes. Lalrus trimatulutus, Gmel. Lubles carnerts, le Pann ronge, Bloch. Trimaculated zerraff.
"The length of this fpecies is about twelve inches; its form is graceful, and the colouse, when recent, of peenliar elegance and delicacy: A fine orange varying to red upon the back, and becoming palce and whiter towards the belly; is the chief and moft 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 reft of the fins paler. The three dark fosts at the potterior extremity of the back, which principaly conflitutes the fpecific diftinction of this kind of wrafle, are of a rich blackith purple. There are alfo four other fpots of a delicate rofe colour, fituated contigunus to thefe, and which do not apm pear to have been mentioned by any writer. Two of thefe fpots are difpofed in the fpace between the three darker ones before mentioned, and the third and foursh are placed one at each extremity of the outermolt ones, fo as to form together a feries of feven fpots, which are alternately of a pale rofe colour and a very deep purple. This fpecies is uncommonly rare. Our fpecimen was canght on the coait of Corawall in June 180 n." Vide Brit. Fithes. v. ia.

Olivacels.

Orimaeres Body olive-green; gill-covers blue at the tip; tail with a black fpot. Brunn.

Native of the Medilerranean; the length two inches; body oblong, comprefficd, bencath inclining to filvery.

Fusects. Budy brown, with blue lines and $f_{1}$ ots. Brunth

Length threc inches, compreffed oblong, beneath whitifl. $T$ he fpecies inhabits the Mediterrancan.

Uximacelates. Body lincated with olive; dorfal fin behind with a black foot. Mrum.
Inhabits the Mediterranean, and a fuppofed varicty of it, which is reticulated with dulky and greenith tivery, occurs in the Adriatic. The body is three inches long, oval, compreffed, and marked with abour ten paic blue longitudinal lines.

Vevosus. Green, with anaftomofing weins; gill-covers and dorfal tin with a black foot. Bloch.

Native of the Mediterranean; bedy oval, and comprefled : fides of the head with a few lougitudinal red lines; filaments and band on the dorfal fin red. Length three inches.

Griseus. Body grey, with darker fpots; tail with a black foot at the bafe. Brunn.

Length three inches, oval; cheeks lineated with blue; fins reddifh, with dufky yellow fpots. Found in the Mediterranean.
Guttatus. Body reddih, variegated with black; tail with a fpot on the middle of the bafe. Brunn.
Native of the Mediterranean.

- Adraticus. Body with four broad tranfverfe brown bands; dorfal fin on the anteriur part ten-fpined; on the pofterior part marked with ocellated black fpots. Brunn.
Length three inches; body pale; head with oblique tawny lines.

Leopardus. Two teeth in the front of each jaw larger ; body fpeckled with brown; from the eyes to the gill-covers a dark line, and on the tail a black band. Le labre leopart, Laccpede.
A fpecies found in the Indian feas, and called leopardus, from the colours and markings on the body, tail, the dorfal and anal fin, refembling thofe of the leopard. It was difcosered by Commerfon.

Bivittatus. Back red, fides yellow, with two longitu. dinal brown rays, the upper one of which extends from the eye, the lower from the pectoral fin. Le labre a deux lignes, Ėc. Bloch. Le labre birayé, Lacepede.
The country unknown.
Macrolepidotus. Yellow; fcales large; nine finines in the dorfal fin; beneath the eyes two rows of pores. $工$.e Jabre a gandes ècailles, Efc. Bloch.

Suppofed to be an inhabitant of the Indian feas.
Areo-radiatus. Lips very thick; body yellowifh, with two very long white rays, and a third above fhorter. Mem. Acad. Petr.

## Country unknown.

Marmozatus. Marbled with brown and whitifh. Le labre marbré, Lacepede.

A native of the Indian feas; difcovered by Commerfon. The teeth are equal and diftinct.

Bergylta. Scales large; the laft rays of the anal and dorfal in much larger than the others. Bloch, \&c. Le labre bergytte, Lacepede.

Found in deep feas in the north of Europe: Feeds on crabs and fhells, and grows to the length of ten or twelve inches.

Hortulanus. Body and tail decuflated with dark

Atripes, and a fpot in each divifion. La labre futeore, fan cepede.
Native of the Inclian feas.
Canones. Scakes large; lateral line firaighe; mar thes pecteral fins a large browa fout. I.c lubert calops, J, merpede.
Shlathits the fas of Europe, and is known at Dispoce under the nane of "brune." The eyes are largs and black ; the back dulky.

Ascasif. thove red, varied with green fones and ftreah, and the under parts ycliowifi, fpeckied with red. Le rone afomius.

Length feven inches; green ftripes on the dorfal ant anal fin about two or three in number; tail green, with the tip red.

Csinoptencs. Above varicl with red, green, and yellow; beneath green and brown; lins thluc. Cbeilontitere cyunutere, I acepede.

A beautiful fpecies, found in the American ficas.
Cingelem. Anteriur rats tivid, potterior brown, with an intermediate white girde, dorfal fin edged with whice. Lacepede, \&sc.

Native of the Indian feas:
Dasa. Four larger teeth in the upper jaw; in the lower two; centre of each fale marked with a brown credeent. Le labre diane, Lacepude

An Indian feccies.
Machodox. Scales large; mouth furnihed with four larger curved teeth. Le lalire nuctidonte, Lacepede.

Neustriw. lack varjed with brown, orange, and greeniflh, the lides marbled with brown, ora gige, and white. $L c$ labre Neufrien, Lacepede.

Found in the Seine, where the fifhermen diftinguih it by the title of "grande vieille," and "bandouliere marbre."
Creentatus. Silvery, with large irregular fpots of fanguineous. Le labre enfinglantí, Lacepede.

Obferved by Plumier in the American feas.
Knnuta. Body blackifh, with a yellow longitudinal ftripe cach fide, and beneath yellowih with rufous fin. Job. nius karutta, Bloch. Le lubre kurui, Lacepede.

An Indian feecies.
Cupreus. Somewhat filvery ; head, back, and fins, tinged with coppery. Jobnius aneus, Bloch.

Shape lanceolate. This £pecies inhabits the Indian feas; and is called Anei kattalei by the natives of Malabar.

Anvulatus. Body encircled by nine regular ftraght bands or rings. Le labre annelé, Lacepede.

One of the fpecies found by Commerfon in the Indian feas.

Brasiliexsis. Two teeth in the upper jaw longer and recurved; dorfal and anal fin with two or three longitudinal: lines. Bluch, \&cc.

Found on the coafts of Brazil, where it is taken with the hook and line; the fefh is excellent.

Tessellates- Back violet, fides filvery, and divided into compartments like a wainfcot.. Labrus tefellatus, Bloch. Le labre boifé, Buff.
This kind inhabits the North feas. Some French authors. call it "perroquet boife."
Cornubius. Body variegated with green ; near the tail a large fufcous fpot; anal fin yellow, obliquely banded with. fufcous. Donov. Erit. Fithes. Labrus corsulius, Gmel. Goldsmay, Ray.

This beautiful fpecies is about a palm's length, the back brownifh, bencath which the green prevails, and below this the fides and lower part are jellowith Clvery; anal fin golden yellow, whence. its name.

Combeb:

## LAB

## LAB

Comsrr. Back, fins, and tail red; belly yellow. $L$. corpore miniato, cauda rotundata, Gmel. Comber, Ray, \&ec. A fmall fpecies of an oblong form, recorded by Ray as an inhabitant of the fhores of Cornwall.

Coques. Purple and dull blue, beneath ycllow. Gmel, Iuhabits fame place as the former, according to Ray.
Mintus. Variegated with yellow and blue; anterior teeth larger. Arted.

Found on the fheres of Dalmatia.
Fulvus. Body fulvous, Gmel. Turdus cauda convena, Catefly

A native of America.
Varius. Varied with purple, green, blue, end black. Art.
Native of the Mediterranean.
Merlea. Blackilh blue. Art.
An European fpecies.
Cynaedus. Pale yellowr ; back purple; dorfal fin reaching from head to tail. Art.

Found in the Mediterranean.
LABURNUM, in Botany. See Cytisus and Aragyrts.

Laburaum, in Gardening, a common name applied to a beautiful, flowering, ornamental tree, for pleafure and other grounds. There are two forts of this tree in ufe generally, which, while young, have nuch the fame appearance in the wood and foliage, but are afterwards readily dittinguifhed by the fmallneis and finenefs of the flowers, and of that of the branches. The fine flowered and more branchy fort, is the molt proper for fituations where ornament is required, fuch as fhrubberies and pleafure grounds; but the more coarfe flroag growing kind, fucceeds belt in poor, gravelly, and rocky fituations.

LABY, in Geagraphy, a town of Sweden, in the province of Upland; 12 miles N. of Upfal.

LABYRINTH, AzE゚vontos, among the Ancients, was a large and intricate edifice cut out into various inles and meanders, running into each other, fo as to render it difficult to get out of it.

There is mention made of four celebrated labyrinth among the ancients, ranked by Pliny in the number of the wonders of the world ; wiz, the Cretan, Egyptian, Lemnian, and Italian.

That of Crete is the mofl famed ; it was built, as Diodorus Siculus conjectures, and Pliny pofitively afferts, by Dædalus, by command of king Minos, who kept the Minotaur fhut up in it, on the model of that of Egrpt, but on a lefs fcale : but both affirm, that in their time it no longer exifted, having been eilher defroyed by time, or purpofely demolifhed. It was hence that Thefeus is faid to have made his efcape by means of Ariadne's clue.

Diodorus Siculus and Pliny reprefent 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 Anacharfi3, vol. iv. p. 44I, \&c.), had been conitructed by Dxdalus under the order of Minos, whence is it that we find no mention of it, either by Homer, who more than once §peaks of that prince, and of Crete, or by Herodotus, who defcribes that of Egypt, after having faid that the monuments of the Egyptians are much fuperior to thofe of the Greeks; or by the more ancient geographers; or by any of the writers of the ages in which Greece flourifhed? This work was attributed to Dxdalus, whofe name, fays our author, is fufficient to difcredit a tradition. His name, like that of Hercules, had become the refource of ignorance, whenever it turned its eyes on the early ages. All
great labours, all works which required more ffrength than ingenuity, were attributed to Herculcs; and all thofe which had relation to the arts, and required a certain degree of intelligence in the execution, were afcribed to 1) $\begin{gathered}\text { dalus. Ac- }\end{gathered}$ cording to Diodorus and Pliny no traces of the labyristh of Crete exifted in their tine, and the date of its deltruction had been forgotten. Yet it is faid to have been vilited by the difciples of Apollonis: of Tyana, who was contemporary with thofe two authors. (Philoltrat. Vit. Apoll. 1. iv. c. 34.) The Cretans, therefore, believed that they polfeffed the laburinth. At Nauplia, near the ancient Argos, fays Strabo (1. viii.), are ttill to be feen valt caverns, in which are conflructed labyrinths that are believed to be the work of the Cyclopes; the meaning of which, as. Barthelemi underttands him, is, that the labours of men had opened in the rock paffages which croffed and returned upon themfelves as in quarries. Such, he fays, is the idea we ought to form of the labyrinth of Crete. He then fuggefts an enquiry, whether there were feveral labyrimths in that inland? Ancient authors fpeak only of one, which mot of them place at Cnoffus, and fome few at Gortyna. Belon and Tournefort defcribe a cavern fituated at the foot of mount Ida, on the fouth lide of the mountain, at a fmall diftance from Gortyna: which, according to the former, was a quarry, ard according to the latter, the ancient labyrinth. Belides this another is fuppofed to have been fituated at Cnoflus, and in proof of the fact it is alleged, that the coins of that city reprefent the plan of it. The place where the lahyrinth of Crete was fituated, according to Tournefort, was, as Barthelemi fuppofes, one league diftant from Gortyna; and, according to Strabo, it was diftant from Cnoffus fix or feven leagues; with refpect 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 ufe of the caverns, denominated kabyrinth, Barthelemi imagines, that they were firft excayated in part by nature; that in fome places ftones were extracted from them for building cities, and that, in more ancient times, they ferved for an habitation or afylum to the inhabitarits of a diltrict expofed to frequent incurfions. According to Diodorus Siculus, the molt 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 ufe; but it is fcarcely credible that, for preventing the efcape of a few unhappy wretches, fuch immenfe labours would have been undertaken. See Crete.

The labyrinth of Egypt, according to Pliny, (N. H. v. ii. 1. 36.) was the oldeft of all; and was fubfilting in his time, after having flood, according to tradition, as he fays, 4000 years. He fays it was built by king Petefucus, or Tithoës; but Herodotus makes it the work of \{everal kings: it ftood on the fonthern bank of the lake Mceris, near the town of Crocodiles, or Arfinoe, and confifted of twelve large contiguous palaces, in which the twelve kings of Egypt affembied to trarfact affairs of ftate and religior, containing 3000 apartments, 1500 of which were under ground.

This frueture feems to have been defigned as a pantheon, or univerfal temple of all the Egyptian deities, which were feparately worlhipped in the provinces. It was alfo the place of the general affembly of the magiftracy of the whole nation ; for thofe of all the provinces or nomes mer here to fealt and facrifice, and to judge caufes of great confequence. For this reafon, every nome had a hall or palace appropriated to it; the whole edifice containing, according to Herodotus, twelve; Egypt being then divided into fo many kingdoms.

## L A B

## LAC

Pliny makes the number of thefe palaces 16, and Strabo makes them 27. All the halls were vaulted, and had an equal number of doors oppofite to one another, lix opening to the north, and fix to the fouth, all encompaffed by the fame wall. The exits, by various paffages and innumerable returns, afforded to Herodotus a thoufand uccafions of wonder. The roofs and walls within were incrutted with marble, and adorned with fculpturcd figures The halls were furrounded with pillars of white ftone finely polifhed; and at the angle, where the labyrinth ended, tood the pyramid, which Strabo afferts to be the fepulchre of the prince who built the labyriath. According to the defeription of Pliny and Strabo, this edifice Itood in the midit of an immenfe fquare, furrounded with buildings at a great diltance. 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 fteps, adorned wih many columns of porphyry, images of their gods, and fatues of their kings, of a coloffal fize: the whole edifice was conftructed of fone, the floors being laid with valt flags, and the roof appearing like a canopy of itone: the paflages met, and croffed each other with fuch intricacy, that it was impofiible for a ftranger to lind his way, either in or out, without a guide; and feveral of the apartments were fo contrived, that on opening of the doors, there was heard within a terrible noife of thunder. Although the Arabs, fince the days of Pliny, helped to ruin this Itructure, yet a confiderable part of it is fill ftanding. The people of the country call it the palace of Charon. See a plan and defcription of this labyrinth, in the prefent Itate of $i$ : , in Pucocke's Hit. of the Eatt, wol. j. p. 6i, \&c. See alfo Perry's View of the Levant, P. 3 Sr, \&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 conftructed to bewilder thofe who attempted to pals through it; though it is manifelt, that, without a guide, they would have been in danger of lofing their way. The Abbé Barthelemi (ubi fupra) fuggerts, that this danger introduced a new term into the Greek language. The word labyrinth, takea in the literal fenfe, fignifies a circumfcribed fpace, interfected by a number of palfages, fome of which crofs each other in every direction, like thofe in quarries and mines, and others make larger or fmaller circuits round the place from which they depart, like the fpiral lines that are vifible on certain fhells. Hence it has been applied, in a figurative fenfe, to obfcure and captious queftions, to indirect and ambiguous anfwers, and to thofe difcuffions, which, after long digreffions, bring us back to the point from which we fet out.
Tht labyrinth of Lemnos was fupported by columns of wonderful beauty; there were fome remzins of it at the time when Pliny wrote. That of Italy was built by Porfenna, ling of Etruria, for his tomb.
Labyriath, in Gardening, a fort of maze or wildernefs plantation, abounding with hedges and walks, diltributed into many windings and intricate turnings, leading to one cofmmon centre, extremely difficult to be found out, deligned by way of amufement. This is commonly formed with liedges, in double rows, leading in various twiltings and turaings, 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 caufe much labour and difficulty to fod out the centre, or out again in the way a perfon came in. But they are now rarely introduced into modern garden defigus; and farcely to be feen, except in fome old gardens.

Vor. XX.

The hedges for this ufe are ufually of hormbam, hut ma be of becch, elm, or any other turt of tree or hirab tiact can be kept in neat order by clipping. The walks firoutlo be five feet wide at leaft, laid with gravel, and neatly rolled ; and the trees and florubs to form the thicket of wond between the hedges of any of the hardy kinds of the decidimats tribe interfperfed with fome evergreens. In the middik, fpace foould be left open as the centre. The labyrinth whit is, we believe, fill in exiltence at Hampton Court, is alm wholly formed of the common elm trec, cut in fo as to keetp it down to the proper height.

But fraill labyrimhs are oecafionally formed with Lo: edgings, and borders for plants, and alleys for walking 1 m . in imitation of the large ones, and which have good effect in fmall garden-grounds.

Labymitit, in Geography, a clufter of fmall illands: in the Pacific ocean, difcovered in 1722 , by captain Roxyewein, 75 miles W. from the Peraicious iflands.-Alfo, a chain of hoals, rocks, and fmall iffands on the E. coaft of New Holland, extending from Cape Tribulation to Cope York.

LABYRINTHUS, in Anatomy, a name given, on ac. count of its apparently complicated itructure, to the internal organ of hearing ; to the part, indeed, which, from is receiving the auditory nerve, is the true feat of the fenfe. See Ear.

LAC, or Lacca, Gum, as it is commonly, though no: very properly, denominated, becaufe it is neither a gum nue a refin, is a kind of compound fubitance, preparea by the female of a minute infect, called by fome Cocces Lacca, and by others Cinermes Laca, which is found in feveral fpecies of trees in the Eaft Irdies, and particularly on the banyantree (Ficus indica and religiofa of Linurus), feveral fpecies of Mimofa, and the Biher on Rhamnus jujuba. Thete infects are nourifhed by the trees on which they are produced, and fix themfelves upon the fucculent extrimities of the young branches; and around thair edges they are environed with a fpiffid fub-pellacid 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 lize of a fmall cochineal infect, emarginated at the obtufe end, full of a beautiful red liquid. When the eggs are hatched, the young infects, or grubs, firft feed upon the rel liquid above-mentioned, and when this is expended, they pierce a hole through the coat that invefts them, and move off one by one, leaving their exuvix behind, which are the white membranous fubltance found in the empty cells of the Stick lac. The accumulation of lac appears in the cconomy of this infect to be the fubitance that anfwers the double purpofe of a nidus and covering. to the egg or infect in the firft flage of its exiftence, and of food for the maggot in its more adranced ftate. The lac is formed into complete cells, finifhed with as much regularity and art as the honey-comb, but differently arranged. The flies are invited to depofit their eggs on the branches of the trees by befmearing them with fome of the freft lac fteened in water, which aitracts the fly, and gives a better and larger crop. For a particular defcription of thefe infects, and their cells, we refer to the papors of Mr. James Ferr, of Patna; Mr. Robert Saundere, firgeon, at Buglepour, in Dengal; and Dr. Roxburgh, of Samulcotta, in the Philofophical Tranfactions, vols. 1xxi. lxxix. and lxxxi. Lac is a faple article of commerce in Anam, a rountry bordering on, and much conne led with, Thibet, which furninhes the greatef quantity of that in ufe; and it is alfo found upon the uncul-

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tivated
tivated mountains or buth fides of the Canges. The ondy trouble in procuring it is that of breaking down the tranches, and carrying them to market. The price in Dacea, in 1785, fays Me. Kerr, was about 825 . the hundred pounds weight. although it was brought from the diftant country of Aflam. The beil lac is of a decp red colour. If it is p.le, and piarced at top, it is depretiated in value, becaule the infects have left their cells, and confequently they can be of no ule as a dye or colour; though they may be probably better for varnihers. Of lac there are four kinds known in commerce: viz. I. Stick lac, which is the lac in its matural Itate, from which all the others are formed. This is ob:ained 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 fecd lac liquefied by fire, and formed into cakes. 4. Shell lac is the purified lac, or the cells liquslied, frained, and formed into their tranfparent laminx. Lac is brought into this Itate, or purified, by the following procets. It is broken into fmall pieces, and picked from the branches and titicis, and then put into a fort of canvas bag of about four feet loug, and about fix inches in circumference. Two of thefe bags are in conflant ufe, and each of them held by two men. The bag is placed over a fire, and frequently turned till the las is liquid enough to pafs through its pores, when it is taken off the fire, and fqueezed by two mern in different dire tions, dragging it along the convex part of a plantain tree (Mufa paradifaica of Linneus), prepared for the purp re: while this is doing, the other baje is hazting, to be treated in the fame manner. The mucilaginous and fmooth furface of the plantain-tree feems peculiarly well adapted for preventing the adhefion of the heated lac, and giving it the form, which enhances its value fo much. '1'he degree of preflureon the plantain-tree regulates the thicknefs of the Thell, and the quality of the bag determines its fincnefs and tranfparency, upon which its value depends.

The lac is applied to various purpofes by the natives in India. A great quantity of the foell lac is confuned in making ornamental rings, painted and gilded in a varicty of taltes, to decorate the arms of the ladies; and it is formed iuto beads, fpiral and linked chains for necklaces, and other femalc ornaments. It is alfo ufed for fealing-was. For this purpore, take a ftick, and heat one end of it upon a charcoal fire; put upon it a few leaves of the fhell lac foftened above the fire; keep alternately heating and adding more thell lac, until you obtain a mafs of three or four pounds of liquefied fhell lac upon the end of your flick. Knead this upon a wetted board, with three ounces of levigrated cinnabar, and form it into cylindrical pieces; and to give them a polifh, rub them while hot with a cotton cloth.

For japanning, take a lump of gell lac, prepared in the manner of fealing-wax, with whatever colour you pleafe, fix it upon the end of a thick, heat the polifhed 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 occafion requires. Their figures are formed by lac, charged with various colours in the fame manner. In ornamening their images and religious houfes, \&c. they make ufe of very thin beaten lead, which they cover with various varnifhes, made of lac charged with colours. The preparation of them is kept a fecret. The leaf of lead is laid upon a fmooth iron heated by fire below, while they fpread the varnifh upon it.

For grindtones, take of river fand three parts, of feed lac wahed one part, mix them oyer the fire in a pot, and
form the mafs into the flape of a grindtone, having' a fquare hole in the centre, fix it on an axis with liquefied lac, heat the ftone moderately, and by turning the axis it inay be eafily formed into an exact ofbicular fhape. Polifhing grindftones are madconly of fuch fand as will pafseafily through fine muflin, in the proportion of two parts of fand to one of lac. The fand is compofed of fmall angular cryftalline particles, tinged red with iron, two parts to one of black magnetic fand, The itone-cutters, inltead of fand, ufe the powder of a very hard granate, called Corunde. Thefe grinditones cut very faft: when they want to increafe their power, they throw fand upon them, or let them occafionally touch the edge of a vitrilied brick. The fame compofition is formed upon flicks ; for cutting fones, fhells, \&c. by the hand.

For painting, take one gallon of the red liquid from the firtt working for fhell lac, ftrain it through a cloth, and let it boil for a flort time, then add half an ounce of foffil alkali; boil an hour more, and add three ounces of powdered load (bark of a tree), boil a flort time, let it itand all night, and ftrain next day. Evaporate three quarts of milk, without cream, to two quarts, upon a flow fire, curdle it with fome milk, and let it Itand for a day or two, then mix it with the red liquid above-mentioned; flrain them through a cloth, add to the mixture $1 \geq$ oz. of alum, and the juice of eight or ten lemons; mix the whole, and throw it iuto a cloth-bag thrainer. The blood of the infect forms a coagelum with the cafeous part of the milk, and remains in the bag, while a limpid acid, water drains from it. The coagutum is dried in the thade, and is ufed as a red colour in painting and colouring.

For dyeing, take one gallon of the red liquid prepared as lefore without milk, to which add three ounces of alum. Boil three or four ounces of tamarinds in a gallo: of water, and Itrain the liquor. Mix equal parts of the red liquid and tanarind water over a brifk frre. In this mixture dip and wring the filk alternately, until it has received a proper quantity of the dye. To increafe the colour, increafe the proportion of the red liguid, 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 latting as in filk. The lac colour is preferved by the natives upon flakes of cotton dipped repeatedly into a ttrong folution of the lac infect in water, and $\mathrm{t}^{\text {hen }}$ dried. The Hindoos, as Mr. Charles Wilkıns informed Mr. Hatchett, diffolve fhell lac in water, by the mere addition of a little borax ; and the folution, being therı mixed with ivory-black, or lamp-black, is employed by them as an ink, which, when dry, is not eafily acted upon by damp or water. Mr . Hatchett found this fact to be exaßly as it was ftated by Mr. Wilkins.

Belides the lac above-mentioned, there is another furt which is white or yellowith, brought from Madagafcar, yery much refembling the pe-la of the Chinefe, which has been lately examined by Dr. Pearfon. See Laccic Acid.

Mr. Hatchett (Phil. Tranf. for 1So4, part ii.), has detailed a number of experiments for the analyfis of the three common fpecies of lac, with a view of afcertaining its conitituent parts and difcriminating properties.

Lac, though long known in Europe, has not much attracted the attcution of chemifts. The firf perfon who fubjected it to a regular examination was the younger Geoffroy, the refult of which is publifhed in the Mem. de 1'Acad. de Paris for 1714. He concluded that this fubftance is not, as fome have fuppoled, a gum or refin, which

Thas exuded from vegetables fimply punctured by infects. Gcoffroy and Lemery obtained from lac, by diltillation, fome acid liquor, and a butyraceous fubltance; and Gcoffroy obferves, that when ftick-lac was thus treated, fome ammonia was alfo obtained, but not when feed-lac was employed. Geoffroy confidered lac as a kind of wax, very dititinct from the nature of gum or refin. Since his time it has been little examined, and therefore chemilts have entertained various opinions concerning it. Chaptal, adopting Geoffroy's opinion, calls it a kind of wax ; but Gren and Eourcroy regard it as a true refin.

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 llick-lac to a yellowifh-brown fubitance, and the water no longer receives any colour. The portion feparated from the lac has, on an average, amounted to 10 per cent.; but as it canuot be completely feparated, confiderable variations mult be expected in different famples.

Fine feed-lac does not afford more than $2 \frac{\pi}{2}$ or 3 per cent. of the colouring fubllance; and fhell-lac, when treated in the fame manner, i. e. merely with water, did not yield more thant $\frac{1}{2}$ per cent. Alcohol diffolves a confiderable portion of each of the different kinds of lac; and when heat is not emp'oyed, the diffolved part is refin, combined with fome of the colouring matter; but if the lac is digefted with heated alcohol, the folution is more or lefs turbid, and it is difficult to obtain it in a ftate of purity and tranfparency, either by repofe or filtration. The folution obtained by digelting flick-lac in alcohol, without heat, is of a dark brownifi-red colour; and the infoluble part fubfides, retaining the greater part of the colouring matter, moit eafily foluble in water. The proportion of refin thus diffolved. when flick-lac is treated with alcohol, amounted to $\mathrm{CH}_{7}$ or 6 S per cent. The feed-lac ufed by Mr. Hatchett was very pure, and yielded to alcohol about 88 per cent. of relin, containing little of the colouring matter. Shell-lac, in finall fragments, by fimple digellion with alcohol, afforded in the firt inflance nearly 8 r per cento ; but part of the refin required fubfequent operations to feparate it, fo that the total quantity of relin mighi be eltimated at 9 I per cent. Sulphuric ether does not feem to att fo powerfully upon the varieties of lac as alcohol; and, therefore, ether is not the beft mentruum for lac. Concentric fulphuric acid acts firft on the colouring matter of lac; and after a thort digellion in a fand-bath, the whole is converted into a reddifh-brown thick liquer, which foon becomes black; and the chief part of the lac is feparated in an infoluble ftate, refembling coal. During the folution of lac in futphuric acid, a confiderable quantity of fulphureous acid gas is evolved. When lac is digetted with nitric acid, nitrous gas is at firft produced; the lac fivells much, and is converted into a deep yellow opaque brittle fubitance, which, by a fufficiercy of nitric aciu, and a continuance of the digellion for about 48 hours, is diffolved.

This yellow nitric folution is converted by esaporation into a deep yellow fubfance, which burns like refin, but is foluble in boiling water. Muriatic acid diffolves the colouring matter and gluten of lac with a feeble astion, unlefe the refin has been previoully feparated. Acetous achd much refembles the rouriatic in its effects. Stick-lac, feed.lac, and fhell-lac are partially diffolved by acetic acid; and the diffolved part confifts of the colouring extract of relin, and of gluten; the wax being the only ingredient which is infoluble in this mentruum. A farurated iolution of toracic acid in water diffolyes the colouring extract ; but
the lac is litele, if at all, acted upon by this acid. Sub. borate of foda or burax has a powerful effect on lac, fo as to render it foluble in water; and it is concluded from the fo facts, that the exeefs of foda in borax is the active fubitance, which conelufion is corroborated by experiments made with the alkalis. In order to render lac, efpecially fhell lac, foluble in water, about one-fifth of borax is neceflary. The beft proportion of water to that of lac is 18 or 20 to 1 ; fo that 20 grains of borax, aid 407 . of water, are, upon an average, requilite to diffolve 100 grains of facll.lac. The general properties of the folution fhew, that it is a fuponaceous compound, which, being ufed as a varnith, or vehicle for coluurs, becomes (when dry) difficul:ly foluble in water. The lixivia of pure foda, and of carbonat of foda, completely diffulve the feveral kinds of lac ; and the folutions refemble thofe formed by means of borax, excepting that they are deeper coloured. Lixivium of pure or cauftic potafh Speedily diffolves the varietics of lac, and forms faponaceous folutions, fimilar to that with borax, exclufive of the colour, which more approaches to purple Lixivium of carburate of potafh extracts a great part of the colouring matter, but lefs completely diflolves the entive fubftance of lac than pure potah. Pure ammonia, and carbonate of ammonia, readily act upon the colouring matter of lac, but do not completely difolve the entire fubltance.

From a variety of other experiments, as well as thofe, the refults of which we have given, but which we cannot recite, it appears that the different kinds of lac confitt of four fubItances, namely, extract, refin, gluten, and wax. The extract, when dry, is of a deep red colour, approaching to purplifh-crimfon; emitting finoke when laid on a red-hot iron, with a fmell like that of burned animal matter, and Jeaving a bulky porous coal; partially foluble in water, hot or cold; more flowly in alcohol, and with a lels beautiful colour; infoluble in fulphuric ether; foluble in fulphuric, nitric, and acetic acid; partially in muriatic acid; not very readily in acetous acid; almolk perfectly fuluble in the lixivia of potalh, fodia, and ammonia, with a beantiful 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 fpeedily combines with the alumine, and a bearitiful lake is formed. A fine crimfor precipitate is alfo pruduced by muriate of tin, when added to the aqueous folution: a fimilar coloured precipitate is alfo formed by the addition of folution of ifinglafs. Thefe properties of the colouring fubitance of lac, efpecially its partial folubility in water and in alcohol, and its infolubility ia ether, together with the precipitate formed by alumine and muriate of tin, indicate that this fubftance is vegetable estract, perhaps flightly animalized by the coccus.

The relin of lac is of a brownifh-yellow colour, emitting on a red-hot irou much fmoke, with a peculiar fiveet odour, and leaving a fpongy coal; completely foluble in alcohol, ether, acetic acid, nitric acid, and the lixivia of potafh and foda; precipitated by water from alcohol, ether, acetic acid, and partially from nitric acid; and poffeffing the other general characters of a true relin.

The gluten is obtainable in two ways; if the pieces of lac, after digeftion in alcohol, be digefted 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 excefs of them, and then is feparable by acid. 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 digettion in buibing nitric acid, and may be collected when cold; or it may
be more cafily obtaieed in a pure flate, by diyefing the refidue left by alcohol in boiling nitric acid. The wax, thus obtained, when pure, is pale yellowilh-white, and (unlike bees' wax) is devoid of tenacity, and extremely brittle: ir melts at a much hower temperature than that of boiling water, and burns with a bright flame, and an odour refembling that of fermaceti. It is infoluble in water and co's aicohol; but the latter, when boiled, partially difolves it, and upon corling, depofits the greater part; foluble in heated fulphuric ether, but upon cooling, nearly the whole is depofited. Lisivium of potath, boiled with the wax, forms a milky folution; bat moot of the svas floats on the furface in the flate of white flocculi, and appears to be converted iuto a kind of foap of difficult. folubility; it is no longer inflanmable; and, with water, forms a turbid folution, from which, as well as from the folution in potafh, the wax may be precipitated by acids. Ammonia, when heated, diffolves a fmall pertion of the wax, and forms a folution funilar to the former; nitric and muria:ic acids do not act upon the wax. When the properties of this fubftance are compared with thofe of bees'-wax, a difference will be perceived; and on the contrary, the molt Itriking 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. Boftock in Nichollon's Journal for March, 1803 , coincide fo perfectly with thofe of the wax of lac, that Mr. Hatchett is led to confider them as almoft, if not altogether, the fame fubftance.

Ourouthor, from his analy fis of the three different fpecies of lac infers, that the fubitances that compofe them bear the following proportions: 100 parts of ftick-lac gave 68 of refin, 10 of colouring extract, 6 of wax, 5.5 of gluten, and 6.5 of extraneous fubltances: 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 fhell-lac gave 90.9 of refin, 0.5 of colouring extract, four of wax, and 2.8 of gluten.

We have already fécified feveral ufes to which lac is applied in India, and it is no lefs important, in a variety of refpects in Europe. A folution of lac in water may be advantageoufly employed as a furt of varnifh, which is equal in durability, and other qualities, to thofe prepared with alcohol ; and, of courfe, much cheaper. It will be found, likewife, of great ufe as a vehicle for colours; for, when dry, it is not eafily affected by damp, or even by water. Mir. Hatchett fays, that with a folution of this kind he has mixed various colours, fuch as vermilion, fine lake, indigo, Prufian blue, fap-green, and gamboge ; and it is remarkable, that although the two luit are of a gummy nature, ard the others had been previoully mixed with gum (being cakes of the patent water-colour), yet, when dried upon paper, they could not be removed with a moiftened fponge, until the furface of the paper itfelf 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 ali, affected by it.

The colour given by lac is lefs beautiful, but more dura. ble than that given by cochineal. To render the colouring matter of the lae diffufible in water, fo as to be applied to the ttuffs to be dyed, Mr. Hellot directs the following procefs:-Let fome powdered gum-lac be digetted 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 ftraw-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 ste clear liquor, and dried. It will weigh about one-fifths
of the quantity of lac employed. This dried fecula is to be diffolved or diffufed in warm water, and fome folution of tin is to be added to it, by which it acquires a vivid fearles colvur. 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 ufed by painters from this fubitance, is by the following fimple procefs:Boil the Itick-lac in water, filtre the decoction, and evaporate the clear liquor to a drynefs over a gentle fire. The occafion of this eafy feparation is, that the beautiful red colour, here feparated, adheres only nightly to the outfides of the Aticks, broken off the trees along with the gum-lac, and readily communicates irfelf to boiling water. Some of this fticking matter alfo adhering to the gumitlelf, it is porper to boil' the whole togetber; 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 ufes which do not require its colour. See Lakke.

A tiacture of gum-lac may thus be prepared:--Take two ounces of gum-lac, reduce it to a fine powder, and make it into a. filff pafle with oil of tartar per deliquium ; fet this in an open glafs 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 mult be reduced to powder, which powder will afford a fine ftrong tincture to feririt of wine, being boiled in it in a tall glafs in a fand-heat for two or three hours. And by this procefs flrong tinctures may be made from myrrh, amber, gum, juniper, \&c. which will yield no tincture of ftrength to fpirit of wine alone, if treated in the ufual way.
A firituous tincture of Atick-lac was formerly fometimes given as a mild reftringent and corroborant in female weakneffes, and in rheumatic and fcorbutic diforders. But the principal medicinal ufe of this concrete was as a topical corroborant and antifeptic, in laxities and fcorbutic bleedings, and exulcerations of the gums. Some employed for this purpofe a tincture of the lac in alum water; others a tincture made in vinous fpirits, 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 digelted in a fand-heat, for fix days, in a pint and a half of fpirit of fcurvy grafs.

The gum-lac has been lately ufed as an electric, inftead of glafs, for electrical machines. See Laceuer, Lake, and Varmisif.

Lac, or Lacca, Ammoniaci, in the Materia Medica. See Gum Ammoniac.

Lac, or Lacca, Artificial, or Laque, is alfo a name given, to a coloured fubftance, drawn from feveral 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 thefe flowers are extracted by digefting them feveral times in aqua vitæ, or by boiling them over a fove fire in alixiviu:a of pot-afhes and alum.

An artificial lacea is allo made of Brazil wood, boiled in a lixivium of the branches of the vine, adding a little cochineal, turmeric, calcined alam, and arfenic, incorporated with the bones of the cuttle-finh pulverized, and made up into littie cakes, and dried.

If it be 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, ileeped in ditilled vinegar for the fpace of a month,
month, and mixed with alum incorporated in cuttic-fifh bone. For other proceffes, fee Lake and Madder.
Lac, Acid of. See Laccic Acid.
Lac, or Gum Lat. Sec Crotos.
Lac Luna. Dr. Plote tives this foffil as a mark of good lime-ftone; but it has been obferved, that two quarrics in Ireland, where lac lunx was found, were of building ftone, but would not burn into lime. Phil. Tranf. $\mathrm{N}^{\text { }} 4 i 7$. 69.

There are many varieties of this mincral, differing in their texture and colour. It is found in many parts of Europe, and alfo in Afia and America. Many of the Englinh quar. ries in Oxfordhire, Gloncelterhire, Northamptonfhire, and Derbyhhire, afford cenfiderable quantities of it. It adheres to the toofs and walls of grottos and caverns, and is lodged in the fiffures of ttrata of llone, fometimes in form of a farinaceous powder, and fometimes concreted into maffics. Its furface is rough and duffy; it colours the lands, adheres to the tongue, melts readily in the mouth, without grittincfs, yields an infipid talte, and raifes an ebullition in water, which foon diffolves it into a fine white powder. See MiTireral Agaric:

Lac Sulpburis, in Chemifry, and the Matcria Medica, denotes fulphur feparated by acids from its alkaline folution, which in the procefs changes its lemon-yellow colour for a grey or yellowih-white like creain. As a medicine it is thought to be fomewhat milder. See Sulphur.
Lac Virginale. See Virgin's Milk.
Lac Virginis:- Sce Virgin's Milk, and Berzons.
LACA, in Gcographs, a town of Africa, in the country of the Foulis; io miles N.W. of Goumel.
LACABEN, a town of Afratic Turkey, in the province of Aladulia; 30 miles S.S.W. of Malatra.

LACANIT'IS, in Ancient Geography, a country of A fia, in Cilicia, according to Ptolemy, who places in it one cit $\zeta$, ェiz. Irenopolis.

LACARACOONDA, in Geography, a town of Bengal; ro miles S. of Nagore. N. lat $23^{\circ} 4^{8^{\prime}}$. E, long $87^{\circ} 27^{\prime}$.
LACAR1A, a fmall town of Italy, in the eaftern 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 ifland of. Cuba; 15 miles W. of Villa del Principe.

LACCA. See LAC.
LACCADIVE Istands, in Geagraphy, a group of fmall iflands in the Indian fea; the neareft being about 15 miles from the coalt of Malabar. They are fuppofed to be the iflands called by Ptolemy "Infule 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 vifited by Englifh thips in their paffage from India to the Perfian gulf, or Red fea. Their principal traffic conGitts of the produce of the cocoa palm, fuch as the oil, cables, and cordage, and alfo of fifh, which, being dried, is fent to the continent of India, whence rice is obtained in return. They alfo trade to Mafcat, in large boats, and for their commodities they bring back dates and coffee.' Ambergris is often found floating near thefe iflands.. N. lat. 10 to $12^{\circ}$ $40^{\prime}$. E. long. $71^{\circ} 15^{\prime}$ to $73^{\circ} 30^{\prime}$.

LACCIA, in Icbtbyology, a name given by Paulus Jovius to the fhad, or, as we foretimes call it, the mother of the pilchards. See Clupea Alofa.

LACCIC AcID, in Chemiffry, is a fubflance that was firt introduced to the notice of chemilts by $\mathrm{Dr}_{\mathrm{r}}$. Pearfon. It is obsaioed from a peculiar compound called swhite lat, which Dr.

A naderfom of Madras difcovered to be the product of fome infects of the coccus tribe. Small quantities of it were fer: to Europe about the year 1789; and, at the requeft of fir Jofeph Banks, an examination of it was undertaken by Dr. Penrfon, and the refult of his inquiries appeared in the Philofophical Tranfactions for $1794^{\circ}$. The lac, in its natural thate, is of a grey colour; and occurs in pieces of from three to fifteen grains in weight. Many of its propertics prefent confiderable refemblance to thofe of bees' wax; and Dr. Pearfon is of opinion, that thefe fubltances are very nearly allied to each other, differing only in the proportions of their conftituents. A curious circumftance, connected with this point, is, that the infect which fecretes the lae alfo produces honey; but the phenomena attending the appearance of the later product have not been examined with. the attention which they merit. To procure the laccic acid, it is merely neceflary to expofe the lac, as afforded by the coccus, to a hicat jult fufficient to liquefy it. A reddifh watery fluid will feparate, having the fmell of newly baked hot bread; and it is this fubitance which conlfitutes the acid under inquiry. "The following are fome of its properties. At the temperature of $60^{\circ}$, it has a fpecilic gravity of 1.025 . Paper ftained with litmus and turnfol is reddened by it. It poffeffes a faline tafte, and is fumewhat bitter ; but is not in the fmalleft degree four. By expofure to the air it becomes muddy, and depolits a fmall quantity of fediment. Dr. Pearfon ditilled 250 grains of it, and afterwards evaporated the produet until it grew turbid. On flarding fone hours, acicular cryftals were produced, having a bitterifh tafte, which amounted to about $\mathbb{Z}_{\frac{3}{5}} \mathrm{~d}$ th of the weight of the fluid employed. The acid diffolves carbonat of foda with cffervefcence; : and by evaporation yields cryfals which are deliquefcent. It produces a purpliih tint on being mixed with lime-water, but no fediment appears. Tincture of galls caufes a green precipitate ; and with acetat of lead a reddilk powder is depofited. This forms nearly the whole of the information that has been coiveyed to us with refpect to it ; and as yet, therefore, nothing either very Atriking, or very important, has been communicated by the difcovery. It is to be lamented that Dr. Pearfon 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 fubftance is entirely new to us; or whether it is only the modified appearance of fome compound with which we had been before acquainted.

LACCOS, Aaxxos, among the Greeks, a ditch or trench ufed inftead of an altar, when facrifices were to be offered to the fubterranean or infernal gods. - See Altar.

LACE, in the Manufaiures, is formed of thread, cotton, or filk, woven into a net, the mefhes of which are varied in their figure, according to the defign of the pattern, as octagons, hexagons, sic. \&c. The lace is alfo ornamented by a thread, much thicker than the thread forming the net, which is woven in among the mefthes, 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 cufhion, upon which a piece of ftiff parchment is Atretched, having a number of holes pricked through it, to form a pattern of the intended lace. Through thefe holes, pins are fluck into the pillow; and the threads, wound upon fmall bobbins, are woven around the pins, and twifted round each other in various ways, to form the required pattern. This procefs is extremely tedious, particularly for the wide laces, with complicated patterns; and though it is extremely expenfive to

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## LAC

the confumer, the people (chiefly in Bedford and Buekinghamfhire) who manufacture it can ouly obtain fufficient to fupport a wretched exiltence, by the mott inceffant exertion. Of late years, the manufacturers of Nottingham have directed their ingenuity to imitate this fpecies of lace by machinery, in which they lave fucceeded molt perfectly: but Itill it is only an imitation, the knot or loop of the mefles being effentially different. In the pillow lace, the net or meflies may be defcribed, by fuppofing a number of ropes, each formed of two or more threads tailled round each other: thefe are extended parallel; but at every two or three firial turns of thefe ropes, the ftrands or threads compoling one rope are twitted around with thofe of its neighbour, and then returu,to be twitted with its own: and this reciprocally of the whole number forms a netting; the figure of the meihes depending upon the number of turns which are made, before the twilt is changed from one rope to the next. To form a lace of this defcription, it is effential that the ends of each thread be detached, and capable of being twifted over the adiacent threads. This is eafily done by the hand upon the pillow, by twifting the bobbins round each other ; but has many difficultics which prevent its performance by machinery.

The Nottingham lace is only a modification of the flitech or loop of which llockings are made; all the mefles being formed by a continuance of one thread, which is, by the machine, formed into loops a whole courfe (that is, length of the intended piece of lace) at once, by preffung 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 firt are drawn through thofe of the fecond, in fuch a manner as to form mefhes by retaining the firlt loops; the fecond are then retained by a third courfe, and this by a fourth, and fo on. The machine is very nearly like a common tocking-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: thefe are introduced between the fixed needles of the Itocking-frame, and a certain number (one half, for inftance) of the loops in the thread are taken off the fixed needies upon thefe points, which are moved endways, the face of two, three, or more fixed needles, and put down upon them again. Another fet of loops is now taken alpon the points, and moved in the oppofite direction; by this means, crofling the loops over each other, and forming mefhes, 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 ftock-ing-frame, bout 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 needies in the frame. Thefe threads pafs through cyes in the ends of fmall points, called guides, which are oppofite the needles; and thefe guides are fixed on two bars, each of which has half the guides faltened in it, that is, one guide is fatt in one bar, and the next in the other, and fo on alterrately of the whole. Each of the guides prefents a thread to its needle, and are all at once moved by the hand to twilt the threads two or three times round the needles which are oppofite them: the loop is now made in a manner fimilar to the other frame. The next time, the alternate guides are fhifted endways, fo as to apply themfelves to other needles than thole they ware oppolite before. This croffes 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. Ali the parts of this machine, execpt the guides, are moved by means of treadles, inltead of ufing the hands, as in the common flocking firame. The net produced by thefe frames is woven in bands of the width of the intended lace, leaving a wider mefh thain the others, through which the divifion is to be made to Feparate the lace into narrow ftrips. Before cutting up in this manner, the lace is fpread in a frame, and a common needle with a thick thread is worked in the mefhes, 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 prefent in a itate of flagnation, being chiefly dependent on foreign trade, as it has never been in fuch great repute with the Britifh ladies.

Lace is alto made of gold and filver tbread (which fee), much in the fame manner as the bone or blond lace above defcribed. The importation of gold and filver lace is prohibited. Great quantitics of the finelt blond laces have been imported from Flanders. By 3 Geo. III. c. 21. and 5 Geo. III. c. 48. if any perfon fhall import any ribbauds, laces, or girdles, not made in Great Britain, whether the fame fhall be wrought of filk alone, or mixed with other materials, the fame fhall be forfeited, and may be feized by any officer of the cuttoms, in whatever importers', venders', or retailers' hands they may be found; and the importer, and every perfon affilting therein, and the venders and retailers in whofe cuftody they fhall be found, or who fhall fell or expofe the faine to fale, or coaceal with intent to prevent the forfeiture, fhall forfeit refpectively 200\% with colls half to the king, and half to the officer who Ihall inform and profecute.

Lace is alfo ufed for a kind of chord made of filk or cotton, chiefly ufed in lacing women's ftays.

## Lace Bark. See Dapine.

LACED※MON, in Ancient Geography, a celebrated town of Greece, in the Peloponnefus, in a country which was originally called Laconia, and afterwards changed into Lacedæmon, or Sparta. See Sparta. See alio Laconia.

LACED ÆMONIANS, the inhabitants of Laconia, are faid to have derived their name from Lacedæmon, herr and fucceffor of Eurotas, whofe daughter he married. Their ancient name was Icleocrates, which has been found in fome ancient infcriptions. The commencement of their liftory is little known. But their firit king, according to the chronology molt gencrally received, was Lelex, furnamed Autochtos, becaufe he was fuppofed to have been one of the Aborigines; and from him his fubjects bore the ancient name of Leleges. He began his reign in the year 1516 B.C., was fucceeded by his eldeft fon Myles, and Myles was fucceeded by his fon Eurotas, who, having no male iffue, appointed for his fuccefior Lacedæmon, the fuppofed fon of Jupiter by Taygeta, to whom he gave his daughter Sparta in marriage. Lacedæmon was the firft king of the Lacedxmonian line, which confifted of twelve fovereigns, the laft of whom was Tifamenes, who terminated this line in $110+$ 3.C., upon the return of the Heraclidx into the Pcloponnefus. In inoz B.C., upon the divifion of the Peloponnefus by the Heraclidx, the kingdom of Lacedæmon or Sparta commences under Procles and Euryfthenes, the two fons of Aritodemus, the chief of the Heraclidx. Euryfthenes was fucceeded by his fon Agis, from whom the defcendants of that line had the appellation of A gidx, or A'giadx: and the firlt princes of the former line were denominated Proslidx, till Eurytion, or Eurypon, the third
of this line, exchanged it for Eurytionitx, or Eurypontidx. In the line of Agis fucceeded Wechettratus 1058 13.C., lanbotas 1023 B.C., Doryfus 9 Sif, B C., A gefilaus 957 R.C., and Archelans 9 r. B.C. The fucceffors of Procles were Ivas ro60 B.C., Eurypon rozs 13.C, Irrytanis 1021 B.C., Eunomus 996 B.C., and P'olydectes 907 B.C. Lycurgus, the fon of Eunomus, fucceeded Polydectes, but he only retained the kingdom till his filter was delivered of a fon, to whom he immediately refigned it; hut his fituation being rendered uncafy, he fet out for Crete about eight monthis efter 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 goverument ; and for this purpofe he returned to Lacedæmon in the year $\mathrm{SS}_{4} \mathrm{~B} . \mathrm{C}$.

The government of Lacedxmon was, as we have feen, originally monarclical; ard though the kings had fome fubordinate magiltrates, chofen by themfelves, of whofe counfel they occafionally availed themfelves, yet the will of the fovereign was the fupreme law. Thus the fovereign power palfed through a fucceffion of twelve princes, from Lacedamon, the fon-in-law of Eurotas, and founder of this monarchy. Under Eury llhenes and Procles the govermment took a new form, and inftead of having one fovereign, it became fubject to two. Thefe two brothers governed jointly, and with equal power and authority, each bearing the title of king of Lacedxmon, and being acknowledged and obeyed as fuch. In this bipartite condition the government continued under a fucceflion of thirty princes of the line of Euryllihenes, and twenty-feven of that of Procles, and it terminated in bothabout the fame time. Difcords, however, were unavoidable, and foon commenced. Two parties were formed, and they became turbulent and unmanageable. By the divifions that were thus occafioned, the regal dignity funk into fuch contempt, that the government was upon the briak of falling into anarchy and confugion, when Lycurgus, as we have faid, undertook the management of it, during fome part of his nephew Charilaus's minority. During the period of his voluntary abfence, when he had travelled through Crete, Alia, and Egypt, the government had become fo corrupt, that not only his friends, but even thofe who had been his molt zealous enemies, were glad to repeat their embaffies, entreating him to return and fave his country from ruin. Thefe were the inevitable confequences of that fatal divifion of the regal authority betseen 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 conitituting a fenate, endowed with the fupreme 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 Afra he had obferved the effects which are produced by different governments and menners, and he had alfo availed himfelf of the opportunities which Egypt had afforded him of gaining wifdom. With a view of giving greater effect and ftability to his new con!titution, he had, like other legiflators, taken care to fecure the approbation of heaven. With this view, he confulted the oracle at Delphi, and had received for anfwer: "the gods accept thy worfhip, and under their aufpices, thou fhalt frame the mott excellent of political conflitutions." Nor did Lycurgus ever afterwards neglect to maintain a correfponderce with the Pythia, who fucceffively impreffed on his laws the feal of divine authority. He alif, before he commenced his operations, fubmitted his plan
to the examination of his friends and the moft diflinguifhed citizens; and from thefe he felećted thirty, who were to attend him completely armed in the general atrembly, and w defend him from thote perfonal affaules which he had reafori to apprehenel in the promulgation of his laws. At length the new conltitution was approved by all orders of the flate. Yet, notwithtanding its excellence, it was not alfured of duration. Lycurgus, therefore, when the people were alfembled, thus addreffed them: "It itill remains for me to lay before you the mof important article of my legifation; but I wih firit to confult the oracle of Delphi. Promife me that, until my return, you will make no alteration in the laws already eitablifhed." They promifed him. "Swear it," faid he. The kings, fenators, and citizens, called the gods to be witnefics to their words. This folemn engagement could not but be irrevocable, for it was his refolution never more to return to his country. Accordingly he immediately repaired to Delphi, and enquired whether the new laws were fufficiont to enfure the happinefs of the Spartans. The Pythia, having. anfwered, that Sparta would be the molt flourifing of cities fo lorg as fhe fhould continue to obferve them, Lycurgus fent that oracle to Lacedæmon, and condemned himfelf to voluntary banifhmert. He died far from the country of whofe happinefs the had been the caufe. See Licultgus.

In fettling the gorernment of Lacedxmon, Lycurgus was too wife to abandon the adminititration of public affairs to the caprices of the multitude, or to leave it entirely to the will of the two prinecs on the throne. He Jought, as we have a!ready faid, a mean, by which he might reltrain and temperpower by wifdom; and he thought that he had found it in Crete, where a fapreme courcil moderated the authority of the fovereign. Such an eftabiifment he introduced at Sparta, under the appellation of a fenate. Twenty-eight aged men, of confummate experience, were appointed to thare with the two kings the plenitude of power. In this auguit fenate the great interelts of the thate were to be difcufled ; here the two kings prefided, and every queftion was to be decided by the plurality of voices ; and the determinations of this council were afterwards laid before the gencral affembly of the flate, which had the power of approving or rejecting, but not of altering them. For abour 130 jears the fenate maiatained a juft equilibrium between the kings and the people ; but the places of the fenators', as well as ti.e authority of the kings being held for life, it was to be feared that,-in time, thefe might too clofely unite, and no longer find any oppofition to their will. It was therefore deemed advifable, with the fanction of the Delphian oracle, to transfer a part of their functions to five magiftrates, called. Ephori, or infpectors appointed to defend the people in cafe of oppreffion. This new intermediate budy was inflituted, with the confent of the ftate, by the king Theopompus; or, if it had been originaily eftablifhed by Lycurgus hinifelf, it was revived, with fome additional powers and prerogatives, by Theopompus. (See Ephori.) The conilitution of Lycurgus contained a happy mixture of monarchy, ariftocracy, and democracy. Theopompus added to thefe an oligarcliy which afterwards became tyrannical. Although Lycurgus limited the authority of the kings, he left them honours and prerogatives which they enjoged as the heads of religion, the adminiftration, and the army. Befides certain prielthoods, which were exercifed by themfelves, they regulated the public worthip, and appeared at the head of the religious ceremonies. One of their prerogatives invelted them with the right of maintaining a fecret correfpondence with the prielts of Delphi, the authors of thofe oracles which often decided the fate of an empire; and this may be confidered as one of

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the mof important privileges in the pofeffion of royalty. As head of the !tate, the king, upon a!cending the throne, might annul the debts which a citizen had contracted either with his predeceflor, or with the republic; and he poffeffed certain portions of inheritances, affigned him by the people, which he might diftribute during life in favour of his relations. The two kings prefided in the fenate, and propofed the fubjects for deliberation. Each gave his fuffrage in perfon or by proxy ; and this tingle fuffrage was equivalent to two. When the two kings agrced i:3 propoling any project of manifet utility to the public, no perfon was permitted to oppofe it. All caufes relative to the maintenance of the lighways, the formalities of adoption, or the choice of the kinfman who fhould be obliged to mariy an orphan heirefs, were fubmitted to the decition of the kings. The kings were not allowed to be abfent during peace, nor both at once in time of war, unlefs there were two armies in the field. They had by right the command of the army, with fech appendages of fplendour and authority that might enfure them refpect and obedience. The ttate provided for the maintenance of the general and his houfehold, with the neceffary attendants. Accordinedy, he had full leifure to direct the operations of the campaign, to fign truces with the enemy, and to give andience and anfwers to the embafiadors of foreign powers. In time of peace the kings were confidered merely as the firlt citizens of a free city; appearing in public without a retinue, and without offentation. As firit citizens they occupied the firlt place, and every perfon rofe in their prefence: and in all repatts, public and private, they were allowed a double portion, which they fhared with their friends. When the kings died, they were honoured with various tokens of refpect.

The fenate, confilting of the two kings, and twenty-eight aged perfons, were the fupreme council, in which were difcuffed, in the firlt inflance, all quettions relative to declaring war, concluding peace, entering isto alliances, and other high and important aftairs of thate. The dignity of a me:nber of this council was never granted but to the cirizen who, from his earlieit yoush, had been diftinguifhed for confummate prudence and eminent virtues; nor could he arrive at it before the age of tixty years, and he retained it till his death. The clection took place in the forum, where the people were aitembled with the kings, fenators, and the different claffes of magithrates; 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 refpected the ftate, and others related to particular cafes, which were referred to the judgrment of the members. - On this tribunal depended not only the lives, but the honours of the citizens. When a king was accufed of having violated the laws, or betrayed the interefts of the flate, the tribunal which acquitted or condemned him was compofed 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 poople from among the citizens of every rank; they, were five in number, and changed every year, to prevent their abufing their authority. (See Eruoni.) We thall here add, that the kings in their own name, and the eph:ori 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 fhall not viokate the laws.

As the Spartans had interefts peculiar to themfelves, they had alfo 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 clallis of the magitrates. Witen the fucceffion to the throne was to be regulated, when magittrates were to be chofen or depofed, when fentence was to be pronounced on public crimes, or the great objects of religion or legiflature were to be decided upon, the aifenbly was only compored of Spartans, and was called the "leffer affembly:" The ordinary affembly of this kind was held cvery month; the extraordinary whenever circumftances required. Every one had a right to give his opinion, provided that he had pafed his zoth year, for before that age he was not allowed to Ipcak in public; and it was required alfo that his manners foould be irreproachable. The general affembly was convoked whenever the queltion related to making war or peace, or contracting alliances. The deputies of the cities of Laconia were then admitted into it, as were alfo frecquently thofe of the allied itates, and of the nations who came to implore the fuccour of Lacedæmon. On occafions of this kind, the kings and fenators frequently fooke, and their authority hiad great weight; but that of the ephori was greater. When the question had been fufficiently debated, one of the ephori alked the opinton of the affer.bly; upon which a multitude of voices exclaimed for the affirnaative or negative. In order to determine the majority, the fame magiltrate afcertained it by numbering the two parties, which he caufed to feparate.

As a gereral prelininary to the laws of Lycurgus, we fhall here observe, that this legifator ordained, that the magiltrates fould not be appointed by lot, but elected by fuffrages. He deprived riphics of the influence and refpect annexed to them, and divefted even love of jealoufy. And though he granted fome difinctions, the government, having imbibed his fipirit, never prodieally lavihed them, and virtuous men dared not folicit them. Honour was the moft valuable reward, and reproach the moft crucl punifhment. Death was fometimes inflicted, but a fentence of this kind followed a vary careful and rigorous examination, for nothing was regarded fo precious as the life of a citizen. Execution was performed in the prifon, and during the night, that the firmnefs 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 multiplies.

Of all the inflitutions of Lycurgus, the divifion of lands was that which required, on his part, the greateft degree of firmnefs and refolution, becaufe it was likely to be much oppofed, and to occafion various and violent contelts. He thought it, however, neceflary for ellablifling peace and good order in the commonwealth. With a view of banifhing from the community infolence, envy, fraud, luxury, and at the fame time, extreme poventy and exceffive wealth, he perfuaded the citizens to furrender all their lands to the flate, and to allow a new divifion of them, that they might live together in a perfect equality, and that virtue and merit Glould eltablifh the only claim to pre-eminence and honours. This fcheme was no fooner propofed than executed. The diltrict of Sparta was divided into 900 portions of land, and the rell of Laconia into 30,000. Each portion'affigned to a head of a family mult have produced, befides a certain quantity of wine and oil, $y 0$ meafures of barley for himfelf, anid I2 for his wife. This is Plutarch's account. Others fay, that he only beftowed on the Spartans 6000 portions, to - which king Polydous is faid afterwards to have added $3000^{\circ}$. And others again fay, that the Spartans received one half of thefe 9000 portinns from Lycurgus, and the other half from Polydorus. After Lycurgus had made this ditribution, he thought it advifeable to abfent himfelf, that the palions of the people might have leifure to fubfide and cool.

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On his return, he found the fields of Laconia covered with clufters of hieaves, all of the fame fize, and placed at diftances nearly equal. Accordingly he feemed to behold a large domain, the productions of which had been divided among bretbren; while the Lacedrmonians belicved they faw i: him a father, who had manifetted no more fondneff for one than for the reft of his children. After having divided their immoveables, he undertook likewife to make the fame equal divifion of all their moveable goods and chattels, that he might uterly banifh from among them every kind of inequality. But apprehending invincible oppofition to this meafure, he endeavoured to accomplifh his object by fapping the foundations of avarice. With this view he cried down all gold and filver money, and ordained that no other fhould be current belides that of iron; which he made fo heavy, and fixed at fo low a rate, that a cart and two oxen were neceffary to carry home a fum of ro minas (equal to about $20 \%$. fterling), and a whole chamber to keep it in. He next banifhed all ufelefs and fuperfluous arts from Sparta. But without doing this, mot of them muft have funk of themfelves, and difappeared with the gold and filver money ; becaure the tradefmen and artificers would have found no vent for their commodities; and this iron money had no currency among the other Grecian ftates, which fo far from efteeming it, made it the fubject 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 flate. Intereft was alfo 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 eldeft of his children was entitled to the inheritance, in the fame manner as in the royal family, the eldeft fon fucceeded by right to the crown. In order to provide for the other children, he eftablifhed other regulations. The land, as well as the perfons of the Spartans, were free from all impofitions. The flate had no treafure. On certain occafions the citizens contributed according to their abilities, and on others they had recourfe to means which evince their exceffive poverty. The deputies of Samos once came to Lacedrmon to folicit the loan of a fum of money. The affembly of the people, having no other refource, ordered a general falt to be obferved by the free citizens, naves, and domeftic animals, and gave the fum thus faved to the Samians.
Another regulation of Lycurgus, was that of public meals. That he might entirely fupprefs the magnificence and extravagance of public tables, he ordained that ail the citizens fhould eat together of the fame common vietuals, which the law prefcribed, and exprefsly forbade all private eating at their own houfes. By this fettlement of public and common meals, and by this frugality and fimplicity in eating, he depreciated the value of riches, and made them of no ufe as means of procuring the luxuries of life. This regulation, however, was very offenfive to the opulent. At thefe meals, each table accommodated about 15 perfons; and every perfon furnihed every month a bufhel of flour, eight meafures of wine, five pounds of cheefe, $2 \frac{\pi}{2}$ pounds of figs, and a fmall fum of money for preparing and cooking the vietuals. Every perfon, without difrrimination, was obliged to attend at the common meal.' At thefe public tables the children obtained inftruction and improvement ; they were likewife trained and accuiftemed to great fecrecy; for as foon as a young man came into the room, the eldeft perfon of the company ufed to fay to him, pointing to the door, "Nothing
fpoken here, muft ever go out there." The moft exquifie 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 otherwife, 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 thirft. Thefe, he was told, are the ingredients with which we feafon all our food. As they were moderate in their eating, they were no lefs abltemious in their drinking; the Lacedxmonians only drank to quench thirtt; drunkennefs was reckoned infamous among them, and feverely punifhed; and that young men might conceive the greater abhorrence of this fpecies of debauchery, the flaves were compelled to drink to excefs, that the beaflinefs of the vice might appear. When they retired from the public meal, they were not allowed any torches or lighte, becaufe it was expected, that men who were perfectly fober, fhould be able to find their way in the dark; befides, this practice gave them a facility of marching without light, a quality very ufeful to them in time of war.

As to drefs, there was no diftinction between the rich and poor. Their garments were made for ufe and not for fhow: and they were taught betimes to diftinguifh themfelves by their virtue, rather than by their robes. Boys were always ufed to go without fhoes, nor were they permitted to cut or trim their hair. Baths and anointing were not much in ufe among the Lacedæmonians; the river Eurotas fupplied the former, and exercife the latter. Young women wore their velts, or jerkins, only to their knees, or, as fome fay, not fo low; a cuftom which has been cenfured both by Greeks and Romans as indecent. Gold, precious flones, and coflly ornaments were permitted only to common women; which permiffion was the ftrongeft prohibition to women of virtue, or fuch as valued their reputation. Virgins went abroad, without veits, 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, becaufe he did no: wifh to fet bounds to virtues, and left the people, imagining they had done all which their duty required, fhould defift and not do all which they are able to perform. But he did not conceal them; they were tranfmitted from mouth to mouth, cited on all occafions, 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 in fubmit them to examination, fince they had been received as the commands of hearen, and fince the authority of the laws was founded only on the profound veneration they infpired. Nor was it allowed to praife the laws and ufages of other nations; becaufe, unlefs the people were perfuaded that they lived under the beft legination, they would foon be led to defire a new one. Indeed, obedience was, among the Spartans, the firt of virtues.
Lycurgus confidered the education of youth, in every ftage of it, from the earlieft infancy to maturity, as the molt important objet of a legilator's care. His grand principle was, that children belonged more to the flate than to their parents; and therefore he ordered the ftate to be entrufted with the general care of their education, that they might be formed on conflant and uniform principles, by which they might be infpired with the love of their country, and of virtue. As foon as a boy was born, the elders of each tribe vifited him; and if they found him well made, ftrong and vigorous, they ordered him to be brought up at the public charge; but if, on the contrary, they found X him

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him deformed, tender, and weakly, he was caft into a gulf near mount 'l'aygetus. This law, it has been faid, feems to have been calculated, in one refpect, to render women very careful, when they were pregnant, of eating, drinking, or uling exercife to excefs; and it alfo feemed to make them excellent nurfes, for which employment they were celebrated throughout Greece. At his carlieft age the child was accultomed to the moft hardy treatment in his food, drefs, rett and general mode of life. He was to be ufed to folitude and darknefs, and to be brought up a ftranger to imprefions of terror, ulelefs rettraints, and unjuft reproaches. At the age of feven years his education according to the laws commenced, and he was trained up under the difcipline appointed by the ftate. Education, indeed, in the whole courfe of it, was, properly fpeaking, an apprenticefhip of obedience. While they were at table, the malter infructed the boys by akking them queftions, to which they were to give a quick and concife, or laconic anfwer. Lycurgus, it is faid, was for having the money bulky and heavy, and of little value, but their language very pithy and flort, comprifing much fenfe in few words. 'To literature they paid little attention; for all the fciences were banifhed from the country. The principal objects of their Itudy were obedience, the patient enduring of hardfhip and fatigue, and victory in battle. The fuperintendant of their education, was one of the moft honourable men of the citr, and of the firlt rank and erudition, or one of the ephori, who appointed over every clafs of boys, into which they were initiated, malters of the molt approved wildom and probity. Strict obedience, and great refpect to their ctders and fuperiors, were matters feduloufly inculcated in the Spartan fyltem of education. To the old men the youth rofe up, whenever they came into any public place; when they met them in the ftreets they gave way; and they were filent, whenever their elders fpoke. All the old men were dcemed to have the authority of parents and warranted in the exercife 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 ftill farther: for if an old man was prefent when any youth committed a fault, and did not reprove him, he was punihed equally with the delinquent. Amongft the youths there was one of their own body, or, at molt, two years older than the relt, who was denominated "iren;" he had authority to queftion all their actions, to watch their behaviour, and to punifl them if they did amifs; and their punifhments were not flight, but fevere. Silence was highly commended at Sparta, where modefty, not only in words and actions, but in looks and geltures, was held to be a moft becoming virtue in young people. An inconfiderate perfon, who would not liften to inftruction, and who feemed 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 neceffary for the benefit of the community, fuch as agriculture and the like, were left to their flaves, the Helotes; but arts, fubfervient to luxury, were wholly interdicted. Thus orators or rhetoricians, augurs, bankers, and dealers in money were excluded. The Spartans admitted no theatrical diverfions among them; but other kinds of poetry were allowed, provided the magittrates had the perufal of pieces, before they were introduced to the public. Mufic was much encouraged, provided that it was fuch as had been in favour with their anceftors; and they would not permit their flaves to learn either the air or the words of their molt admired pieces.

Among the effects of ancient mufic, in foftening the manners, promoting civilization, and humanizing men, naturally favage and barbarous, the monf fingular and Atriking
is related by Polybius, the hittorian, a grave, exact, and refpectable writer, who, in fpeaking of feveral aets of cruelty and injuafice exercifed by the 巴tolians, againft their neighbours the Cynotheans, has the following remarkable paffage, which we fhall give at full length, from Mr. Hampton's excellent tranflation.
"With regard to the inhabitants of Cynætha, whofe misfortunes we have juft now mentioned, it is certain, that no people ever were. elteemed fo juftly to deferve that cruel treatment to which they were expofed. And fince the Arcadians, in general, have been always celebrated for their virtue throughout all Greece; and have obtained the higheft fame, as well by their humane and hofpitable difpofition, as from their piety alfo towards the gods, and their veneration of all things facred; it may perhaps be ufeful to enquire from whence it could arife, that the people of this fingle city, though confeffed to be Arcadians, fhould, on the contrayy, be noted for the favage roughnefs of their lives and manners, and diftinguifhed by their wickednefs and cruelty above ail the Greeks. In my judgment then, this difference has happened from no other caufe, than that the Cymatheans were the firft and only people among the Arcadians, who threw away that inftitution, which their ance[tors had eftablifhed with the greateft wifdom, and with a nice regard to the natural genius, and peculiar difpofition of the people of the country; I mean, the difcipline and exercife of mulic: of that genuine and perfect mufic, which is ufeful indeed in every ftate, but abfolutely neceffary 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 hiftory, and which indeed is very unworthy of that writer, that mulic was invented to deceive and delude mankind. Nor can it be fuppofed, that the Lacedæmonians, and the ancient Cretans, were not influenced by fome good reafon, when, in the place of trumpets, they introduced the found of futes, and harmony of verfe, to animate their foldiers in the time of battle: or that the firf Arcar dians acted without ftrong neceffity, who, though their lives and manners, in all other points, were rigid and aultere, 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 ycars, to perfift in the conttant ftudy and practice of it. For all men know, that Arcadia is almott the only country, in which the children, even from their moft tender age, are tanght to fing in meafure their fongs and hymns, that are compofed in honour of their gods and heroes : and that afterwards, when they have learned the mufic of Timotheus and Philoxenus, they affemble once in every year in the public theatres, at the feaft of Bacchus ; and there dance, with emulation, to the found of flutes, and celebrate, according to their proper age, the children thofe that are called the puerile, and the young men, the manly games. And even in their private fealts and meetings, they are never known to employ any hired bands of mufic for their entertainment ; but each man is obliged himfelf to fing in turn. For though they may, without fhame or cenfure, difown all knowledge of every other fcience, they dare not on the one hand diffemble or deny, that they are fkilled in mufic, fince the laws require, that every one fhould be inftructed in it ; nor can they, on the other hand, refufe to give fome proofs of their fkill when afked, becaufe fuch refufal would be eftcemed difhonourable. They are alfo taught to perform in order all the military fteps and motions, to the found of inftruments: and this is likewife 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 thefe cuftoms, to be the inftruments of

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luxury and idle pleafure: but becaufe they had confidered with attention, both the painful and laborious courfe of life, to which the Arcadians were accuftomed; and the natural aufterity alfo of their manners, derived to them from that cold and heavy air, which covered the greateft part of all their province. For men will be always found to be in fome degree affimilated to the climate in which they live: nor can it be afcribed to any other caufe, that in the feveral nations of the world, diftinct and feparated from each other, we behold fo wide a difference, in complexion, features, manners, cultoms. The Arcadians, therefore, in order to fmooth and foften that difpofition, which was by nature fo rough and ftubborn, befides the cuftoms above defcribed, appointed frequent feftivals and facrifices, which both fexes were réquired to celebrate together; the men with women, and the boys with virgins ; and, in general, eftablifhed every inftitution, that could ferve to render their rugged minds more gentle and compliant, and tame the fiercenefs of their manniers. But the people of Cynatha, having flighted all thefe arts, though both their air and fituation, the moft inclement and unfavourable of any in Arcadia, made fome fuch remedy more requifite to them than to the reft, were afterwards engaged continually in inteftine tumults and contentions; till they became at laft fo fierce and favage, that, among all the cities of Greece, there was none in which fo many and fo great enormities were ever known to be committed. To how deplorable a ftate this conduct had at laft reduced them, and how much their manners were detefted by the Arcadians, may be fully underitood from that which happened to them, when they fent an embaffy to Lacedxmon, 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 pafs, they were commanded by the public crier inftantly to be gone. The Mantineans alfo expreffed even fill more flrongly their abhorrence of them: for as foon as they were departed, they made a folemn purification of the place; and carried their victims in proceffion round the city, and through all their territory.
"This then may be fufficient to exempt the general cuftoms of Arcadia from all cenfure; and at the fame time to remind the people of that province, that mufic was at firlt eftablifhed in their government, not for the fake of vain pleafure and amufement, but for fuch folid purpofes, as flould engage them never to defert the practice of it. The Cynretheans alfo may perhaps draw fome advantage from thefe reflections; and, if the deity fhould hereafter blefs them with better fentiments, may turn their minds towards fuch difcipline, as may foften and improve their manners, and efpecially to mufic; by which means alone, they can ever hope to be divefted of that brutal fiercenefs, for which they have been fo long diftinguifhed."
Though Polybius in this paffage feems to attribute the happy change that was brought about in the manners of the Arcadians tomufic alone, it does not appear to merit all the honour, as a confiderable part was doubtlefs due to the poctry that accompanied it ; which being grave, majeftic, and full of piety and refpect for the gods and heroes, whofe glorious actions and benẹfits were celebrated in it, muft have had great influence upon the minds of young perfons, in whofe education thofe two arts had fo confiderable a fhare.

Thucydides, as quoted by Aulus Gellius (lib. i. cap. i i.) fyys, when the Lacedæmonians went to battle, a Tibicen played foft and foothing mulic to temper their courage, left by an ardent temerity they fhould have rufhed on with too great impetuofity; for, in general, they had more need of having their courage repreffed than excited.

However, in an engagement with the Meffenians, they
were very near being difcomfited, when the celebrated 'I'yrtæus, 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 fo reanimated their courage, repreffed by the preceding mode, that they obtained a complete victory.

The Lacedæmonians, though a military people, of auftere manners, appear at all times, notwithftanding their inhofpitable law againtt the admiffion of ftrangers, to have invited eminent muficians into their country, and to have encouraged mufic; not only in order to regulate the fteps, and animate the courage of their troops, but to grace their feftivals, and fill their hours of leifure in private life.

Athenxus tells us (lib. xiv.), that they had a flute painted on their enfigns and ftandards.

There was one kind of theft to which the boys were ac cuftomed, and which was even authorifed 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 punifhed for want of dexterity. The defign of the Spartan legiflator in allowing this practice, was to infpire the Spartan youth, who were all defigned for war, with a view to felf-defence, and not to extent of dominion, with boldnefs, fubtlety, 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 fhift for themfelves. The patience and conftancy of the Spartan youth were fignally exemplified in Diana's feltival, called "Orthia," which fee. The molf ufual 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 Lacedxmonians, becaufe it had a tendency to prevent corpulence, which incurred public contempt, if not banifhment, and to ftrengthen their limbs, and to render thofe who practifed it fupple and fleet. They had a kind of public dances, in which they much delighted, common alike to virgins and young men. Indeed, in all their fports, girls were allowed to divert themfelres with the other youths; infomuch that, at darting, throwing the quoit, pitching the bar, and the like robuf diverfions, the women were as destrous as the men. For the manifelt peculiarity of this cuftom, Lycurgus affigned no other reafon, than that he fought to render women, as well as men, ftrong and healthy, that their children might refemble them. The laborious life ceafed with the age of $30:$ and they then employed themfelves wholly either in affairs of flate, or of war.

As to the laws relating to religion, they prefcribed that the ftatues of all the gods and goddeffes worfhipped by the Spartans, fhould be reprefented armed, even Venus herfelf; that the people might regard a nilitary life the moft noble and honourable, and not attribute, as other nations did, floth and luxury to the gods. Their facrifices confifted of things of fmall value; that indigence might never hinder them from worthipping the gods. They were forbidden to make long or rafh prayers to the heavenly powers, and were enjoined to afk no more, than that they might live honeflly, and difcharge their duty. Graves were allowed in their city, and they buried clofe to the temples, that all people might be familiar with death, and not conceive of it as a thing dreadful in itfelf, or that dead budies defiled the living. Magnificent fepulchres were forbidden, nor was the plaineft or moft modeft infcription permitted, except for fuch as were flain in the wars, or for women who had devoted themfelves to a religious life. Tears, fighs, and outcries were not permitted in pubiic, becaufe they difhonoured Spartans, who ought to bear all things with equanimity.
Mournings were reltricted to feren days.
Celibacy in men was regarded as infamous, and punifhed

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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 thofe alfo were who married above or below themfelves. Such as had three children had certain immunities, and thofe who had four were free from all taxes. Virgins were married with out portions; hulbands were allowed to beat their wives; and there were fonte other laws which we flall not here recite. The men of Sparta are generally faid to havebeen dittinguifhed for their virtue; but the Spartan women have been as generally decried for their boldnefs, 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 thefe regulations, Lycurgus thought to prevent litigioufnefs, and that multiplicity of fuits which are always fatal in a ltate. Perfons of abandoned characterloft all right of voting or fpeaking publicly on public affairs; for it was a perfuation among the Spartans, that a man of a bafe character in private life could not ferve his country from motives of triue 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 converfations and mutual intercourfe which frequently occurred, thier public monuments, and their inferiptions. Accordingly Lycurgus would not allow all forts of perfons to travel, left they fhould bring home foreign manners, and return infected with the licentious cultoms of other countries, and thus become averfe from the life and maxims of Lacedrmon. On the other hand, he would fuffer no ftranger to remain in the city, who did not come thither to fome ufeful or profitable end, or out of mere curiofity, left they fhould diffeminate the vices of their own countries. A foldier was the only reputable profeffion in Sparta; a mechanic or hufbandman was looked upon with contempt. War, indeed, was the trade and bufinefs of the Lacedrmonians, and the firf law of war with them was never to fly, or turn their backs upon their enemies, however fuperior in number ; never to quit their poit; never to deliver up their arms; in a word, either to conquer, or to die upon the fpot. Hence it is, that a mother recommended to her fon, who was going to make a campaign, that he fhould return either with or upon his fhield; and that another, hearing that her fon was killed in fighting for his country, anfwered very coldly, "I brought hims into the world for no other end." A Spartan lady, having heard that her fon had fied from a battle, wrote him this fhort letter, "Fame fpeaks ill of you; cfface 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 affiltance, they might be enabled to perform deeds worthy of being recorded to lateft times. Then the army advanced in order to the found of flutes, which played the hymn of Caftor. The king himfelf fung the Pæan, which was the fignal to charge. When their enemies began to fly they purfued no longer than till victory was afcertained; becaufe they would feem 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 .jo, the Spartans were not held invalids till they were 70. It was one of the wifent maxims in the political fyltem of Lycurgus, that he forbade the Spartans to fight often againft the fame enemy. They were forbidden to meddle with maritime affairs, though in procefs of time they were forbidden to tranfgrefs this inftitution.

It has been faid that Lycurgus was the author of that
political expedient for leffening the number of flaves, or Helotes, in Sparta, called "Cryptia," i. e. the ambufcade, when the flaves were thought too numerous. Such as had the care of educating the Spartan youth, felected the ftoutell of them, and having armed them with daggers, fent them out to deftroy 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 Ariftotle exprefsly lays it to his charge; but when or however it was made, it was undoubtedly a cruel unneceffary expedient, in all refpects unworthy of a virtuous people. The abbe Barthelemi (Trav. Anach. vol. iv. p. +8 I.) has, in our opinion, fatisfactorily vindicated Lycurgus from the charge of having inltituted fuch a practice. Plato himfelf recommends, that in a well governed ftate, the youth, as foon as they are of fufficient age, fhould, during two years, range the country with arms in their hands, braving the rigours of fummer and wintèr, leading a hardy life, and fubjected to a ftrict difcipline. As the Cryptia was only practifed among the Spartans, Plato has here defcribed the nature of it. In this and another fimilar paffage the object of the Cryptia is defribed, but not a word is faid of the chace of the Helots; of which no mention occurs in any of the uow remaining works of Ariftotle, nor in thofe of Thucydides, Xenophon, Ifocrates, and other writers of the fame age, though they often fpeak of the revolts and defertions of the Helots, and occafionally cenfure the laws of Lycurgus, and the cuftoms of the Lacedrmonians. The Abbé concludes, that till about the time when Plato wrote his treatife on laws, the Cryptia was not employed to fhed the blood of the Helots. Afterwards, $i . e$. a fhort time after the death of Plato, the laws loft their force, and the Spartan youth killed thofe Helots who made too much refiftance, and perhaps gave occafion to the decree of the ephori, which imported that the Helots might be murdered with impunity. The abufe increafing from day to day, the Cryptia was at length confounded with the chace of the Helots. According to Ariftotle the Cryptia was inflituted by Lycurgus. Plato explains its object and believes it to be extremely ufeful. When the manners of Sparta became corrupted, the youth of Lacedxmon, we are told, abufed this exercife to perpetrate horrid cruelties, which cannot be juftified, but which have been tranfmitted to us with exaggeration, and unjuflly charged upon the inflitution of Lycurgus.

The inflitutions of Lycurgus have been much extolled both by ancients and moderns, but they are unqueftionably liable to many objections. The legiflator himfelf, when he framed them, mult have been in a great degree devoid of that comprehenfion and fenfibility 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 thofe of parents and children. The underitanding was left in a great degree uncultivated; decency was profcribed, barbarity rendered familiar ; and all thofe tender fenfations that humanize fociety were fmothered, as it were, in the birth. The conftitution was a moft unnatural effeet of fpeculation, founded upon the mifery of the individuals that compofed the community: for if the Spartans were free with refpect to other nations, they were flaves to their own leginature. In a word, fay the authors of the Univerfal Hiftory, it was a difcipline calculated, not for a free people who had a right to cultivate the powers of reafon, and tafte the nobleft enjoyments of life, but for the defperate militia of a defpotic tyrant, who wants to extinguifh every fentiment of humanity, and produce a contempt of life by frripping it of all its comforts.

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Such an inflitution as that of Lycurgus, with all its defects and failings, is a jutt object of admiration : but it rould have been lefs wonderful, if it had fubfitted only during the life of the legiflator; however, we know that it fubfifted many ages after his deceafe in a greater or lefs degree of vigour and influence. Xenophon, in the encomium he has left us of Agefilaus, and Cicero, in one of his orations (Pro Flacc., obferves, Lacedæmon was the only city in the world that preferved her difcipline and laws for fo confiderable a term of ycars unaltered and iaviolate. "Soli," (fays Cicero, fpeaking of the Lacedxmonians), "toto orbe terrarum feptingentos jam annos amplius unis moribus ad nunquam mutatis legibus vivunt." In Cicero's time, however, the difcipline of Sparta, as well as her power, was very much relaxed and diminifhed. But all hittorians 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 fubvertizg the laws of Lycurgus. But the introduction of gold and filver, fays Rollin, was not the firlt wound given by the Lacedxmonians to the inflitution of the legiflator. It was the confequence of a violation of another law ftill more futndamental: ambition was the vice that preceded and made way for avarice. The defire of conquefts drew on that of riches, without which they could not have propofed to extend their dominions. The main defign of Lycurgus, in the eftablifhment of his laws, and efpecially of that which prohibited
the ufe of gold and filver, was, as Polybius and Plutarch have judicioufly obferved, to curb and reftrain the ambition of his citizens, to difable them from making conquefts, and in a manner to force them to confine themfelves within the narrow bounds of their own country, without carrying their vicws and pretenfions any farther. Indeed the government which he cittablifhed was fufficient to defend the fronticrs 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 exprefsly 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 fhadow of their arms, they might live in liberty, moderation, juftice, union, and peace, by being content with their own territories, without ufurping thofe of others, and by being perfuaded, that no city or ftate, any more than a fin. gle perion, can ever hope for folid and lafting happinefs, but from virtue only, On this fubject, fee Anc. Un. Hift. vol. vo Rollin's Anc. Hitt. vol. ii. Travels of Anacharfis, vol. iv.
The ftability, as well as the glory, of the Lacedxmonian government, was derived from the wife inflitutions of that celebrated lawgiver, of whofe government we have given an account. After the death of Lycurgus, the Lacedæmonian hiftory becomes perplexed, being fupplied from fcanty and fcattered materials.
The following table fhews the fucceffion of their kings, in both lines, with the duration of their reigns, from Lycurgus until the Achæan league.

Table of the Lacedxmonian Kings.

Agidx, or Family of Agis.


Machanidas the Tyrant.
Nabis ditto 14
Alexamenus the Etolian.
Lacedromon becomes a part of the Achæan league, 19x B. C.

## LACED $\mathbb{A M O N I A N S . ~}$

It would far exceed our limits to detail minutely the hif. tory of the Lacedxmonians during the feries of reigns which we have above enumerated. We mult content ourfelves with marking fome of its principal events, and particularly thofe in which their ambition led them to violate the conftitution eftablifhed by Lycurgus. We fhall find that inftead of employing their arms and exercifing their valour for maintaining their own independence, they were actuated by an ambition for making conquefts and extending their territories, by methods directly contrary to the rules of conduct which Lycurgus had preferibed. Charilaus, his nephew and pupil, began with an unfuccefsful war with the Argives, and with the Tageate, a people of Arcadia; and he then turned his arns againft the Achæans, who lad taken from the Lacedxmonians feveral frontier towns, which he and his colleague Teleclus recovered. But a more important event in the Lacedxmonian hifory was the Meffemian 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 Meffenian territory. In the profecution of this war, the Lacedemonians and their two kings took a folemn oath not to return till they had thoroughly reduced Meffeniz, by which oath they entered into an obligation to tranfgrefs two of the exprefs laws of Lycurgus; one of which forbade them to make conquefts, and the other which prohibited them from prolonging their war againit the fame people. Polydorus and Theopompus continued the war which had been begun by Alcamenes and Nicander; and conftrained the Meffenians to fortify a city which was fituated 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 expofed. The Lacedrmonians, regardlefs of that claufe in the laws of Lyycurgus, which cautioned them againt befieging fortified places, laid fiege to Ithome; and altogether deftitute of experience in this branch of military tactics, they were under a neceffity of continuing the fiege 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 conftitution of the Spartan government. The attention of the Spartans was diverted from the Meffenian war by a difpute with the Argives, concerning the city of Thyrea, and its diltrict, which, lying on the borders of Argolis and Laconia, occafioned great contentions between thofe ftates.
The Argives were defeated with great flaughter; but when Polydorus was urged to purfue his victory, and to attack Argos itfelf, he declined it with this noble declaration, worthy of the inflitution of Lycurgus, "that the Spartans fent him to affert their rights, but not to rob others." The Spartans, after having provided for the adminiftration of affairs at home, by the appointment of the ephori, renewed the Meflenian war, and marched with a great army towards Ithome, but they were defeated with great lois, and conftrained to betake themfelves to flight. At length, after an obffinate reliftance on the part of the Meffenians, they were obliged to furrender Ithome to the Spartans, and they themilves were treated with great rigour. The Spartans, during the Meffenian war, having been ten years abfent from the city, on account of their oath, which obliged them not :o return till they had entirely fubdued that country, were :eminded by a mefiage 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 joung men among them who came out of Sparta under age, ond on this account were not obliged by the onth, fhould
return, and affociating themfelves promifcuoufly with the unnarried women, preferve the city from falling into decay. This project being executed, thofe who were burn of fuch young women were called "Parthenix," that is, fons of virgins. When the Lacedæmonians returned, after having reduced Meflenia, they neglected thefe young men, who, finding themfelves involved in difficulties, for want of parents and an inheritance, intrigued with the Helotes, and formed a plot againft the ftatc. The plot, however, was difcovered, and they were fent off to Italy, where they fettled near Tarentum. In the reign of Anaxander and Anaxidanug, 685 years B. C., the fecond Melfenian war begun, and continued $1+$ years. It terminated with the capture of Ira or Era, after a fiege of in years, and by the conquelt of Meffenia, the inhabitants were made flaves, and the whole country was divided by the Spartans among their own citizens, the diftrict of Methone excepted, which they gave to the Argives. Nothing of any great importance occurred in the hiftory of the Lacedæmonians until the Perfian war. When Miltiades, the Athenian, fought the famous battle of Marathon, and defeated the Perfians, 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 comnended the Athenians, returned home again to Sparta. When this battle at Marathon excited the Perfians to attempt again the conqueft of Greece, the Spartans, with a refolution worthy of the difciples of Lycurgus, deternined to oppofe them. The ftates of Greece, apprized of the hoftile intentions of Xerxes, unanimoufly joined in a general affembly to defend its liberty againft the Perfians; but in the event, of all the confederates, the Spartans and Athenians were the only fates that feemed prepared to execute their purpofe. A refolution was formed to defend the ftraits of Thermopylx; 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 Lacedxmon. Of the 6000 foot, 300 only were Spartans. Leonidas himfelf confidered it as a defperate 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 Perfians coft them 20,000 men. The Grecian fleet, which lay at Artemifium, was entrufted to the command of Eurybrides, a Spartan, poffeffed of great perfonal courage, but timorous as a commander, and unexperienced in maritime affairs. When Mardonius attempted the conquert of Greece, Paufanias, the fon of Cleombrotus, who affumed the character of tutor or protector to Pliftarchus, the fon 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 diminifhed by defertion. At length the Lacedæmonians and Tegetæans were forced to engage Mardonius's army without affiftance. The Perfians, it is acknowledged, behaved well on this occafion; but being neither fo well armed, nor fo well difciplized as the Greeks, their valour was of no ufe but to expofe them to flaughter. The Perfians were defeated and Mardonius killed. The Perfian camp was forced; the Lacedrmonians opened a paffage; and then a mercilefs flaughter enfued. Of 300,000 men, whom Mardonius brought into the field, fcarcely 3000 efcaped. The number of Greeks that fell is uncertain ; Plutarch reckons them at 1360 , but Diodorus Siculus affirms pofitively, that they were very few lefs than 10,000 . On the fame day in which the battle of Platra was fought, (479 B.C.) Leotychides, king of Sparta, with Xanthip-

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pus, the Athenian, gained a glorious vietory at Mycale, where the laft remains of the Perfian fleet, 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 frict orders to free the Grecian cities from the Perfian garrifons. But he foon after intrigued with Artabazus, and engaged in a fcandalous treaty with the Perfians; 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 accufe 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 releafed him. He neverthelefs purfued his negotiations with Artabazus, till his intrigues were difcovered. 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 efcape, reduced him to the neceffity of flarving in the temple. At the end of the 77 th olympiad ( 465 B.C.) a molt dreadful earthquake happened at Sparta. Diodorus fays, that 20,000 perfons loft their lives; and Plutarch affirms, that only five houfes in the city efcaped ruin. In this year, 465 B.C., the third Meffenian war commenced, by the infligation of the Ifelotes, and lafted ten years. The next war which the Lacedxmonians undertook, was that ftyled the "Sacred," by fome the "Phocian" war; begun in the $44^{\text {Sth year }}$ B.C. The defign of it was to put the temple of Delphi into the hands of the inhabitants of the country, whereas it bad before belonged to the Phocians; this defign the Spartans effected; and they were recompenfed by a decree on the part of the Delphians, that they fhould have a right of firft confulting the oracle; which decree was engraved on the forehead of a brazen wolf, confecrated in the temple. The Athenians foon after, having reftored 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 fame time fhaking off the yoke, availed themfelves of this opportunity for giving a mortal blow to Athens; for which purpofe Pliftoanax 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 punihed Cleondrides with death, and fentenced 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 43I B.C. the Peloponnefian war began. Archidamus, the king of Lacedæmon, wifhed to avoid this war, and fent a meflienger to Athens, with a commiffion to this purpofe; but he was fent back unheard. After feveral incurfions into Attica, Archidamus died. He is faid to have been one of the beft kings that ever reigned in Sparta. Being afked, "who were governors of Sparta ?" he replied, "the laws, and the magiftrates according to thefe laws." During the reign of his fon and fucceffor 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 molt celcbrated men of Sparta. In the year 42 I B.C. a peace was concluded, after the war had raged for ten years. But in order to preyent too intimate an union between Sparta and Athens, feveral of the Peloponnefian ftates leagued themelves with Argos, which was a very powerful republic, and hoftile at this time to the Lacedromonians. After fome flights and affronts, the Spartans, much irritated, refolved on a war
againf them and their allies; and entered the territory of Argos with a large army. The Argives, being ill prepared for a confict, declined it, and obtained from A gis 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 $\Lambda$ gis, though inferior in number to the Argives and their allies, and very obltinately refifted, gained a complete victory. This happened in the year $4 \times 8$ 13.C. In the year 4I B.C. Agis entered the territories of Elis, in order to revenge the difhonour that had been done fome 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 Peloponnefian war was renewed. The Athenians having fent a great army into Sicily, the Lacedæmonians fent Gylippus to affilt the Syracufans; among whom he gained great reputation at firlt, 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 refpect by Agis, who received him into his houle; but in return for the hofpitality he experienced, he bafely 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 Lyfander, who proved the great hero of Sparta, and brought to a termination the Peloponnefian war. Lyfander was fuppofed to be of the royal family, and of the Herculean race; he paffed his younger years under all the reftrictions of the inftitutes of Lycurgus, and was thus rendered bold, hardy, patient, and refolute; his genius was extenfive, and in his difpofition and manners, he was affable, modeft, vigilant, and indefatigable; but with thefe great qualities he cherifhed the moft dangerous ambition, in order to gratify which he flooped to every fpecies of flattery and diflimulation; fo that to accomplifh his ends, he made no fcruple to violate the moft folemn oaths. When he entered on his command, he found the Athenians greatly fuperior 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 himfelf into the favour of Cyrus, who was then at Sardis, and obtained from him 10,000 pieces of filver, which he applied to the purpofe of fupporting his foldiers, and refitting his fleet. Whilt he lay at Ephefus, repairing his fhips and keeping his foldiers and mariners to their exercife, he projected a fcheme for making himfelf, in a manner, fovereign of Greece. After feveral previous manceuvres and changes of pofition, he attacked the Athenians, whofe 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 Peloponnefian war, and to the maritime power of Athens. After this victory ( 40 , 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 magittrate, and with him ten of his friends from Ephefus, where he crected a kind of political univerfity. Thefe men conducted themfelves with haughtinefs and feverity, and the Lacedæmonian government was thus rendered ungrateful; fo that the people were uni-

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verfally difpofed to fhake ir off as foon as they could. Lyfander collected the wealth which his viEtorics had put into his power, and deftined 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 flect of 200 fail; upon which, Agis and Paufanias, the two kings of $\mathrm{S}_{\text {parta, }}$ were fent, with a very large land army, into Attica. Lyfander entered Athens in triumph, on the anniverfary of the great victory at Salamis, April ${ }_{2} 4$, in the year 404 B.C., which completely finifhed the Peloponnefian war. (See Athens.) Lyfander, having accomplifhed this object, fent the immenfe treafures which he had collected to Sparta, under the care of Gylippus, whofe avarice and fraudulent difpofition led him to open the bags which contained them, and to take out what he thought proper. Upon his arrival at Lacedxmon, their contents were examined, and compared with a ticket which Lyfander had put into each fealed bag. The deficiency was foon difcovered; Gylippus was impeached by his fervant, and his crime being proved, he was exiled under the feandalous imputation of being a detected cheat. This influx of wealth occafioned great difputes at Sparta: thofe who were beft acquainted with the nature of their conftitution regarded the receipt of it as an open violation of the laws of Lycurgus, and they exprefled their apprehenfion, that in procefs of time they, would have reafon to repent this accef. fion of opulence. It was at laft determined, as a compromife of the fubfifting difputes, that the ftate might make ufe of the gold and filver, but that private perfons fhould poffefs neither, on pain of capital punifhments. Lyfander, while he remained in Greece, amply evinced his imperious difpofition; fetting up his own flatue, and thofe of his commanders, who were his favourites, and dedicating two ftars in honour of the deities Cattor and Pollux, two flars which his fycophants pretended had been feen in the rigging of his Ship, at the battle of Egos. The range of his ambition in Afie was ftill lefs reftrained. At length the ephori and fenate of Sparta difpatched a foytala (which fee) to recall kim. After fome tokens of difpleafure, the Spartans became reconciled to him, and in procefs of time extolled him for a man of integrity and true public fpirit, to the mortification of their king Paufanias, who had endeavoured to humble his pride and reftrain his infuence. Before Agefilaus was well fettled on the throne ( 397 B.C.), the king of Perfia declared war againt the Spartans: the king was, not without reafon, jealous of the power of Lyfander ; and a mifunderftanding between them taking place, Lyfander refolved to overturn the government of his country. But new difturbances occurring in Greece, he perfuaded the ephori and fenate once more to entruft 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 unfupported by Paufanias, who was more dilatory in his progrefs, was attacked by the Thebans and Haliartans, and killed on the (pot, and the Spartans were defeated. A treaty was concluded with Paufanias, on condition of his retiring out of Bœotia. But on his return to Sparta, fuch a fpirit of refentment appeared againft 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, notwithltanding the opportunities he had of enriching himfelf.

Agefilaus, having fubjected the greateft part of the coaft, determined to march into Perlia, and revenge the cruelties
perpetrated by Xerxes, when he invaded Greece; but being recalled, he returned without hefitation ; preferring his duty townrds the conftitution of his country to the profpect of fubduing the whole Perfian empire. During the reign and military exploits of Agefilaus (B.C. 393), Conon, the Athenian, threatened the Spartans with the lofs of their fovercignty by fea; upon which it was refolved at Sparta to fend Antalcidas into Perfia, to appeafe the great king, and to detach him from the interefts of their rivals. The negociations of Antalcidas prevailed, fo that a peace was co cluded ( 387 B.C.), called the peace of Antalcidas, by which the fovereignty of Greece was, in a manner, guaranteed to Sparta, but upon-very difhonourable terms, the Greek cities in Afia being entirely abandoned to the Perfians, notwithtanding 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 refolved to punifh all who had injured them. They began with the Mantineans, who had becn 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 diftrefs, 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 fhould lead them. Sparta exercifed a government that was arbitrary and cruel over all whom the had brought noft unjufty under her dominion; for, by the peace of Antalcidas, the had engaged that all the cities fhould be left free. The Perfian king perfifted in his defign to bring about a fettled 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 refufed to hear of peace, becaufe the Spartans infifted they fhould fet the cities of Bocotia at liberty. In this oppofition they were encouraged by Epaminondas, who demanded that, before the Lacedxmonians gave laws to others, they fhould fhew a proper regard to thbfe maxims of equity themfelves, by giving up. Meffenia to its ancient proprietors, and fetting Laconia free. This obitinacy violently incenfed Sparta, and offended Athens. Cleombrotus, with an army of 12,000 men, penetrated into Bootia, and advanced towards Leuctra. A truce, however, was concluded by the mediation of Jafon, a powerful prince of Theffaly. But as Cleombrotus was retiring, he met Archidamus, the fon of Agefilaus, with a reinforcement from Sparta; and thefe princes, notwithftarding the truce, marched back to Leuctra, fin order to fall on the Bcootians, where they found Epaminondas ready to receive them. The Spartans, in the battle of Leuctra, (fought July Sth, 37 I 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 Meffene, and recalled the ancient inhabitants of Meffenia from the feveral countries where they had taken refuge, and reftored them to the poffeffion of their ancient patrimony, after they had loft it 300 years. Having accomplihed this object, he offered the Lacedæmonians peace, on condition that they furrendered all pretenfions to Meffenia, and left Laconia free; terms which they rejected with difdain. At length the Perfian king difpofed almoft all Greece to think of peace; and this was effected, after the Laconian or Bootic war had lafted about five years. In the fecond year

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of the roth olympiad ( $363 \mathrm{~B} . \mathrm{C}$ ) new commotions arofe in Peloponnefus. Epaminondas made an unfuccefsful attempt to furprife Sparta, and afterwards Mantinea; mortified by thefe difappoinements, he determined to attack $\Lambda$ gefilaus, who was at the head of the Lacedemonians and Areadans, with the rett of their allies ; but in his charge againnt the Lacedrmonians, he expofed his perfon too much, and fell under a cloud of darts, and was at lengrth killed by a Spartan javelin. Pyrrhus of Macedon, interferiag in a difpute about the fuceeffion to the throne of Sparta, made feveral attempts againtt the city, but was.as often repulfed; and before he quitted Greece he was kilied in a battle with Areus the Spartan king. Cleonidas II., who fucceeded Arets II. in the year 257 B . C had long lived in the court of Scleucus, and acquired a tatle for pomp and grandeur. At Sparta le had an opportunity of indulsing this talle, for the maxims of L.ycurgus had funk not only into difufe, but into contcmpt. One of the ephori, who had gained influence, and who had conceived a prejudice agaiat his own fon, procured a law, by which all mea were left at liberty to difpofe of their lands by gift or fale, or by tettament at the time of their deceale. In confequance of this law, which fubverted the original conltitution, mort of the lands were, by degrees, transferred from the ancient Spartan families; and thus the credit and glory of the Spartan fate declined. Agis, the colleague of Leonidas, and a perfect counterpart to him in difpolizion and character, attempted to counterach his conduct, and to reltore the conffitution of Sparta. Cleombrotus, who fucceeded Ieconidas, after he lad been fet alide, concurred with Agis in all his deligns; but when Agis was obliged to go with a body of Spartan troops to the affillance of the Achreans, his colleague abufed his power to fuch a degree, that Leonidas was reftored; 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 last put to death. On the death of Leonidas, Clermenes afcended the Spartan throne; and refolved to fupprefs the ephori, and to reltore the ancient conflitution of Sparta. In the courfe of his reign he invaded Achex, and took feveral citics. Being informed that Aretus and the Achrans were preparing to give him difturbance, he marched a body of troops into their territories, and gained many advantages over them. At length the Achrans, difheartened by their ill Cuccefs, offered to fubmit to any terms which Cleomenes propofed. He acted like a generous vietor, declaring that he merely fought to be acknowledged general of the Greeks, and that he was ready to deliver up the prifoners without ranfom, and to reitore the cities he had taken. But being feized with a diforder, which insuced for a time a difability for fervice, Arctus fuffered jealoufy, ciny, and felf-conceit to triunph orer his virtue and love for his country ; and he, who in his youth lad expelled the Macedonians out of Pelopontefus, merely frum the love of freedom, now privately recalled them, fearing that Cleomenes, the molt worthy of the Spartan kinge, thould be raifed to that dignity which he fo highly njerited. When Cliomenes recovered from his diforder, he advanced towards. Argos, where the Achreans 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 Achrea, and took feveral cities. He foow after furprifed Argos, and advanced himfelf to greater power than any of his predeceffors had poffeffed; and his city to greater pre-eminence than the had ever held in Greece. At a fubfequent period, wiz, in the Vol. XX.
year 222 B. C. he gave battle to Antignous at Sallafia, where, from the fuperiority of the Macedonian troops, and the ereachery of Damoteles, the Laccdxmonians were defeated with a great flatyhter of their mercenary tronps, and an almolt total defltruction of their own. A feer this difaftrous defeat, Cleomenes fled to Egypt, where he put an end to his life. With him terminated the Herculcan race of Spartan kings, if we except the fort reign of $A$ gefipelis. After the fatal battle of Sallafia, Sparta $f$ fll into the hands of king Antigonus, who treated the inhabitants with great kindnefs, and they for a time behaved very quietly. Lycurgus, the Spartan king, invaded Meffenia, and defeated the Meffenians. After he had obliged Philip of Macedon to retire from Lacenia, the ephori, pretending to have received information that he wauted to make himfilf abfolute, attenipted so furpric and nurder him; but he withdrew into Neolia, and when the iniquiey of the eplori was difcovered by the people, he was recalled. Machanidas, the fuccefor of Lycurgus, cjected the ephori, averfe from having any either equal to, or greater than, himfelf in Sparta. A broad, he made all Peio. ponsefus trem:ble, and would probably have fubdued it, if Phulopxomen, the chief of the Acheans, had not oppofed his deligns. This leader engaged all the cities in that league to furrifl troops for reducing the power of Machanidas; an engagement took place between the contending parties at Mantinea, in which the Sparta:ss were defeated, and Machanidas was killed. Nabis, a cruel tyrant, fucceeded Machanidas ; and upon lis death, by the hand of violence, the chicf of the Etolians broke into his palace at Sparta, and rifled alt his treafures. The foldiers followed his example, fo that the Lacedrmonians, who had fuffered fo much from the wanton and favase tyranny of Nabis, looked upon his murder as their misfortune ; and a multitude of them affembled, and put many of the 厄etolians to death without mercy. In the middt of their confufion, Philopocmen arrived, and having conviaced the Lacedremonians of the madnefs of their act, enyaged them, fince they had fo happily recosered their freedom, to unite themfelres to the Achrans, B. C. 19 io $^{\circ}$ (Sec Acuresis.) In the year 188 B. C. upon a quarrel between the Lacedxmonians and Achreans, Philopcomen deftroyed the wal's of Lacedremon, abrogated the laws of Lycurgus, and compelled the Spartans to adopt thofe of the Achreans. 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 Meurfius, which is the molt probable, the liws of Lycurgus were not reftored till after the Romans had vanquilhed Perfeus, and Achaia was joined to their empire. Lacedxmon was placed under the protection of the Romans. During the civil wars of the Roman empire, the Lacedemonians attached themfelves to the party of Cæfar and Auguitus, to whom they confecrated temples. Nero, in his expedition into Greece, durlt not enter Sparta, by reafon of the feverity of its laws. Pliny the elder fpeaks of Lacedzmon as a free city under Vefpafian. A pol ionus Tyaneus, if we may credit Philotratus, found the laws of Lycurgus in full vigour in the time of Domitian; but it is probable, that this emperor diminilhed the liberty of the Lacedxmonians, for Pliny the younger, writing under the reign of Trajan, fays, that there only remained the fhadow of liberty. From that time no vellige remains of the intlitutions of Ly'curgus; at leaft Meurfius could not difcoverany. When Chriltianity became the religion of the empire, the relidue, if any, of thefe inflitutions mult have been abolifhed. Meurlius cites a paffage from Theodoret, which proves that they were entirely abolified by the Romans before his time, that is, before the 5 th century.
Although, in the preceding article we have ufed the appellations
pillations Iacedemonians and Spartans as fymmymon: yet whe they are ditinguifhel, the Spartans denote the citizens of Sparta, and the Lacedemonizns are the imbhitants of the province. The number of the former ancently amounted to 10,000 . In the time of Xerses their number was 8000 ; but by their continued wars they were fo much reduced, that very few ancient families were fond at Sparta. The new families were defcended from the Helots, or llaves, who, being lirtt rewarded with their liberty, afterwards acquired the citle of citizens. Thefe were not called Spartans, but were differently denominated according to the various privileges they had obtained, and their feveral names hore fome reference to their former condition. The lacedicmonians, 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 interefts of the whole itate were to be difcuffed, they fent their deputies to the general affembly, which was always held at Sparta. There were fettled the contributions which each city fhould pay, and the number of troops it floould furnifh. The inhabitants of the cities of Laconia did not receive the fame education with thofe of the capital. Their manners were more rude, and their courage lef's brilliant ; and hence Sparta obtained an afcendancy over the other cities. Anc. Univ. Hitt. vol. v. Rollin's Anc. Hift. vol. ii. 'Trav. of Anacharlis, vol. iv.

LACEDEMONIUM Marmor, in the Notural Ifflory of the Ancinats, the name of a \{pecies of marble very hard, and of a beautiful green colour; it is a very clofe, even, and compat marble; of a fine floug and bright green, and when polithed, is the brighteft of ail the green marbles, and is remarkable for this, that the colour is not reguilarly and equally difufed through the whole mafs, but leav-s in it many foots 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 fhades and degrees, fome parts approaching to black, and others to whitenels.

It was originally found only in Egypt, and there not in entire flrata, but in large pieces wahed off from the illata, and fometimes le.t 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 Briltol there is a ftratum of it, whence it might be had in confiderable quartitics. 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 polifh it would take.
LACERATED Wounds. Sce Wounns.
LACERNA, a thick coarfe fort of military garment worn by the ancients.

The lacerna was a kind of cloak of woollen, only ufed by the men; who wore it over the toga, and, when that was not on, over the tunica. It was at firit very hort, but growing popular in the Roman army, it was foon lengthened.

The lacerna was fcarcely known in Rome till the time of the civil wars, and the triumvirate; then indeed it came into fafhion; 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 ufe of it; infomuch that it became the common drefs of the knights and fenators, till the time of Valentinian and Theodofus, whea the fenators were prohibited the wearing of it in the city.

The lacerna appears to have been much the fame with the chlamys and birrus.

Martial mentions lacerne of ten thoufand fefterces price.
LACERTA, LrzAnd, in Affronomy, a conflellation of the porthern hemifohere, including, according to Hevelius,
en itars, and in the Britifin Catalogue fistem. Sce Coso stellation.
Lacerta, in Zoology. See Ifzamb.
L.ACER'I'I, a divifion of the reptiles, comprehended under the grenus of 1 acerta.

LACERTUS, and Lacertales, in Anatomy, names fometimes applied to the bundles of fibres, of which the mufcular organs ate compofed.

Lacemtes, in Zoology. See Manis.
Lacertes, in Ichtlyography, the lizard-fik, a name given by fome writers to a tifh of the cuculus kind, much refernbling the common mackarel in flape and in tafte, and more ufually called trachurus.

Lacertes is alfo ufed for a fifh of the gar-fifh kind, or acus Oppiani, but larger than the common fpecies, and called by the Italiaa fiflermen arughia imperia!', or the imperial garfith, and by the fiffermen of England, particularly in Cornwall, the girrock, in diftinction from the cor son kind which they call jkipper. It is thicker in proportion to its length than the conmon gar-lifh, and has a fhorter and fharper fnout, and inftead of teeth, has only its jaws ferrated like a file. It is a fearce lifh, but is more firm in its flefl thau the common gar-fifh. Sice Esox.
LACERUM, in Anatomy, an epithet applied, fronr their irregular ligures, to two foramina of the $\mathbb{k}$ ull ; one in the orbit, the other in the batis cranii. See Cranicas.

Lacercy Foliun, among Boianifls. Sce Leaf.
LACHAS, in Gengraphy, a toiwn of South America, in the audience of Quito ; 60 miles N. of Quito.

LACHELiA, a town of Sweden, in Ealt Buthnia; 13 miles S.S.E. of Wafa.
LACHELLO, a town of France, in the department of the Selia ; 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 alfo crytals and petrifactions; eight miles IV. of Utznach.

LACHENALIA, in Botany, fo named by profeffor Jacquin, jun. in honour of Werner de Lachenal, profeffor of botany and anatomy at Bafil, a diltinguihed pupil of Haller and friend of Limxus, eminent for his knowledge of European plants, and ftill more eltimable for his candour and hibcrality. Scveral of his differtations occur in the Ala Helvetica, which throw great light upon the botany of switzerland, and were intenced as preparatory to a Flora of that csuntry, difpofed according to the Linnæan fyttem; hut this work has never yet appeared. Whether its author be ttill living, we have not lately heard. He was born in 1736.-Jacq. fil. in Act. Nov. Helvet. v. 1. $3^{\text {S. t. 2. f. } 3 .}$ Murr, in Lim. Syt. Veg. cd. 14 - $31+$. Schreb. 799. Willd. Sp. Pl. vo 2. $1_{71}$. Mart. Mill. Dict. v. 3. Air. Hort. Kew。 ed. 2. Yo 2. 28 \&. Lamarck. Dicte v. 3. 372. Illultr, f. 1. t. 237. (Phormium ; Jufl. 52.)

Gen. Ch. Cal. none. Cor, of fix oblong unequal petals, approximated into the form of a tube, united at their baje; the three outer ones fhortelt, and often callous at the tip. Stam. Filaments fix, erect, awl-fhaped, axtached to the bate of the petals, various in length; anthers erect, oblong. Pi/f. Germen fuperior, nearly ovate; ityle awl-thaped, as long as the ftamens; fligma fimple, obtufe. Peric. Capfule nearly ovate, with three wings, and three cells. Seeds feveral, globofe, attached to the central column.

Eft. Ch. Corolla inferior, regular, of fix petals; the three inner ones longeft. Stamens erect. Capfule fomewhat ovate, with three wings. Seeds globofe.

Obs. Juffieu and Lamarck, following the younger ${ }^{\circ}$ Linnreus in his Supplemenium, confound this genus with the

Phornium of Forler, or New Zealand flax, the former retaining this name, while the latter adopts that given by facquin as ahove ; but thefe genera are no lefs dittinct in bahit than in their effential characters. See Puonmus.
The fuecies of Lactendia are beautiful bulbous plants, with the hathit of a Hyacinth, having all radical oblong leaves, a fimple racemofe fower-ttalk, and variounty-colvarred, more or lefs fpreading or drooping flowers. Wildenow ha3 ${ }_{2}+$ fpecies; the 2 d edition of Horr. Kicwo. enumerates 17 as cultivate- in that nohle collection; but we would prefume to remove two fpecies from both thefe liits. $I_{c}$ f.rotima, which is $H_{\text {Sacinthus f frouinus of } \mathrm{L} \text {.inneus, } 2 \text { native of Spain, figured }}$ in Curt. Mag. t. 859 and t. $145 \%$, is referred by Mr. Ker, in the lalt-mentioned work, to Sillu, a meafure to which we cannot but readily arcede ; and $L$.. vir:dis nay as well, in our opinion, continue, in Hyatinthus, where Linnxus has placed it; at lealt it cánot weil be made to agree with $L$.a. cbraalia; fre Stucq. Ic. Rar. t. Goi. The remaining fpecies are all natives of the Cape of Good Hopz, and, as far as we know, of no other part of the world. Such as we have in gardens are cultivated in the green-houfe, being treated like other Cape bulbs, and flowering chieft in the carly fpring, a few of them in autumn. Good examples of this genus are,
L. orchioides. Orchis-like Lachemalis. Jacq. Ic. Rar. t. 390. Curt. Mag. t. 854. 1269.-Flowers bell-haped, fefille. Inner petals obtufe, expanding. Style the leegth of the flamens. Leaves oblong-lanceolate, with a crenate cartilaginous edge.-This is the o'dett intabitiant of the Englinh gardens among the whole genus, having heen cuttivated by Miller in $2 \boldsymbol{7} \boldsymbol{5}$. It appears to be a very variable fpecies, at leall if more that ouse be not confoundel mider this nam. The leaves are more or lefs fpeckled, ike the \#talk. Fiosers numerous, varying with yple yellow or purple miugling into flades of brown.
L. contaminata. Mised-coloured Lachenalia. Curt. May. t. I401. (L. hyacinthoides ; Jacq. Ic. Rar. t. 3's. Willi. ni: 4 . L. orchioides; Jacq. Hort. Vind. v. 2. 83 , t. 17 -8.1Flowers bell-fhaped, fomewhat cylindrical, on fhort thalks, erect. Inner petals lancediate, obtufe, crect. Leaves linear-awl-fhaped, channelled, lax, longer than the ttaik. This has long been at Kew, having been fent from the Cape, by Mr. Maffon, in 17\%t. The lomg taper-pointed leares, deeply-fpoted fall, and fpe:kled focerers, in which whitc, brownifla purple, and tints of green, contend for the fupesiority, but the two former fenera ly prevail, characterife this fpecies. - Neariy akin to it is L.. angylifolia, Jacq. Ic. Rar. t. 38 I. Curt. Mag. t. 735 . Redout. Liliac. to 162; chiefly dilltinguilhed, accordiur to Mr. Ker, by the broader proportion and fpreading poilure of the inuer pecta's. The leazws alfo are narrower. Gut the whole habit and collours of the plant are very fimilar.
L. oriboppcala. Straight-petalled Lachenalia. Jacq. Coll. v. 3. 240. Ic. Rar. t. $3^{83}$.-Flowers eylindrical, fighthty fun-nee-flaped, on fhert italks, erect. Petals all lanceolate, ttraight. Bracteas cup-faped. Leaves linear-awl-haped, clamnelled, lax, longer than the ftalko - Of this we hare feen no fpecimen, but Jacquin's figure proves it abundantly diftinet trom the contaminuta, with which, as Mr. Ker obferves, it has been confounded by Willdenow and in the Horrus Kezerffis. The petals are white, with a green fpot at the back, near the point of each. The abovecharacter expreffes their form and polition.
L. puffuluta. Bliftered Lachenalia. Jacq. Coill v. 3. 244 v. 4. 220. t. 2. f. 5 . Ic. Rar. t. ${ }^{386}$. Curt. Mag. t. 817.-Flowers bell-fhaped, fomewhat criindrical, on wery thort Halks. Inener petals dilated and obtufe. Stalk triangular,
reclining. Lesares two, danceolate, binered.-The laven are rentarkable for thicir blittered upper firface. The forsors are pallich and unornamental ; their inuer petahi, at Girth creamn-coluired and fpreadiug, become twilted together and yellowil' in decar.

 Flowera be bi-hapeci, tlatked. Inner petals obtuf, revoluts. Stamens pronnisent. Stalk angular above. Leaves two. lancell.te, blithered.-(Ore of the more handifome kind, confpicuons for its copious flocerers, which are warieyated with blue and purple, and finell like havethorn. Theif colours and expanded form give them a refemblance to forse fpecies of Scilla. The kazes are fliort and broadih, occafiomally deltitute of bliiters.
L. iancesfoulin. Spotted copperss-leaved L.echenaliaJaç. Ic. Rar, to +22 . Curt. Mag. to G 43 . Redoutt. Lidiac. t. 59.- Flowers foneewhat bell-fiaped, 'preading, on italks thrice their owa length. Petals linear, Whant, nearly equal. Leaves numerwas, orate, pointcd-Chiefly remarkable for its numerous, troad, taper-puinted leaves, fpreadings in the form of a thar, of a chaucous hue, enor: or lefs fepckled with a darker green. The fouerss arnumerous, pendulous, variegated with du!l purple and green.
E. triccler. Broad-leaved three-coloured I.achenalia, Mifuray in Li. n. Syyt. Ved. ed. ri4- 314 . Redout, Liliac. t. 2. Curt. Mar.t. 82. (L. Iuteola; Jacq. Ic. Rar. to 395Pharnium aloides; Limn. Suppl. 205.)
A. Luteola; Curt. Mag. t. 1020. (L. Alava; Andr. Re. pof. to +56 .)
$\gamma$. quadricoior ; (L. quadricu'or ; Curt. Mag. t. $5^{\hat{6} 8}$ and 1097. Jact. Ic. Rar. t. 3y, Andr. Repof. to. r\&8. L. triculor; Jacq. Ic. Rar. t. 6r. L. pendula $\hat{\beta}$; Wild.

Flowers cylindrical, pendulous, flalked. Inner petais twice the length of the outer, dilated, fightly fipreading, fomewhat emaryinate. Bracteas taper-pointed. Leaures two, lanceolate. - This is ope of the moft common and generally cultrivated fpccies. We are fo well fatisficd of the truth of Mr. Ker's remark, that the quadriciolor of the above authors, referred by fune to the perululat, is molt akin to tricolor, that we cannot conlider it otherwife than as a varicty, certaindy not more fecifically dittinct than the luteold. We concecire therefore that either thecit three phants mult conflitute one fpccies, or they ought all to be confidered ac alike dittinct. Cnltivation by feed mult in time decide this quaction. Thie leates in all of them are in pairs, and recurved; thofe of the firlt are broad and fpoteed; the others longer and narrower, generally without fpots. spite in all fomeyhat comofe, many of the uppermoft flowers being abortive, and their pointed bracteas crowded into a tuff. The outer petals of all are tipped with green; thofe of the firit and third varieties more or lefs tinged with red, thofe of the fecond plain yellow. The inner petals of the firft are variegated with yrien and pale yellow; thofe of the fecond are of a plain full yellow, being moreover rather broader and more expanded; thofe of the third are lemon-coloured, clegantly tipped with deep crimfon or purple.
L. rubida. Dotted-fowered Lachenalia. Jacq. ic. Rar. t. $399^{\text {s. }}$ Curt. Mag. t. $90 \mathrm{~S}_{3}$.
B. tigrina ; Jaç. Ic. Rar. t. 399 .
$\gamma$. punctata a ibid. t. 39\%.
Flowers cylindrical, drooping, on fhort flalks. Inner petals one-fourth longer than the outer, fpatuluate, fomewliat umequal, obtufe. Bracteas fearcely pointed. Lecaves two, ellipetic-oblong.-This is faid to be rather rate in our collec.
tions. The leanes and flal: are fpeckled with purple, and the foozeres dotted with red, in all the three varecties, which have no pretentions to be reckoned fuecies. They differ only in luxuriance, tigrina being the ftrongett plant, pandata the weakett and moft flender.
L. pendula. Fonrecoloured Pendulnus Lachenalia.Sit. Hot. Kew. ed r. v. 1.46 r . Jacg. Coll. v. 3. 239 . 1:0 Rar. t. 400 . Curt. Mage t. 590 . Aludro Repolit. $\mathrm{q}^{1}$. Redont, Liliac. t. 52.
Flowers cylindrical, pendulous, on very flart Atalks. 1 inner petals nearly onc-fourth longer than the outer, wedgethaped, obtufe. Bracteas fearcely pointed. Leaves two, nvaro olanceolate. -One of the molt commonly cultivated and mo't beautiful fpecies, flowering in the green-houfo or frame in February. The lenves are brvad. Fioowers numerons, dionping and forewhat curved, of a finc red at their hafe, their fegments tipped with various degrees of purple and green, the middle part yell:w. The main falk is fout and Atraight, fieckled; the partiat oncs sery flurt.-Willdenow makes the quadricolor a varicty of ahis, in which he is inadvertently copicd by the editors of the fecond edition of Hurt. $\mathrm{h}^{\prime} \mathrm{rcse}$; an error corrected by Mr. Ker in Curt. Mag. 8. 26. p. 1020. See allo v. 16. P. 585 , of the fantice work.
Lacienalia, in Gardening, comprifes phants of the bul. bous-ronted kinds, of which the fpecies moitly cuitivated are the fpoted-leaved haclemalia, L. orchioides, the pale-fowered laclienalia, L. pallida, the three-colotrred lachicnalia, L. tricolor.

The third fort varies with yellow, faffron-coloured, bloodred purple at the tip, and greenilh-yellow corollas ; alfo in the proportion between the inner and outer petals; and in the breadth of the leaves.

MTethod of Culture.-All the fe plants may be increafed by offsets from the bulbs, and by feeds, when they are produced in perfection.
The offsets flould be planted out in pots of light freth earth, when the bulbs are in a ftate of inactivity of growth, placing them in a warm border to be covered with handglafes, or, what is better, in a dry flove or green-houfe.
Thefe plants bear forcing tolerably, and their flowering is much promoted by being preferyed in the warmth of the flove.
They all afford variety ameng collections of potted bul-bous-rooted fowering plants.
LACHES, from the French lafcher, i. e. laxare, or laffbe, ignayus, in our Lazus, fignifies hacknels 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 Engyifh word: for when we fay there is laches of entry, it is the Fenee is if it were faid, there is lack of entry; and in this lignification it is infed. (Litt. i36.) No laches fhail be adjudged in the heir within the age; and regularly laches thail not bar either infants or femes covert for not entry or claim to aveid difeents: but laches fhall be accounted in them, for non performance of a condition a miexed to the fiate of the land. (Co. Litt. 146.) The lav alfo determines, that in the king there can be no negligence, or laches; and therefore no delay will bar his right. Co. Litt. 90 .

## Iachesis, in Zoology. See Coluber. <br> LACHEZE, in Geography. See La Cuaise.

LACHISH, in Scriftere Geograpby, a town of Paleftine, in tle trise of Dan, S.IV. of that of Judah, on the frontiers of this tribe, to which Senacherib laid fiege, when he feat his haughty meflage to Hezekiah It was a fmall towno,
or village, about 7 miles $S$. from Elentheropolis, in the tinne of Eufebius and Jerom. Jofh. x. 23. xv. 39. 2 Kings, xviii. 17. xix. 8. ? Chron. xxxii. 9.
1.ACHNEA, in Botany, from $\lambda \% \chi^{v n}$, foft hair or down, alluding to the fine hairy clothing of the corolla. The name feems to have been given by the e'der Van Royen.-Lim. Gen. 19t Schreb. 261. Willd. Sp. Pl. v. 2. $434^{\circ}$ Mart. Mill. Dict. v 3 Ait. Hort. Kew, ed. 2. v. $2.415^{\circ}$ Juif. 77. Lamarck. Illuftr. t. 292. Clafs and order, O.grmdria Monogynia. Nat. Ord. Veprecula, Lim.' Thymeluca, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, coloured, permanent ; tube long and flender; limb in four deep unrqual fegments, the upperinof of which is much the finalleft and erect, the other three reflexed, the middle one largett. Cor. none. S/ain. Filaments eight, briltly-fhaped, crect, infcrted in:o the upper part of the tube, and nearly as long as the limb; a little unequal; anthers fimple, roundifh. Pif. Germen fuperior, ovate; ftyle thread-fhaped, longer than the tube, attached laterally to the germen; Ittigma capitate. hifpid. Peric. none, except the permanent bafe of the calyx. Sced folitary, coated, ovate, with an oblique point.

Eff. Ch. Calyx tubular, coloured, with a fo!r-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 osly. We follow Limmus in his Gen. P\%. as to the denomination of the parts of the flower, though in his $S_{y, j}$. Veg. he fubfequently termed corolla what he had before called calyx; but the analogy of Daphne compared with Gnidia, (fee thofe articles), confirms his original phrafeology.
I. L. erioccplacha. Woolly-headed Lachnea, Linn. Sp. Pl. 514. Andr. Repor, t. 104. Curt. Mag. t. 1295. (Pafferina eriocephala and cephalophora; Thunb. Prod. 75.) -Leaves uppolite, imbricated in four rows, pointlefs, keeled underneath. Flowers woolly; fegments acute.Native of the Cape of Good Hope, like all the o:lier fpecies. This is faid in the Forifus Scerenfis to have bepn introduced into. Eugland in 1793, by Meffrs. Lee and Kennedy. It is a green-houfe ihrub, flowering al fummer long. The fhort flender fmooth leaves, flanding in four rows, refemble thofe of fome kinds of heath. The flow ress are large and white, in terminal folitary heads, fubtended by bracteas broader than the leaves, of an elliptical figure, and tinged with red. The talk and bafe of each fower, as well as the outfide of its limb, are all very woolly. Nothing is recorded refpecting the feent of thefe flowers, nor have we had an opportunity of examining them fufficiently to. afcertain this point ; but we fhould expect them, from analogy, to be fragrant at fome time of the day or night. An authentic fpecimen fhews this to be Paffrina cephalophora of Thunberg, and we prefunse it muft be his eriosepbala.
2. L. purpurea. Purple-flowered Lachnæa. Andr. Repof. t. 293. Leaves oppolite, imbricated, in four rows, oftufe, keeled underneath. Segments of the calys finoo:h. This elegant fpeci-s, dillinguithed by its larger fize, and rofe-coloured or light purple forwers, whofe outhide is fmooth. and naked, except a thort puticfeence on the tube, was gathered at the Caple by Mr. Jancs Niven, an indefatigable collector fent out by Gca. Hibbert, efq. M. P. It flowers. in June and July, and is theftered in the green-houfe in winter, where it is liable to pevifh from damps. The tube of each flower is white, with a woolly tuft at its bafe, like the former. The brateas are broad and almoll round.
3. L. glaucge Glaucons-leaved Lachmean Salifb. Parad,

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f. 109. (L. buxifolia; Lamarck. Dict. V. 3. 37.3. Andr. Rrepof. 1. $5^{24}$. Gnidia filamentofa; Lim. Suppl. 22.4.) Leaves feattered, elliptical, glaucous. Segments of the calyx downy on both tides. - This beautiful Species was communicated to Linnxus by his friend Bock. Mr Niven fent it to Mr. Hihbert about the year 8800 . Its broad elliptical glaucous leaves at once diatinguith it. The flowers are white, fragrant, exceflively copious in each round terminal head, their $\mathrm{Ne}_{5}$ mints downy on both fides, pointed, and not very unequal. Minute glands altervate with the ftamens, are found in the orilice of the tube, as in Gnidia, but finaller.

Some excellent remarks are given by Mr. Salifbury, in his Paradifus, in favour of the latter opinion of Linneus concerning the calyx of this genus, which he therefore terms co:olia, but the point feems to us ltill doubiful, at leatt, and we therefure adhere to what we have always maintained.
4. L. conglamerata. Crowded Iachara. Linn. Sp. Pl. 514. (Paflerina glomerata; Thenb. Prodr. 75.) Leaves oppolite, imbricated in four rows, abrupt. Fiowers oppolite, crowded about the ends of the branches. Bracteas elliptical, three ribbed.-Gathered by Sparmann and Thunberg at the Cape, bat as y yt unknown to our cultivators. It is a frall branching $/ f r r u b$, very clofely refembling Paffrina fliformis, but the leaves are horter, and much more remarkably abrupt or retule, nor are they at all incurved. The upper ones infenfibly become brakas, being dilated, elliptical, concave, with three, fometimes five, itrong projecting ribs; their inner fide is cluthed with denfe prominent wool. Thefe bracteas continue, in three or four oppolite pairs, to the end of each little branch, every one of them being accompanied by an axillary, fulitary, fmall flower, whofe tube, longer than the bractea, is woolly, its limb nearly or quite f:nooth and naked. The colour of the flowers is apparently purplifh; their fegmen's are fufficiently tuequal to make the phat a Lachnea, though they and every other part are fo very like Polferina filifornis, in whofe fegments likewife we thinic we perceive an inequality, that we are certain thefe two plants oiight to be placed in one genus. They differ, however, fecifically in their brateces, which in P. fliformis are ovate, pointed, itrongly keeled, with numerous finaller lateral ribs. We recomnenend this lalt to the notice of betanifts who publifh figures of plants. Of L. conglomerata we can lind no reprefentation in books. The fynonyms quoted by Limnxus and copied by Willdenow, belong to a very diffimilar thob, from which neverthelefs the fpecific character feems to be taken, and which appears to be the following.
5. Le phylici:des. Phylica-leaved Lnchnea. Lamarck.
 capitis bunx 〔pci; Breyn. Cent. 18. t. 7?)-" Leaves linear-awlhaped, fmooth, loofely imbricated. Heads fmall, cluftered, white and downy." Lamarck deferibes this as "very clofely refembling a Pbylica, in which genu: he had placed it, tiil an examination of the fowers let him right. Thefe he found quadritid and oetandrous, with fo llight an inequality in the limb, that he doubts whether that character be futficient to keed the plant dillinet from Paffrinu. It is a branching: Jrub, the branches Atraight, Inender, leafy, fmooth, except the youngelt fhoots. Leazes numerous, feffile, linear-awlhaped, nearly triangular, quite fmooth, Atraigh:, loufely imbricated, Lomewhat refenbling Diofima rubra. The fozvers are collected, from fixe to eight tugether, into cottony white heads, the lize of a pea, terminating the numerous, very fhort, croíded little branches, which furn a.fort of coryinb at the end of the principal ones.

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The caly $y$ is white, downy; its tube a line and half long, its limh in four oval, concave, unequal fegments, nearly as long as the tube.". 'The amthor received it dried from M. Thoum, as a native of the Cape. He oljects to the ryo nonym of Breymius, which we have, with great doubts, transferred hither from the preceding fpecies. 'T'o this plate, in his own copy, Limaxts has writen the name of Pbylica imberbis, a plant adopted in his Mantifa, p. $2 c 9$. from Bergius, without having feen a fpecimen hmfelf; and he there copics this very fynonym of Breynius, without recollecting that he had cited it already as Lachnra conglo. merata. Lamarck thinks it belongs to Pbylica Jlipstlaris. The plant of Bergius is ceriainly, by his defuription, a Pbylica, and if that of Breymius be the fame, it mult be erafed from Lacbnea. We have one more error to correct concerning $L$. consflomerala, which is, that Thunberg thinks it the fame with Paffrina ericoides, though nothing can be more diltinct than the latter in the Linneun herbarinm, with the ovate tube and fmall regular limb of its fower, fo exactly refembling fome Species of Erica. This Pafferina is, therefore, it feems, erroneoufly omittal in Thmberg's Prodromus. - The author lalt named, regardlefs of the irregularity of the flower, unites Lacbnaas altugether with $P^{\prime}$ afferina, a meafure we are very unwilling to adept. It is an opinion of the ingenious Cerrea de Serra, that, in every naturd order, there are cine or more gencra, differing from the relt in the regularity or irregularity of the fiower. Lachnea then is the only genus of the Thymelac, or Mezereon tribe with an unequal or irregular flower. S.
LACHNIS, in Natural Hiflory, the name which fome have given to a gen:us of foffils, attributed to the clafs of the fbraric; the characters of which are, that they are fibrofe bodies, not elatic, and compofed of fhort and abrupt fibres, ur filaments.

The word is derived from the Greek $\lambda x \chi^{u r}$, a hair or fhort capillament or fibre.

The bodies of this genus have been divided into thafe which are compofed of larger and broader, and thofe which are compofed of fmaller and narrower filaments. Hill's Fofils. See Fibrarif.
LACHNOSPERMUM, in Botany; a genus fo called by profeffor Willdenow, from $\lambda x \chi^{\prime \prime}$, custl, and smegue, feed ; indeed that author ditinguifhes this plant from Staebelina, on account of the woollinefs which inve!ts its feed. - Willd. Sp. Pi. v. 3. 175 S7. (Staehelinæe fpecies; Thunb. Prod. I43.) Cliafs and order, Sjezenefia Polyramia-Rqualis.. Nat. Ord. Compofila Difcoider, Liun. Cinaroceplale, Juff.

EfI. Ch. Receptacle hairy. Seeds invefted with hairs. Calyx cylindrical, inbricated.

1. L. ericifflium. Willd. (Stachelina fárciculata; Thunb, Prod. 143.)-A native of: the Cape of Good Hope- -The branthes of this $\not\langle b r a b$ are divaricated, rigid, and downy. Lazeres very fmaili, about half a line in lengrth, fafciculated, rulind, obtufe, inveited with downo. Flozuers folitary, at the tops of the little branches, on thurt footlalks, fimetines in pairs, the fize of Sketecima frutionfio. Caly.e. cylindrical, downy ; fcales ovate, acute, with a naked, elongated, fpreading point. Seeds. withour a proper crown, cutolded with hairs. Rezeptacle hairy, the hairs as loug as the florets.

LACHOW, in Geggraply, n town of Puland, in Volhynia; 28 miles N.W. of Conttantinow.
LACHOWICZE, a town of Lithuania, in the palatinate of Brzefc; 28 miles S.TV. of Pinks.
LACHRYMA Jorr, in Befany See Cors,
LaCHRYMF Batavicer. See Rupert's Dropso.
Lachrymal. See Lacrymaris.

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Lacimemar Duïs, Fundat and Sac, Difeafe of. Sec Epirioma, and Fistula Jachrymafis.
Lachimal Fï/ula. Sce Fistla Lachrymalis.
Lacumsul Gland, Difafe ofo 'The lachrymal gland, fodged in the folfula of the anterior and external part of the root of the orbit, and enveloped in the fat which furrounds the globe of the eye, is not frequently met with in a llate of difeafe. Doubtlefs, it is often involved in the general inflammation, whichaffects all the contents of the orbit in cafes of ophthalmy; but inftances of this individual gland fuffering inllammation by itfelf, mult be regarded as extremely uncommon.

The lachrymal gland, however, is fubject to feirrhous induration, which is more frequently notieed in diffections, than practicc. We allude to cafes, 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 dittemper, and for the fake of fecurity, ought generally to be extirpated together with the eye.

A remarkable cafe is related by M. Guérin, where he extippted a fcirrhous lacluymal gland, which was fo much e:larged, that it covered the whole of the eye-ball. The latter part, indeed, was entirely concealed, and might have been fuppofed to be confounded with the fwelling, had not circumitances exitted, which teuded to fhew, that the organ in queltion was found and fituated under the tumour. M. Guérin fuccefsfully detached the fivelling from the cye and eye-lids without injuring the rectus externus mufcle.

If this can be received as really and unqueflionably an example of a fcirrhous lachrymal gland being found difeafed quite alone, and extirpated by itfelf, it is a cafe which, perhaps, has not its fellow in the records of furgery. Pof: tibly, the fwelling might be nothing more than an encylted tumour.

LACHRYMATORIES, in Antiquity, fmall glafs or earthen phials, with a long neck, found in the fepulchres of the ancients. Mayy antiquaries have fuppofed that thefe velfels ferved to collect the tears of the weeping friends that furvived, or of perfons hired for that purpofe. This belief was grounded on the appearance of the opening of thofe phials, which is generally furnifhed with a round concave part well adapted for embracing the convexity of the eyebell. On fume lachrymatorics are cven found impreffions of an eyc, and fometimes of a pair of eyes. But here, as in many other cales, the cye appears to be merely emblematical. It may alfo be faid that the opinion of tears being preferved in thofe veffels is nufupported by any ancient cuftom we are acquainted with, or by any well interpreted paflige in anclent authors. This opinion was firt broached by Chitlet; it foon fpread over Europe, and was, in fpite of its improbability, adopted and fupported by Kirchmann, Kipping, and many other antiquaries. At lalt it was combated by Schoepfin and Paciaudi; fo that at prefent it appears to be agreed on all fides that the lachrymatories did never contain any thing but balins dettined to moilten the funeral pile or the afhes 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 reprefents the funcral rites at the death of Meleager, a woman approaches the pile, holding in one han a large bellied veffel, and in the other a long flender phial with elongated neck and bottom, and in crery refpect fimilar to feveral earthen lachrymatories preferved in collections. This wonlan is in the act of pouring out of the large into the fmall veffel what may be fuppofed to be balms or odoriferous oil for the purpofe of perfuming the funeral pile of Meleager. If we may
believe Dumolinet, there have fmall fpoons been fuund in lachrymatories, which may have ferved for diltributing into feveral fmall phiais the contents of a veffel of greater dimenfions. Millin Dict.

LACHSA, denominated alfo Hulsjar, and fometimes Babbrein, in Geograply, a province in Arsbia, bounded towards the E. by the P'erlian gulf, towards the S. by Oman, towards the W. by the province of Nedsjed, and towards the N. by the territories of the wandering Araths in the vicinity of Baftora. This province affords no great variety of productions. Its afles and camels are elteemed to be of an excellent breed; and of the latter fome thoufands are annually fold into Syria. In the interior parts the inhsbitants fublitt very much upon dates. Upon the coails pearl-fifhing is purfued with advantage; and there is a confiderable trade in foreign commodities. The inhabitants of Lachfa are very much divided with regard to religion. Thofe who live in the towns are Shiites; but the peafants are, like the Bedouins, Sunnites. Here are alfo fome Jews, and many Sabzans, or Chriftians of St. John.

Lachfa was once a province of the empire; but the Arabs have long fince thaken off the Ottoman yoke. Many Turks, defcended from the anctent Pachas, itill remain ia the province, and poflefs conliderable eltates, but have no fhare in the government. At prefent the fovereignty of this province belongs to the fchiesh 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 fchiech of Leái Khaled. The cities in the interior parts of this province are little known. Niebulr. -Alfo, a town of Arabia, capital of this province, where the fchiech relides, fituated on the river Aftan, near the Perlian gulf. N. lat. $265^{6} 6^{\prime}$. E. long. $4^{8} \quad 34^{\prime}$.

LACHWA, a town of Lithuania, in the palatinate of Brzefe; ;o miles E. of PinR.
LACING, in Ship Building, the name of one of the pieces compofing 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 Botuny. See Leaf.
LACINIUM Prosontomus, $1: 1$ Anciens Geography, Capo delle Colone, a promuntory of Italy, at the ealtern part of Brutium, and bounding on the fouth the gulf of Tarentum. This cape was much cele brated on account of a temple of the Lucinian Juns, 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 maffive 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 Lactipus, a town of. Spein, in Beetica.
LACIS, in Botany, fo named by Schreber, and derived from $\lambda_{a x s} \%_{2}$, to tear, or lacerate, becaufe the herbage of this genus exhibits a fringularly jagged or lacerated appearance. Schreb. 366. Willd. Sp. P1. v. 2. 1225. Mart. Mill. DiEt. .v. 3. (Mourera; Aubl. Guian, v. 1. $5^{82}$. Juff. 411. Lamarck Illuftr. t. 480.)-Clais and order, Tolyandria Dizynia. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth none. Cor, none. Siam. Filaments numerous, about 40 , capillary, winged on each tide at the lower part, inferted into the receptacle which is furrounded by 12 fpines; anthers oblong, cloveri at the bafe, acute, incumbent. Pil. Germen fuperior, oblong, angularly ftriated ; Ityles two, incurved; Itigmas obtufe. Peric. Cap-
fulk orate, with eight furrows, of one cell and two values. Sceds numerous, very fimall, affixed to an ovate, unconnected receptacle.

EIf. Ch. Calyx none. Corolla none. Capfule of one cell, two valves and many feeds.

1. L. fuveiatilis. Willd. (Mourera fluviatilis; Aubl. Guian. t. 233.) A native of rivers in Giiana, flowering and bearring truit in November. Its Caribxan name is Mou-rerou--Reot creeping. Stems herbaceous, fimple, rough. Lebves alternate, divided into numerous, repeatedly jagged, lobes, dark green, curled and veined at the margin, rough, with minute points. Flowers in fikes, terminal, each one, before expantion, inve!ted with three fmall deciduous leaves. Filaments violet-colonted; anthers yellow.

We know not how Willdenow came to defcribe the leaves as fmooth, for in Aublet's own fpecimens we find them extremely rough with minute points.

LACIS'LEMA, fo denominated by Dr. Swartz, from $\lambda e x b_{5}$, a cleft, or fiffure, and sripx, a flamen, alluding to the divifion in the filament. Swartz. Prodr. I. II. Ind. Occ. v. 2. 10ワI. Schreb. 783. Willd. Sp. Pl. v. 1. 27. Mart. Mill. Dict. v. 3.-Clafs and order, Moradelphia Diandria. Nat. Ord. Anuntacca, Lime 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 dcep, nearly equal, lanceolate, acute, afcending fegments, fhorter than the internal fcales, without any tibe. Nectary of one orbicular, concave, entire, central leaf, lefs 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 pititl; anthers folitary on each branch of the filament, minute, roundifh. $P_{j}^{\prime}$ f. Germen fuperior, globofe ; thyles two, very fhort, recurred; ftigmas fimple. Peris. Berry flalked, obovate, of one cell. Seed folitary, oblong.
r. L. myricides. Swartz. Prodr. 12. Fl. Ind. Oce. v. 2. 1003. Ic. Plant. 5. t. 1. (Piper aggregatum; Berg. in Act. Helvet. v. 7. 131. t. 8.)-Received by Bergius from Surinam. Swartz found it in bufhy parts of mountains, on the weflert fide of Jamaica, but fparingly, flowering in fpring, and ripening fruit in fummer. This is a $/ \mathrm{brub}$, or fmall trec, with a fmooth bark. The principal branches are round, lax, and fmooth, with a few alternate zig-zag fubdivifions. Leaves alternate, ftalked, two or three inches long, clliptical, pointed, entire, very fmooth, brownifigreen, with one rib and feveral tranfverfe veins. Stipulas none. Catkins axillary, feveral together, feffile, loufely fpreading, a little curved, about half an inch long, whitifh, many-flowered, hairy at the bafe. The foowers are extremely minute; the corolla white. Berry black and foft, the fize of a red currant, with a fwettifh intipid tafle. There is fome difficulty in defcribing the parts of the flower, efpeciaily the inner fcals, which Swartz incautioufly named bradtas, though fituated within each proper feale of the catkin. Nematofpermum of Richard in the Actes de la Societć d'Hith. Nat. de Paris, v. . r . ro5, is jullly indicated as nearly allied in defrription to this plant, except that it is faid to have three fligmas (or rather fyles), and a capfule with three feeds, fufpended from its valves by threads. We prefume therefore they cannot be the fame genus. See Nematospermenas.
LACK, in Groorrapby; a townfhip of A merica, in Miflin county, Pennylvania, containing 1071 inhabitants.

Lack of Rupees. See Rupee.
LACKAH, in Geography, a fmall river of Ireland, in the county of Donegal, which flows into Sheephaven.

LACKANWADDY, a town of Hindookian, in the circar of Aurungahad ; 45 miles E. of Jaffierabad.

LACKAR, an ifland in the Eaft Indian fea, about 30 miles long and fix broad. S. lat. 8 18'. E. long. $12 \mathrm{~s}^{\circ}$ 14'。
I,ACKARAGO, a town of Africa, in the kingdum of Kafton.

LACKARI, a town of Perfia, in the province of Irak; 129 miles W.N.W. of Ifpahan.
LACKER. See Lacquen.
I.ACKERGAUT, in Gography, a town of Thibet; 45 miles S. of Deuprag.
L.ACKI, a town of Hindoottan, in Bengal; 5 to miles N of Dacca.

LACKIPOLE, a town of Bengal; 16 miles N.E. of Calcutta.
L.ACKRICOTTA, a town of Hindooltan, in the circar of Cicacole; 24 miles S.W. of Vizianagram. -Alfo, a town of Hindooltan, 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 Afia, fituated between the mountains N . of Comagene, on a fmall river, which ran into the Euplurates, S.E. of this town.
LACOBRIGA, a town of Spain, upon the Piforaca, S. of Juliobriga and N.E. of Pallantia, belonging to the Vaccei.

LACOCK's BAy, in Geograpby, a bay on the N.E. coaft 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 iflands among the Laccadives, about three miles apart. N. lat. 10 $33^{\prime}$ '. E. long. $71^{\circ} 40^{\prime}$.

LACONIA, in Ancient Geography, a country afterwards called Sparta and Lacedremon, was fituated on the S.E. point of Peloponnefus, and bounded on the N. by A rgos and Arcadia, on the W. by Meffenia, 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 cloudf, the eye might furvey the whole of Peloponnefus. The fides of thefe mountains were every where covered with woods, which were the afylum of a great number of goats, bears, wild boars, and ftags. The extent of Laconia from E. to W. where it reached fartheft was $\mathbf{I}^{\circ} 45^{\prime}$, 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 encompaffed by the fea, and the eatt and north-eall part by the Argolic bay, it had a great number of promontories, the chief of which were thofe of Melea and Tanara, now capo Malio and capo Matapan. Thefe two being fituated on the Mediterranean form the large Laconian gulf, which lies between them, and is now called the Golto di Colochina, into which the famed river Eurotas, better known by the name of Balilipotamo, or Royal river, difcharged its waters with an eafy and gentle courle. The fea-coalts of Laconia were furnifhed with a confiderable number of fea-ports, towns, and commodious harbours, of which the largeft and molt convenient were thofe of Trinaflus and Acria, fituated one on each fide the mouth of the Eurotas, and Gythium, at a fmall diftance from Trinaflus ; which laft is faid to have been built by Apollo and Hercules; but the moft noted was Epidaurus, now Malvefia, feated on the gulf of Argos, now Golfo di Napoli, a well-built town, famous for its excellent

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wine called Malvefy, or Malmefy, which was produced from grapes that grew round it." There werc about 12 more fea-port towns along the Laconian coalts; and they were rendered particulatly famous on account of a fiell fifin 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 kingdum, the molt confisderable of which was the netropolis Sparta, which fec. Other cities of note were Amyclx, Helve, Thulana, and Lenctrum. The mountains of Laconid were numerous. Its mult conliderable rivers, belides the Eurotas, were the Smenns, the 'Thiafus, and the Scyras. The foil was very rich, efpecially 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 i:habitants inproved thefe advantages, how powerful they became, what flects they maintained, and brave experienced admirals they bred, may be feen in their hiltory. We fhall here only obferve, that the Lacedmomians were a courageous people, hardy, and inared to war both by fea and land, averfe from floth and luxury, jealous of their honour and liberty, as well as the power of their neighbours; nor were they wanting in any military difcipline, in order to fecure the one, and curb the other. By thefe means they became fo powerful, and made fo confiderable a figure in Greece, that the kings of Egypt and Phocnicia did not difdain to pay a kind of homage to them, and own their fuperiority by folemn embafies. See Lacedimonians.

Laconia, in Geograpby, 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 1022, from the council of Plymouth to Caut. Mafon, and fir Ferdinand Gorges. See Iroqzois.

LaCONIC Stile. See Stile.
laconica Scittala. See Softala.
LACONISM, Aaxvys $\mu 0$; a fhutt, pithy, fententious fpeech, in the manner of the Lacedremonians, who were remarkable for the clofenefs and concifenefs of their way of delivering themfelves.

LACOVIA, in Geozrapby, a town of Jamaica; 55 miles W. of Kington.

L HCQUER, or LAcKer, is a varnifh applied upon tin, brafs, and other metals, to preferve them from tarnihhing, and to improve their colour. The bafis of lacquers is a folution of the refinous fubltance called feed-lac, or rather thell-lac, in fpirit of wine. This fpirit ought to be very much dephleginated in order to diffolve much of the lac. For this purpofe, fome authors direct dry pot-afh to be thrown into the fpirit. This alkali attracts the water, with which it forms a laquid that fubfides ditinctly from the fpirit at the bottom of the reffel. 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 depraves its colour, and communicates a property to the lacquer of imbibing moilture from the air. Thele inconveniences may be prevented by diltilling the fpirit ; or, if the artilt has not an op. porturity of performing that procefs, he may cleanfe the pirit in a great meafure from the alkali, by adding to it fome calcined alum, the acid of which uniting with the alkali remaining in the fpirit, forms with it a vitriolated tartar, which, not being foluble in fpirit of wine, falls to the bottom together with the earth of the decompofed alum. To a pint of the dephleganated and purified fpirit, about three ounces
of powdered fhell-lac are to be added; and the misture to be digefted during fome days with a moderate lieat. The liquor ought then to be poured off, fltained, and cloared by fettling: This elear liquor is now fit to receive the required colour, from certain refinous colouring fubitances, the principal of which are gamboge and anotio; the former of which gives a yeilow, and the latter an orange colvur. In order to give a golden coour, two parts of gamboge are added to one of anotto; but thefe colouring fubitarcess may be feparately. diffo'ved in the tincture of tik, and the colour required may. be adjulted by mixing the two felutions in different proportions. When filver-leaf, or tin, are to be lacquered, a larger quantity of the colouring matcrials is requifite 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 turn:eric, faffron, dragon's blood, \&c. See Gold Colourd Vabnisu, and Japanner's Gilming.
Initead of fhell-lac, ufed in the compofition of varnifhes for lacquering, refin or turpentine is fubfituted for the coarfer ufes. The following compolition for brafs-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 Sparifh anotto each two drams: put them into a bottle with a pint of highly rectified firit of wine, and place the bottle in a moderate heat, occafionally fhaking it, for feveral days; then ftrain 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 thake it, till the feed-lac be diffolved. The-lacquer ftrained as before will be fit for ufe, and muft be kept in a bottle carefully ftopped. By increafing or diminifhing the proportion of anotto, the lacquer will be rendered warmer and redder, or cooler and searer a true yellow. A cheaper compofition little inferior to the former, may be formed of one ounce of turmeric root ground, half a dram of the beit dragon's blood, and a pint of fpirit of wine, managed as the former.

The varnith for tin may be made of one ounce of turmericroot, two drams of dragon's bloud, and one pint of fpirit of wine, prepared in the fame manner with the other. The dragon's blond may be increafed or diminithed, as the red or yellow is to be the molt prevalent; and for a coarfer lacquer the quantity of fhell-Lac may be leffened, and the deficiency fupplied by the fame proportion of re!!n. The lacquer for lucks, nails, \&c. where little or no colour is defired, may be either fhell-lac varnifh alone, or with a little dragon's bleod; or a compound vamifl of equal parts of fhell-lac and refin,' with or without the dragon's blood. The manner of laying on the lacquer is as follows: the pieces to be lacquered mult firt be made thoroughly clean; and if they be new fourded, aquafortis mult be wfed for this purpofe. When they are afterwards heated by a fnall charcoal fire, the lacquer is laid on with a proper brufh, like other varnifhes, and the pieces reflored to the beat. After the lacquce is thoroughly dry and firm, the fame operation mult be renewed for four or five times, or till the work appears of the required colo:r and brightnefs.

The lacquering of leather, improperly called gilding, is performed by means of leaf-filver, coloured by a ycllow: varnifh. (See Japanner's Gilding.) For this purpofe. calf or goat-fkins are procured in a dry fate, after the common dreffing and tanring. They are foftened by being immerfed and itirred about for fome hours in a tub of water; and afterwads beaten againft a flat tone and fmoothed, by fpreading them on the flone and rubbing
them over with an iron inftrument : the fikins, 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 fitiff fize, that anfwers to the groldfize ufed in other kinds of gilding or filvering, prepared from parchment or glover's cuttings. The worknan next proceeds to cover the whole furface - of the fized flin, 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 Ariking them; and clofes this operation with gently rubbing the whole furface with the tail. When the flins are filvered, they are hung to dry firft on cords, and the drying is completed by putting them over a board joined together, with the filvered fide next the boards, where they mult be kept ftretched out by means of fome nails. They are then burnifhed with a fiint burnifher, which operation is performed by fpreading the ikin even on a fmonth flone, and fliding the burniher backwards and forwards over every part of the $\mathbb{K} \mathrm{kin}$, with a confiderable degree of preffure. In fome manufactures the burnifhing is performed, by paffing the filvered fkins betwixt two cylindrical rollers of tteel, with polifhed faces. The flins are now prepared for receiving the yellow lacquer or varnifh, 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 ufed: take of fine white refin, $4 \frac{1}{\frac{1}{2}}$ pounds; the fame quantity of common refin; of gum fandarac, $2 \frac{1}{2}$ 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, flirring all the time, to prevent a kind of fediment, that will furm, from fticking to the bottom of the veffel. When the varnifh is almoft fufficiently boiled, which will generally require feven or eight hours, add gradually half an ounce of litharge, or half an ource of red lead; and when this is diffolved, pafs the varnilh through a linen cloth, or flannel bag. A pint of oil, and a correfponding proportion of fine refin and aloes, have produced a very good varnih in an hour and a half. This lacquer or varnifh is laid on the filvered leather in the open air; and is beft done in fummer, when it is hot and dry. For this purpofe, the 1kins are flretched and faltened with nails to the boards, on which the drying was finifhed, with the filvered fide outwards. And when thefe boards are properly difpofed on treffels, the workman generally fpreads Tome white of eggs over each flin; and when this is dry, the varnifh, which is nearly of the confiftence of a thick fyrup, is repeatedly fpread with the four fingers of one hand, moved fo that each finger paints a kind of $S$ with the varnifh, from one end of the fkin to the other: and it is then diffufed evenly over every part with the flat of the hand: after this it is to be immediately beaten by ttrokes of the palms of the hands, and principally where the varnifh is obrerved to lie thickeft. When this coat of varnifh is fufficiently dry, which nay be known by the fingers making no impreffion upon it, another coat is laid on in the fame manner. When this coat is dry, the varnifhing for producing the appearance of gilding is completed; and if it has been well performed, the leather will have a sery fine gold colour, with a confiderable degree of polifh 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 tlamping, a defign on Vol. XX.
the fitrface after thy filvering. The fkin is then to be varnifhed, as if the whole were intended to be gold ; but after the laft coat, inftead of drying the varnifh, 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 fcrapes 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 ikins thus filvered and varnifhed, are made the ground of various defigns for cmboffed work and painting. The emboffed work or relief is raifed by means of printing with a rolling prefs, fuch as is ufed for copper-plates; but the defign is here to be engraved on wood. The painting may be of any kind; but oil is principally ufed, 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 fyle as if weefing.

Lacryma Cervina, in Natural Hifory, a little round and hard bone, faid to grow in the great corner of a Itag's eye after a certain age. Some alfo preferve under this name a thickened excretion from the inner angle of that creature's eye, in colour and confiltence refembling myrrh, or ear-wax, long hardened in the ear. This is of a Alrong and very difagreeable fmeil, like the fweat of the fame animal, and is affirmed to be fudorific and alexipharmic.
LACRYM FE CHRISTI, the name of a fort of wine produced by grapes on the lower part of Mount Vefuvius; fo called from the drops of juice oozing frcm 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 compofes the tears: the puneta lacrymalia are the orifices of two fmall ducts, by which this fluid is abforbed from the furface of the eye; and the lacrymal fac or bag is the cavity in which the tears fo abforbed are received. See Eye.
The os lacrymale is a name applied to the bore in which the lacrymal bag is lodged; it is called allo os unguis. See Cranium.
The lacrymal nerve is a branch of the ophthalmic or firft branch of the fifth pair. See Nerve.
LACSUR, in Geography, a town of Perfia, in the province of Korafan ; 50 miles N.E. of Herat.

LaCTANTIUS, generally called Lucius Cėiuus, or Cacilius Fimminus, in Biograply, the moft eloquent of the Latin fathers, flourihed towards the clofe 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 difciple 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. Whilt he was young, he wrote his "Sympofium," or Banquet, and thus acquired a degree of reputation, which occafioned his being fent for to teach rhetoric at Nicomedia, when Dioclefian propofed to render this city a rival to Rome. Some have fuppofed that Lactantius was in his youth a heathen, and converted to the Chritim faith; but it is molt probable, from the argurnents alleged by Dr. Lardner, that he was educated in Chriftian principles, and that he was a

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Chritian when he taught thetoric at Nicomedia, at the commencement of Dioclefian's perfecution, though it does not appear how he efcaped the danger to which his Chriltian profeffion mult have expofed him, at a time when the church of the Chriftians in that city was deftroyed. Nicomedia was at this time chiefly inhabited by Greeks, who had no great tafte for Roman eloquence; and the religious profeffion of Lactantius, notwithfanding his learning and talents, rendered him. unpopular, fo that the number of his fcholars was fmall, and he was under the neceflity of writing, in order to procure a fcanty fubfiftence. As he was much addicted to reading, and books in MS. were colly, his library mult have exhaufted his pecuniary fupplies. Thefe circumftances will account for the poverty of his condition; without fuppofing with Dupin and Cillemont that it was voluntary. His dituation, however, was improved, when he was invited by the emperor Conftantine 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 Conflantine made any permanent provifion for him, which might reafonably have been expceted. It is generally allowed, that, during the greateft part of his life, Lactaztius was in indigent and even deflitute circumftances, often wanting neceffaries. 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 afcertained. 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 diftinguifhing tenets of theology. Lactantius often fpeaks of the nature and defign of the Chriltian revelation, as fuited to promote the general good of all, of every age, fex, and condition; fo that all may attain to juft fentiments of God, and be directed and affifted in the way of holinefs, and obtain everlafting happinefs. And he afferts it to be in the power of the meaneft and pooreft of men to attain to righteoufnefs. He fometimes glories in the great and happy effects of the Chritian 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 difeafes. He afferts the freedom of man's will, or his power to do goed or evil. He openly afferts the innocence of Chriftian people, all whofe religion, he fays, confifts in good works, or a care to live unblameably and inoffentively. And the criminals, who fell under the fentence of the magiffrate for robbery and other offences, he obferves, were not Chriftians, but of the fame religion with their enemies. He expreffes himfelf as if in his time Chriltians performed miracles in difpoffeffing demons. Lactantius was of opinion, that another life, or a future flate of happinefs for good men, may be proved by reafon. He did not deny the cternity of hell torments. With regard to repentance he often afferts its great value, and maintains, that whenever finners repent, they are pardoned. He alfo thinks, that the divine difpleafure againft men ceafes 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 Chritt's coming, and particularly of his death, he afferts, that Chrift came to be a teacher and a pattern of virtue; and that he died and rofe again, to affift men in overcoming death, and give them alfo hopes of rifing again, and obtaining the reward of immortality. Chrift, he fays, lived in a mean condition, and undervent the ignominious death of the crofs, that he might be a complete example of virtue, and of pa-
tience under fufferings; and that he might more efpecially lead and encourage luch as are poor and mean in this world. In a word, he fays, Chrilt came, and was made like unto man, lived, and died, and rofe again, that he might clearly teach the precepts of virtue, and afford the beft motives to the practice of it, and effectually help frail man to conquer the defires of the flefh, and the fears of prefent evil, and to overcome all the temptations of this life, and thus obtain a happy immortality.

Lactantius has itrenuounly afferted the right of private judgment for every man in things of religion, and he exhorts all men to the refolute and diligent exercife of it. He alfo argues excellently againft perfecution; efteening it the greateft abfurdity that can be conceived, for any to impofe on others a worlhip contrary to their confcience, or to deny men the liberty to choofe their own religion ; and exprefsly affirming, that it is not zeal for religion, but a love of power. For religion, he fays, is the freet thing in the worid; nor can it be promoted by force and violence. Compulfion may make men hypocrites, but it cannot make them religious. He alfo maintains, that it is no juft reafon why men thould be perfecuted, becaufe they defert or oppofe ancient and eftaLlifhed religions. For there can be ro profcription againtt truth; and every man has an unalienable right to fearch after truth, and to profefs it, when he has acquired the knowledge of it ;-with much more, admirably exprefled, to the fame purpofe. Of the numerous errors, real or imaginary, charged upon Lactantius, we shall enumerate the following: the firlt and principal is that of Manichairm, from which he is vindicated by Lardner. It is well known, that he denied the exiftence 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 terreftrial reign of Chriit for 1000 years before the general judgment, and he thought it to be very rear, within a period of 200 years. (See Millexsium.) Lactantius denied the perfonality of the holy ghott; nor did he confider Chrilt's death as a propitiatory facrifice for fin, or a fatisfaction made to divine juftice for the fins of the human race. Thefe opinions, in which he differs from many others, and fome of which are undoubtedly erroneous, have occafioned feveral reflections upon his judgment and character. Dr. Heumann, in particular, acknowledges that he was pious, learned, and eloquent ; though chargeable with feveral faults and defeets; he was no critic, nor philofopher, and but a poor divine. Bull fays, that he had rery little knowledge of the Chrillian doctrine; and Warburtonafferts, that be knew but litele of Chriltianity.

As a writer, Lactantius has been bighly commended. Dupin fays, that he is jullly efteemed the Chriltian Cicero for his Atyle, whillt he greatly furpaffed him in his thoughts. Some authors have not only found a friking 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 quies and peaceful fate of the church before Dioclefian's perficution; he was alfo witnefs of that dreadful fcene, and afterwards faw the flourihhing condition of Chrittians under Conftantine. His eminent abilities recommended him to the efteem of two great emperors, of different religions. His uncommon honelty and fimplicity, and earnelt zeal for the Chriltian religion, ard all truth in general, appear in his works, where alfo his learning is very confpicuous." He had, as it feems, a certain vehemence and impetuofity of natural temper not uncommon in Africans, which on Come occafions hindered

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his confidering and weighing what might be faid on both fides of a quellion. 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 Clirittian profeffion in his day;" for "he employed his fine parts and extenfive 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 beautics of his fyle; but the matter of his works is alfo a juft recommendation."

The principal work of Lactantius is intitled "Inftitutionum, libri vii." which was occafioned by the writings of two heathens of note, who publifhed their pieces againt the Chrifians at the beginning of the perfecution under Dioclefian, apd was alfo intended as a general anfwer and full confutation of all others, who already had oppofed, or hereafter might oppofe, the Chriftian 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 compofed the greatelt part of it under the perfecution of Dioclelian, and that, probably, it was not publifhed till that perfecution terminatcd. We have alfo an "Epitome" of the Inftitutions, infrribed by Lactantius to his brother Pentadius, which is fuppofed 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. Chriitopher Matthew Pfaff, and publifhed by him intire, or nearly fo, at Paris in 1712 , to the great joy of the learued world. This abridgment is an ufeful book, and contains fome things not to be found in the Inflitutions themfelves. His book "De Ira Dei," i.e. of the wrath or anger of God, which is ftill extant, is particularly commended by Jerom, as a learned and elegant performance, and a complete treatife on the fubject. In this work he endeavours to prove that God is capable of anger, as well as of mercy and compaffion. In his treatife "De opificio Dei," i. e. of the workmanfhip of God, he eftablifhes the doctrine of God's providence, by demonitrating the excellence of man, his principal work, giving an elegant defcription of the parts of the human body, and the properties and facultics of the foul. Of the genuinenefs of another work, ufually afcribed to Lactantius, and intitled "De Mortibus Perfecutorum," i. e. of the deaths of perfecutors, different opinions have been entertained. Dr. Lardner has referred to the writers who have efpoufed both fides of the queftion; and as for himfelf, he feems to incline to the opinion of thofe who do not allow it to have been written by Lactantius. He allows, however, that it is a very valuable work, containing a flort account of the fufferings of Chriftians under feveral of the Roman emperors, from the death and refurrection of Ctrift to Dioclefian ; and then a particular hiltory 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 alfo 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 firit publifhed by Stephen Baluze in the fecond volume of his Mifcellanea, in the year 1679. It is needlefs to fay any thing of the poems de Phoenice, de Pafche, de Paffione Domini, which fome have afcribed to Lactantius, and which are joined to his works in moft editions. They are not mentioned by Jerom, and are now generally fuppofed not to belong to this author. The "Itinerary" and "Granmati-
cus," mentioned by Jerom, are irrecoverably lof. A work, nuder the title of the "Sympofium," or Banquet, long fuppofed to have been loft, was not long ago publifhed by 1 Dr . Heumann, who afferts its genuinenels. It is a collection of 100 triftich cpigrams, with a prologuc. All our author's books of Epiltles are entirely lolt. The editions of Lactantius are very numerons. Fabricius has given a full and copious catalogue of them. The firlt edition was publifhed at Rome, in 1468 , fol. by Conrad Lewenheim; and the laft, which is the moft correct, was edited at Paris in 1748 , in two vols. 4to, by the Abbé Lenglet.
lactantius has, in his various works, references to the goipels, the Acts of the Apoltes, and fome of the épilttes, and to the book of the Revclation, which he exprefsly quotes as facred feripture, and written by John. It appears alfo, that he had a collection of fcriptures, confifting of the Old and New Teftament; which he efteemed facred and dsvine, and of the highelt authority. His quotations of S:bylline books, and other writings, afcribed to heathen vatcs or diviners, fuch as Hydafpes, and Hermes Trifmegittus, were intended to ferve the caufe of Chriftianity; but he did not reckon them a part of thofe books which were of austhority with Chriftians. Nor does it appear, that he placed the preaching of Peter and Paul in the rank of facred fcripture, though he has once quoted it. Fabr. Bibl. Eccl. fub Hieron. cap. Ixxx. Cave's H. L. vol. fub frc. Arian. Dupin. Lardner's Works. vol. iv.
LACTARY, in Rural Economy, a term frequently applied to a milk-houfe, or place where milk is kept.

Lactary Column. See Column.
LACTATION, the act of giving fuck.
The word is alfo applied to the time during which the mother doth that office to her young.

LACTEA VAsA, or Ladeals, in Anatony, are thofe abforbing veffels which take up the chyle, or the nutritive matter furnifhed by the food, from the furface of the intef--tines. As this fluid is of a white colour, the veffels, when filled with it, appear quite white, and hence their name. They may be feen in valt abundance in an animal killed a few hours after a meal. See Absorbents.

Lactea Via, the milky way. See Galayi.
Lacteal Fevers, a term ufed by ATedical Writers, to exprefs what the women call milk fevers, that is, fuch fevers as attend the difficult ingrefs of milk to the breaft of lyingin women. See Labour.

Lacteals of Birds. See Anatomy of Birds.
LaCTEUS Lapis, in Natural Hiffory, a name given by fome authors to the galactites.

LaCTLFERI 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, fowthittle, and many others.

LACTOMETER, in Rural Economy, the name of an inflrument for the purpofe of afcertaining the different qualities of milk. It was invented by Mr. Dicas, mathematical inflrument maker, in Liverpool; and the following defcription of it is given in the Survey of the County of Lancaller. This lactometer is contrived fo as to afcertain the richnefs of milk from its fpecific gravity, compared with water, by its degree of warmth taken by a ftandard thermometer, on comparing its fpecific quality with its warmth, on a fcale conftructed for this particular purpofe, and by which, if the principle be right, may be difcovered not only the qualities 28

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of the milk of different cows, paftures, food, as turnips, potatoes, grains, Sce. but alfo probably, which may be the beft milk or beft paltures for butter, and which for cheefe. This in?rument, however, is but in its infancy. At his own houfe, the writer has made a number of varied experiments upon different milks from different farms.

It is flated to be conltructed with ten divifions upon the Aern, fimilar 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 inftrument, upon the middle or fliding part of which is laid down the lactometer weight of the milk, going from o to 80; and oppolite thereto are placed the various itrengths of the milk, from water to $160 ; 100$ having previoully been fixed upon, from a number of experiments, as the ftandard of gond new-milk, and each of the other numbers bearing a proportionate refierence thereto. At one end of the fiding-rule the degrees of heat, from 40 to soo, are placed with a itar oppofite, as an index to tix the flide to the temperature of the milk; the whole being graduated to fhew the exact frength of the milk, as it would appear in the temperature of 55 degrees of beat, although tried in any inferior or fuperior temperature between $40^{\text {. }}$ and $100^{\circ}$ : 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 expanfion fubtituted. And as fkimmed milk, being divelted of the particles of butter which exilted before flkimming, appears to have a lefs degree of affinity with that than the new milk has, ane fide of the ivory fliding-rule is adapted to fkimmed, and the other to new. This fimple contrivance is reprefented in the annexed plate.

General Rulle.-Firit, find the temperature of the milk with the thermometer, and fix the nliding-rule fo that the Atar fhall 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 divifion together, and oppolite the fame, formed upon the fide, will be fhewn the itrength of the milk.
Examples of $N e=u$ milk.-If in the temperature of $72^{\circ}$, the lactometer with the weight 40 finks to 9 upon the flem, fix the fide fo that the ltar hall be facing $72^{\circ}$; then oppofite 49 will be found 100 , the ftrength of the milk. Again, 'if in $60^{\circ}$, the lactometer with 50 on the top finks to 6 upon the ftem, the flide being fixed for new-milk, fo that the far Shall be at 60 of heat, then facing 56 will be found ryo, the ftrength of this milk in proportion towards the other, provided it is equally replete with cream. To difcover which, it becomes requifite thefe two famples fhould tland 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 denfer or better in quality than before. Suppofe the milk in the firt example to be 57 by the lactometer in 60 degrees of heat, then the ftrength by the fkimmed milk fide of the rule will be 112 . And admit the fecond example of rew-milk to be 58 in $6 \psi^{\circ}$ when fkimmed, the ftrength sould be 116 .
As a comparifon fay,
No. 3.

| Nerv-milk |
| :--- |
| Ditto fkimmed |$\quad . \quad 100$

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## No. 2. New-milk - 110 <br> When fkimmed <br> 116 <br> 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. Sume inflances have occurred where the flrength of new-milk has only been about 80 , and when flimnied near 100 . Thus it may, without the leait imprupriety, be called a milk much better adapted for making butter than cheefe; the ferum or whey in general being near the fame denlity.

The inllances in which the lactometer may be ufeful, are, according to the fame writer, in difcovering what breeds of cattle are molt advantageous; what food in the, winter fealon, whether carrots, turnips, potatoes, sce are beft; what the effects of different paftures may be; how far particular farms are belt adapted to making butter and cheefe; how far the inconvenience of large cheefes in fome dairies being too rich to ftand may be prevented, by difcovering when this redundancy of richnefs exitts in the milk; and in fixing a ftandard for the fale of this ufeful article of life.
A flandard for fkimmed milk may readily be fixed, by faying what Itrength the common faleable fkimmed milk fhall be by the lactometer, or what its Specific gravity fhell be in relation to that of water in the temperate degree of heat, and that an eafy comparifon may be made between the fpecific gravity of any milk, and its lactometer ftrength; this inftrument is fo conftructed, that one of feecific gravity fhall exactly correfpond with three of Arength; that is, the ftrength of 90 by the lactometer is a milk whofe fpecific gravity is ro30, to common pump water 1000. From a number of experiments and obfervations, it is obferved, that the common faleable fimmed milk in Liverpool is from $5^{2}$ to 64 of ftrength, and that of new-nilk from 70 to 80 ; but it would be difficult to fix any flandard for the latter, unlefs fome mode could be devifed to difcover whether it was mixed with old milk or not. The only method would be, after fixing the ftrength of it, to try, by letting it fland, to difeover if it produced that quantity of cream, which as new-milk it might reafonably be expected to do.

This ingenious contrivance is made ufe of in the Liverpool workhoufe, with great fuccefs in afcertaining the goodnefs of the milk which is there employed.
LACTUCA, in Botany, fo called by the Latins, from luc, milk, becaufe 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. Juff. 169. Tourn. t. 267. Lamarck. Illuftr. t. 649. Gxertn. t. 158.-Clafs and order, Syngenefia Polysamia-equalis. Nat. Ord. Compofise Semiffofculoje, Linn. Cichoracee, Juff.

Gen. Ch. Common Calyz imbricated, nearly cylindrical, of numerous pointed fcales, with membranous edges. Cor. compound, imbricated, uniform; the llorets hermaphrodite, numerous, equal, each of one petal, ligulate, abrupt, with four or five teeth. Stam. Filaments five, capillary, very fhort; anthers united into a cylindrical tube. Pif. Germen nearly ovate ; ftyle thread-fhaped, as long as the ftamens; ftigmas two, reflexed. Peric. none, except the permanent clofed calyz, become rather ovate at the bafe. Sceds folitary, obovate, pointed, itriated, compreffed; down capillary, fupported by a long ftalk tapering at its bafe. Recepto naked.

EII. Ch. Receptacle naked. Calyx imbricated, cylindri-

## LACTUCA.

cal, with pointed, membranous-bordered fcales. Sceds compreffed, ftriated. Down fimple, ftalked.

This genus is moft naturally allied to Sonchus, the Sowthiftle, in habit and qualities, as well as fructification, the talked feed-down, and much more flender and cylindrical calyx, contituting its chicf marks of diltinction. The rith edition of Sylf. Vig. enumerates ten frecies; Willdenow has 21. 'Three of them' are natives of Britain, occurring chiefly in warm dry fpots, where the foil is calcareous. Thefe are L.. virofa, Engl. Bot. t. 1957. Woodv. Med. Bot. Suppl. t. 250 , celebrated for its opium-like fcent and foporiferous quality: L. Scariola, Engl. Bot. t. 268, a more flender and lefs active plant, diftinguifhed by the vertical polture of its leaves, of much more rare occurrence, being fearcely found wild except in the inc of Ely: and Lo. feligna, Engl. Bot. t. 707 . Jacq. Auftr. t. 250, the moft llender of all, which ever fince the time of Ray has been ftationary about Pancras, and near the Small-pos Hofpital. There are atl biennial plants, three or four feet high, more or lefs ghaucous, with fimall fulphur-coloured Howers, which expand only in bright funny morrings. The Rev, Mr. R. B. Francis found the laft-mentioned at South-end, Eflex, but it is among the moft uncoramon of Englifh plants.
Of the foreign fpecies, L. fativa, Linn. Sp. Pl. in is. Ger. em. 3c6, is well known as the Garden Lettuce, rendered luxuriant, mild, and wholefome by culture; for though we know it not in an actually wild ftate, fome idea of its nature may be difcovered by allowing it to fow itfelf fpontaneoufly for two or three generations, the produce of which will be found much more bitter and acrid, as well as far lefs luxuriant, than the cultivated plants. Of this fpecies the L. crijpa, Willd. !., 2. Ger. em. 306. Dod. Pempt. 644, appears to be a variety, as it has always been thought, till Roth diftinguinhed it. Such is the caife with $L$. palmata of Willdenow, who quotes for this the L. crifpa non capilata, Lob'. Ic. 242, which is the very identical wooden cut he had juit before cited from Dodonzus for the preceding.
L. quercina, Linn. Sp. Pl. in18, has always been a very obfcure plant, fcarcely known but in the Limnean herbarium. The fynonym of Ray is, at belt, doubtful, and the figure given hy fir John Hill, in his cumbrous Vegetable Syftem, is altogether a deception, drawn from defcription or imagination. What the German writers intend under this name, we have no infermation. The following is a tranflation of Linnæus's account of the L. quercina, from his Swedifh Travels to Oeland and Guthland.-"Laftuca with leaves finuated in a pinnate form, finely toothed, acute, without prickles at the back, and a finooth ftem. Fl. Suec. ed. 1. $n . \sigma_{4} 6$. Found on the fouth fide of the leffer infe of Carlfoen, towards the eaft. I never had an opportunity of feeing this plant before; and Ray is the only author whofe defcription is fufficiently clear to prove, beyond a doubt, that the Laciuca foliis quernis, of his Hitt. Plant. v. y. 210 , is a fimilar plart. . The root of our's is flethy and obtufe. Stem a cubit high, erect, round, fmooth, fimple. Cluft: of flowers terminal, clofe, narrow and long. Leaves like Sonchus oleraceus, but having fharper teeth, as if bitten or jagged. Caly.x nearly cylzidrical, fcaly, fnooth, with fcattered ruity fpots; the fcales erect, furnifhed at the back with an additional fpreading fcale."
L. canadenfis, Linn. Sp. Pl. Iry, is rightly removed to Sonchus by Willdenow, under the name of pallidus. The fame author, on the contrary, removes the Linnean Sonchus suberofus to LaEluca, calling it fonchifolia, and he appears to be right in this inftance alfo, the feed-down being fupported by a confiderable falk.
L. perennis, Linn. Sp. Pl. 1120. (Chondrilia cxerulea: Ger. cm. 286.), is one of the more handiome fpecies of this genus, on account of its elegantly pinnatifid leaves, and large blue flozects. It grows in the warmer parts of Germany, Switzerland, and Fraice, and is pe cmial.

- A typographical error in our account of Hierecium, co. lumn 3, hine 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 fpecies ufually cultivated in the garden, is the common garden lettuce, L. fativa, which has feveral varieties: the principal of which are ;of the cahbage-lettuce kind, the hardy green, white honey, great admirable white, brown Dutch, fmall carly, white ball, green bail; -and of the cofs-lettuce kind, the green cofs, white cois, Egyptian cofs, fpotted cofs, black cofs, brown Cilicia, green Cilicia, red Capuchin, green Capuchin, large imperial, the Roman, the prince; but the three or four firlt of the different forts are the moft valuable, and it is of much confequence to have the bell kinds employed in cultivation.

Metbod of Cu'ture- -This fpecies, and all the varieties, are raifed by fowing the feed annually, at different times, as in February and the three following months, for the fummer fupply of plants; and in Auguit and the following month, for the autumn, winter, and very early foring fupplies. And all thefe different fowings fhould be performed upon beds of fine light dry earth, in an open fituation, and expofed to the fun. Some of the late fowings may be made under hand-glaffes, or in frames or boxes, in order to have the young plants protected from the froits. Each of the varieties or forts fhould be fown feparately, and diftioct from the others, and be flightly raked into the fuil.

It is fometimes the practice to fow them among other low growing crops, fuch as radifhes, fpinach, onions, \&c. to fave ground ; but this flould always be avoided as much as polfible, as a very fmall portion of land is fufficient for railing large fupplies of plants.
For the very early fpring ufe, as open lettuces, the early white cahbage forts are the moft proper; but for the main crops, to remain for full growth, the principal forts of the cofs and cabbage kind mult be employed.

When the plants appear, they murt be kept perfeetly free from weeds, and properly thinmed out. As they attain a proper growth, as three or four inches in height, fome of the different forts mult be planted out into beds in the open ground, drawing them up carefully, and planting them immediately. This work fhould be performed by a line and fmall dibble, in rows, a foot or more diftant, with the fame fpace from plant to plant. The quincunx mode is mofly adopted, which affords the moft room, and at the fame time has the neateft appearance. As foon as the planting is finifhed, the whole fhould 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 diftance of three weeks or a month, from the early fpring 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 them in fmall drills, in order to preferve the moifture more effectually.

After the beds of the different principal fowings have been confiderably thinned by the feveral tranfiplantations that bave been made from them, the plants that remain may be fet out

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to proper ditances by the hoe, and left to take their full growth.

As foon as the plants of the main fpring and fummer crops have attained a pretty full growth, efpecially thofe of the cofs kinds, it is neceffary to tie the leaves of them up with bafs pretty clofe, when the plants are quite dry, in order to blanch the inner parts, and render them perfectly crifp, fweet, and tender.

Mode of Culture in the IVinter and very early Spring Crops. - For this purpofe, fome feed of the hardy green and white cabbage forts, and the brown Dutch, and white and green cofs kinds fhould be fown about the middle of Auguft, and beginning of Scptember, in open lituations, 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 belt plants of each fowing flould be planted out in a warm dry fituation, five or fix inches afunder; and at the latter period fome in fhallow frames, to be covered with glaffes on cold nights, and in lad weather; or under hand-glafles, or in a bed arched over with hoops or rods, to be covered with mats in winter frofts. Under either of the above flelters the plants fhould have the free air in the day time in mild dry weather, covering them in cold nights with proper covers, efpecially after this month; alfo, in all very cold, and in very wet weather, day or night, particularly thofe in the frames and under glaffes; and thofe in hand-glaffes may have the glaffes almolt conftantly over them in winter, tilting up one fide in mild weather, only fetting them entirely off in fine mild or dry days; but in fharp frolty weather keeping thofe under every kind of fhelter quite clofe; allowing alfo additional covering of mats or litter, when the froft is very intenfe. Thofe in the borders may be defended by fome light litter; but the covering fhould never be fuffered 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 greateft part of the winter and early in the fpring, particularly the cabbage forts: thofe planted out firlt will be fit for ufe in November and December, and the fecond plantings come in towards Chriftmas, and being fheltered by the glafes, continue coming in for ufe till fucceeded by the other latter autumn fowings; being careful that, as any are gathered out of the frames or glafles, others be removed from the borders to fill up the vacancies, whereby the glaffes may be conftantly fupplied during the winter feafon.

It is fometimes the practice where lettuces are intended to be planted in frames late in autumn, for winter ufe, 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 livings, allowing plenty of air in mild weather, the plants may be very fine by Chrilmas, or a little after.

Mode of Culture in the Winter flanding Spring Crops.-In order to have good lettuces for fipring ufe, fome feed fhould be fown toward the middle and latter end of Auguh, for the plants to ftand the winter, fome where fown, others arauplanted into warm borders, to ftand without any other fhelter than that of the walls or other fences; and another fowing floould be performed about the middle of September, to provide plants for pricking out under frames, to have the Thelter of the glaffes all winter, as a referve in cafe thofe in the borders are deflroyed; where both ftand, one may fuc. ceed the other as crops. In the firlt cafe a quantity of the belt plants, when two or three inches high, fhould be planted out towards the latter end of OAtober, into a fouth border, unds a wall, $\& \in e$, and in fome other warm dry fituation,
in rows fix inches afunder, and four inches in the rows; or fome clofe under a fouth wall, or other fence, in a foot wide fpace all the way along, pricking them therein four or fix inches diftant ; as they will have a better chance of flanding the winter than thofe fituated more diftant from the fhelter 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 efcape the frolt; but in very fevere weather they may be protected by a light covering of dry long litter, which fhould be removed again in due time when the froft breaks. In March or A pril, if they remain too thick, fome fhould be thimed out and planted in another place, in rows twelve or fifteen inches afunder; the crops thus wintered in the open ground, come in for ufe in April and May, to fucceed thofe fown in autumn, and fheltered occationally all winter, and will remain good till the fpringfown plants are ready for ufe.

But in the latter cafe, or thofe fown in September, to be wintered in frames, they fhould 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, finifhing with a moderate watering all over the plants, and putting on the glaftes to promote their more fpeedy rooting afrefh, puhing the lights, however, two or three inches down, to give vent to the moilt vapour arifing from the mould. But when the plants have taken frefh root, and are fet to growing, the full air hould be admitted every mild dry day, by taking the glafles entirely off, which mult be continued throughout the winter feafon, in all dry mild weather, but putting them on every night in cold or very wet weather ; alfo in the day-time when great rains prevail; and in frofty we-ther keeping the glaffes always on, except in the middle of funny days, and when the froit is but finght; ufing alfo other coverings of mats or long litrer over the glaffes, and around the fides of the frame, when the frofts 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 fhowers. In this way they may be effectually preferved, if thofe in the open ground thould be deltroyed by the froll or excefinve muifture. About March fome of them fhould be tranfphanted into a warm lituation in the open ground, in rows, a foot afunder, watering them moderately till frefh rooted; leaving a crop remaining in the frames or winter-bed, a foot apart, to tland to cabbage; which will arrive to perfection a confiderable time before the tranfplanted ones, and thofe that have been fully expofed all winter, are ready. Where frames cannot be fpared, a quantity of the plants may be pricked out under hand or bell-glaffes in autumr, to iland the winter, either by themfelves for a full crop, or foms under the hand or bell-glaffes that are placed over early cauliflowers, as practifed by the London gardeners, planting them round juft within the glaffes, and managing them as directed for thofe 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 thofe fully expofed; and in fpring tranfplanting a quantity, by way of thinning, into other beds, as directed already.

Manner of faving Seed. - With this intention fume of the belt cabbaged early plants of all the forts Should be chofen, as thofe of the latter crops rarely run foon enough to ripen fecds perfectly before they are attacked by the autumnal

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ryins and cold, which greatly retard the ripening of the feer. And it is of much importance to have the different varietics 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 derenerate plants be produced, initead of fuch as are perfect in their nature.
The feed ufually ripens in Augult and September, but that of different plants racely equally together; fo that, as it arrives to perfection, the refpective ftems, \&.c. of ripe feed fhould be pulled up or cut off in dry days, and fpread upon a cloth, or tied in finall bunches acrofs 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 rubbifh, and expofed upon cloths a few days to dry for keeping ; being afterwards put up in bags for ufe, and hung in a dry room or other place.
In general thefe plants may be conlidered as amnuals and biennials; as thofe fown in fpring and fummer attain perfection, run up to feed, and perifin the fame year ; while the autumn fowings fland all winter until the fpring following, when they attain perfection, hoot up to feed, and perifh root and branch. All the forts are fufficiently hardy to grow in any good dry common foil, in a free fituation open to the fun and air.

In regard to the ufe of thefe plants it is principally in fallads, when arrived at full growth and cabbaged, that the inner leaves become blanched, crifp, and fiseet; and fometimes, alfo, the young open plants of the cabbage-lettuce forts are ufed in winter and fpring, till the other general crops arrive at perfection. Young open lettuces are alfo often ufed as fmall fallad herbs, fowing them thick in rows, like crelfes, \&c. and gathering them in the fame manner; but this mode is more particularly practifed in winter and early fprin. 5 . They, however, in general, do not eat any way fo crilp, fweet, and palatable, as when fully cabbaged. The fully cabbaged-lettuces are alfo excellent for thewing and for foups, as well as many other culinary ufes.

Lactuon Marina, fea-lettuce, in Botany, a name ufed by fome authors for the lichen marimus, commonly called oifergreen.

Lactuca Virofa, in the Materia Mcdice, a fpecies of laetuca, which grows about ditches, banks, borders of fields, and old walls, flowering in July and Augult. The plant has a frong ungrateful fmell, refembling that of opium, and a bitterilh acrid tafte. It abounds with a milk juice, in which its fenfible qualities feem to refide, and which feenis 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, firft 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. $D_{\text {i. . Collin mentions more than twenty-four cafes of }}$ dropfy that have been treated with fuccefs by employing an extract prepared from the expreffed juice of this plant, which is ftated to be, not only powerfully diuretic, but to promote all the fecretions, and to remove vifceral obitructions. In the more fimple cafes, proceeding from debility, dofes of the extract, from eighteen to thirty grains a day, proved fuffic ent to accompliih a cure; liut as the difeafe was inveterate, and accomparied with vifceral obftructions, the quantity of extract was increafed to three drams; nor did larger dofes produce any bad effect befides exciting a naufea. The patients, it is faid, continued fo ftrong under the ufe of this remedy, that it was feldom neceflary, to em-
ploy any tonic medicines. In Germany, few phyficians have, fince the year 1771, when Dr. Collin made his experirgents with the lactuca, adopted the ufe of this plant: and lience Dr. Woodville (Med. Bet.) takes occalion to obferve, that the recommendation of 1 )r. Collin will be fcarcely thought fufficicnt 20 eftablina its ufe in England.

LACTUMEN, from lac, milk, in Surgery, a name fometimes given to tinea capitis, or the fcald bead, on account of the white fcabs which are formed in this difcafc.
L. ACTUMINA, from lac, milk, little ukers, or count fcabs in the fkin, chiefly occurring in children at the breaft.
LACUNA, A. .drew, in Biograply an eminent Spanifh phyfician, was born at Segovia, in Oll Caftile, in the year 1499. He ftudied philofophy at Salamanca, and afterwards went to Paris, partly for the purpofe of improving his knowldgge of the Greek language, and partly for the itudy of medicine. He took a degree in that capital, but probably only that of matter of arts. In 1536 . he returned. to Spain, and followed the courfes eftablifhed in the colleges of Alcala, Henarez, and Toledo, in the latter of which he received the honours of the doetorate. After this he inmediately 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 ceurt of that monarch. In is $\mathrm{O}^{0}$, he went to the imperial city of Met\%, and refided there five or fix years, rendering great fervices to the citi-zens during the prevalence of an epidemic peftilence : and by his influence, thus acquired, he contributed to ftrengthen 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 . of the year 1560.

He proved himfelf a learned critic by the corrections and commentaries on the works of Diofcorides, and on many parts of thofe of Hippocrates, Ariftotle, Galen, \&c. His own works are numerous, confinting of a treatife 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 tranllators, \&c. He likewife publifhed a treatife on gout, on excrefcences in the neck of the bladder, and on diet. and an epitle to Cornaro; and he tranflated the works of Diofcorides into Spanifh. Eloy. Dict. Hitt. de Med.
LACUNE, in Anatomy, fmall 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 defcription of them in thofe organs under Gexeration.

LACUNARS, in Arclitectire, are the pannels or coffers formed on the ceilings of apartments, and fometimes on the foffits of the corona of the Ionic, Corinthian, and Compofite 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 lacusars are not fquare, but longer in the longitudinal than in the tranfverfe direction of the building.
In the temple of Thefeus at Athens, the lacumars 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 bave only a fingle recefs upwards, with an ovolo aboze the recefs. The fide of the \{quare of each coffer is about one-fifth part of the diameter of the column, and their reefs upwards half the fide

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of their โquare. The diftance between the beams is equal to the breadith of the antx at the bottom, or nearly equal to the diameter of the columns. The beams are not regulated by the columns, but placed at equidittant intervals, to reccive the two rows of lacunars or coffers. Within the temple or cella, the beams reach tranfverfely from fide to fide; but without, and under the foffit of the pronaos, they extend longitudinally from the front to the sear of the pronaos, and the lacunars in the fame direction.
Temple of Minerva at Atbens, Plates IV., VII.-The lacunars are placed above a fricze highly decorated with hiftorical figures.

In this they are formed in one recefs, with a moulding ovolo at the top of the recefs, or the faxthet extremity of the fides. The lacunars are not fquare, but longer from front to rear of the portico, than in the tranfverfe direction of the building. Chap. ii. Plate XVIII.

In the foffit of the temple of Pandrofus at Athens, the lacunars are formed immediately above the architrave, each into three receffes, with an ovolo at the bottom of each, nearly as broad as the perpendicular furface. The whole depth of the recefs is nearly half the fide of the \{quare of the lower part of the faid recefs. Each part diminifhes gredually in breadth in a floping ttraight line, till the fide of the fquare of the upper part is fo contracted as to be only half that of the lower. Each fucceeding third part diminimes regularly in altitude, fo that accounting the bottom the firft, the altitude of the fecond, or the one next above, is fomething lefs, and the third about the fame quantity lefs than the fecond. Each orolo is fomething lefs in height than the vertical furface below it, and has the fame ratio to its refpective furface.
The cella of the temple of Velta at Rome is furrounded 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 fquare as is confiftent with their diminution, formed by radiations towards the centre of the building, and are conftructed in two receffes. The greatelt breadth of the outfide lacuinar is about nine thirteenths of the diameter of the columns. The whole depth of the recefs upwards is about one-feventh 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 greatelt breadth of the upper recefs is about two-thisds of the lower. The hollow of this recefz is occupied by a rofe of a circular form. The recefs or cradle vaults of the temple of leace at Rome are arched and erriched with cctagonal lacunars, each formed in three receffes, which diminifh in their margins as they recede upwards Between the octagonal lacunars are others of a rquare form in a diagonal pofition. 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 Compofite orders, are generally enriched with lacunars between the modillions

LACYDES, in Biography, a Greek philofopher, and native of Cyrene, was a difciple of Arcefilaus, whom he fucceeded in the academic chair. He was brought up in very humble circumitances, but acquired great reputation by intenfe application to his tludies, and a graceful elocution. He was lighly efteemed by king Attalus, who gave him a garden where he might devote himfelf to ftudy, and to the Eilltruction of others: this was afterwards known by the

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name of the Lacydean garden. Attalus wihed Lacydes to come and refide at his court, to which he refpectfully replied. that the portraits of kings fhould be viewed at a diftance. He taught his difciples never to be hafty in their judgments, and never to fpeak pofitive'y. Having taught philofophy twenty-fix years, he refigned the employment to his fcholara Tclecles and Evander, in the fecond year of the 14 ft Olympiad. In old age he difgraced himfelf by giving a favourite goofe a moft magnificent funeral, and he fell a victim to exceffive drinking. Bayle. Enfield.

LAD, in Geograply', 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 Lavta, in Geography, a province of Thibet, bounding on Caflmire towards the welt, towards the ealt on Ngari, and towards the north on the Urbeks. See Thibet.
LADANUM, in Botany. Sẹ Cistus.
Ladanum, or Labdanum, in Pbarmacy, a gummous or a relinous matter, oozing out of the leaves of a fhrub called ciflus creticus, or ladanifera, which is very common in the hot countries of the Levant, particula-ly in Candia, and of which there are various kinds. The flarub is alfo 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 fhrub, return to the ftable with their beards loaded with a fat fubitance, 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 flarub; and, fcraping off what had ftuck 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 bruhing it off the leaves with a fort of whip, compofed of many lafhes, or flraps: after it is fcraped off the ftraps, they make it into cakes of different fizes.

Pietro 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 was.

Bellonius fays that this juice is collected by lightly bruthing the fhrub, in the fummer heats, with a kind of rake, called in Candia "Erga-tiri," having feveral ftraps or thougs of leather fixed to it inltead of teeth; the unctuous juice adheres to the thongs, and is afterwards fcraped off with knives, and formed into regular mafles for exportation.

There are two forts of ladanum in the fhops: the beft, which is very rave, is in dark-coloured maffes, of the confittence of a foft platter, which becomes ftill fofter on being handled. The other is in long rolls, coiled up and much harder than the preceding, and not fo dark. The firft las commonly a fmall, and the laft a very large admixture of fine fand, blown upon the juice from the fandy foil where it is found.

Ladanum has been fometines exhibited as a pectoral and aftringent in catarrhal affections, dyfenteries, and fereral other difeafes, but it is at prefent wholly employed in exterral applications and perfurnes. The foft kind, wivich has an agreeable fixell, and a lightly puugent bitterifh tafte, makes an ufeful ingredient in the cephalic and flomachic plafters of

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The frops. Rectified Spirit of wine diffolves nearly the whole of the pure ladanum into a goldecoldured liquor. Water aequires by infufion much of its fmell and talle: and, by diltillation in water an effential oil arifes, leaving a brittle alnooft inlipid refin and a pale-coloured liquor, which, infpifsited, fields a weakly bitterifh extract. Heat foon deftruys the feceitic flasour of this juice. Lewis.

Ladanus, Lizuid, more properly called clear or purifeed lacanum, is a preparation of the natural ladanum, by meling and purifying it from the hairs, \&c.

This hardened is fometimes fold for a fort of black am3) argrs.

LAider to Heaven, in Bolayy. See Lily of the J"alle.j.

Ladders, Scaling, in the Military Art, are ufed in efcalade. They are of various forts; fome are of ropes and fome of wood; fome are made of feveral joints, fo as to be capable of being put together, and to form ladders of different length, according to the fervice required. There is a fort ufed in England, much of the fame make as the common ladders, except that the fteps turn about wooden pests, fo that the poles may be brought near each other, or to thut like a parallel ruler. Thefe are very convenient for carriage.

Ladders, in a Slip?, derive their names from the feveral hiacchways or other parts where they are fituated. Beffies thefe, there are fome of a particular conitruction, as the accommodation-ladder, and the quarter-ladder. The ac-comaodation-ladder is a fort of light faircafe, occafonally Fixed on the gangryay of the admiral, or commaider in chief of a fleet. It is furnifhed with rails and entering ropes, covered with red baize, and the lower end of it is kept at a proper dittance from the flip's fide by iron-bars or braces, to render the paffage more convenient to thofe who enter or leave the Chip. Quarter-ladders, are two ladders of rope, depending from the right and left fide of the thip's ftern, whereby to defcend into the boats which are moored altern, in order to bring them up along-fide of the frip, or to wfe shem for any other occafion.

Ladoer H'ajs, the openirgs in the decks where the ladders are placed.

LADEINOEPOLf, in Geggrafby, a town of Ruffia; in the government of Olonetz; 56 miles S . of P'etrozarodik. N. lat. $61^{\circ} 56^{\prime}$. E. long. $33^{\circ} 50^{\prime \prime}$.

LADEN, in Sea Language, denotes the fate of a finp when the 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 fhe is laden be extremely heary, her burthen then is denominated by the weight of the goods; if it be light fhe carries as much as fhe can ftow, fo Iis to be fit for the purpofes of navigation. A ton in meafive is gencrally ellimated at 2000 lb . in weight, and therefore a veifiel of 200 tons ought to carry a weight of $400,000 \mathrm{lb}$. when the matter of volich the cargo is compofed is fpecifically heavier than the water in which fhe floats.

Ladey, in Bulk, denotes the flate of being freighted with a cargn, which is not in cafks, boxes, bales, or cafes: but lies loofe in the hold, being defended from the moifture or wet of the hold, by a number of mats and a quantity of dumage. Such are ufually the cargoes of corn, falt, or fuch materials.

LADENBURG, in Geograpby, a town of Weftphalia, i:1 the bifhopric of Ofnabruck; nine miles S.S.E. of Ofnabruck.-Alfo, a town of the duchy of Baden; fix miles E. of Manheim. N. Jat. $49^{\circ} 27^{\circ}$. E. long. $8^{\prime} 40^{\prime}$.

LADETSCH, a town of Bohemia, in the circle of Czallau ; ${ }^{2} 2$ miles S.S.W. of Czafau.

Vol. XX.

## I. A ()

LADJA, in Ifimboo ATwholow, a beirg prodirent be. Brahma, fimilanty with Lalha: a being which Eratera, en the creative power of the desty, produced from lis "in when peopling the world. Lalina is a perfonifocation of petite or paffion, and the word in Sanferit ha, as in rany wite banguages, a babial meaning, indicating the fource of th being thens produced. On hat occation Kama, a purtorit co. tion of love or defire (fee Fasa) , fprung trem his hears : the form of a beautenus female, and Brahma, focking on L... with amorous emutions, was informed by the Munis, (!... Mcxi.) that fle was his own daugherer: he fhrunk back, and Ladja, a perfunification of Chame, a binfinis virgin, we. producce. Brahma, deeming his body defiled by is cmotin: toward Koma, purified it by partial.y metamorphoting it inn ten females, who were refpectively elpoufed by the Atons:

LADIFIEH, in Genereshy, a town of Afatic Tome. in Caramania, anciently Latadica; 20 niles W. of Ccörio

Lamisgo Sce Bill of Ladios:
I, ADISL, AUS I, in Biegrotly, Fing of Funmary, of Beda I. born in 10\&1, was a martial prisce, and joina his brotber Geyfa in a sar againit Solunon, whom he wis the chief caule of defeating, at the tloolly battle which eroprived him of his crown, and placed it upon the head of Geyfa. Upon the death of the latter in 1008 , Ladinans was chofen to fucceed him. He immediately attacked and defeated the rebellious Wallachians, and annexed to his dominions Dalmatia and Croatia, through the gift of his filter, who was widow of the laft king of Dalmatia. He rečuce: the Bohemians 'who had revolted, expelled the Ifuns, and conquered part of Bulgaria and Rulia. He defeated allo the 'Tartars, and having made his dominions fecure on all fides, he ftudied to render them flourifhing and happy by the arts of feace: he encouraged commerce, and fublifhed an improved code of laivs. He built feveral new churches, and made conliderable preparations for joining in the firit crufade, when in an expecition into Bohemsa he was attacked with a difeafe, which put an end to his life in the year IO95, after a glorious reign of feventeen years. He was diftinguilhed for piety as well as valour, and was canonized in II 9 S by pope Celettine III. Univer. Hint.
Lamislaus III., king of Hungary. The fecond prince of this name reigned but a fery months, and did nothing worthy of record. The third Ladiflaus, the fubjeet of this article, furnamed Chun, came to the throne in 127z, after the death of his father, Stephen IV. He obtained the name of Chun from the barbarity of his difpofition. Soon after his acceffion to the throne, he, in conjunction with the cmperor Rodolph, defeated the Buhemian king Othogar, who was flim in battle. After this fuccefo, he gave himfelf up to all manner of voluptuoufnets; divorcing his own wife, that he might indulge his paffion with women of the Tartar nation of Cumans. His general condut was fo bafe, aud his opprefion of the Chriitians fo erormons, that the pope, at the delire of the principal people of Hungary, excommunicated him: upon whicli he feigned a fincere repentance, and built an hofpital for itrangers. His total neglect of the government, and the difaffection of his fabioses, invited the incurlions of the Tartars, by whom Hiniexiz was fo dreadfully defolated, that, for want of beats, men, and even thofe of the higher ranks, were obliged to drave the plough. Hence the Hungarian proverb, "The ploughs of Ladillaus." After a fecond invation, which Ladilans took no meafures to repel, he was Itabbed, while fleeping in his tent, by fome of the Cumanian women in whom be confided, but whom be had offended. Uniser. Hift.

Ladislals IV., king of Hungary, alío king of Poland, under the titte of Uladifans Vo, was fon of Jarello, of Aa Uladiflays
I. A D

Uladinaus IV., whom he fuececeded on tho Polinh throne in 4.35, being then only in the uinth Jear of his age. He was clected king of Hungary in $14 f^{\circ}$. As the famous crown of St. Stepheri was in poffeffion of the late queen, he was crownel with a diadem taken from the chefl containing the relics of that fainted nonarch. He declared war againt the Turks, and cmployed as his gencral John Huniades, who was very fucceffful in the canfe. Ladiflaus made peace, which gave much diffatisfaction to the pope, and other Cturittian princes; fo that he was induced to break it. A battle foon after enfued, in which he loft his life at Varna, in the year 14.4. His death occafioned the complete ruin of his army. Univer. Hitt.

Ladislaus V., king of Hungary, was born in 1440 , and freceeded to the crown in 144t, when the 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 reltored to his country. It was agreed that, during his minority, Hungary fhould be governed by John Corvin, fon of Humindes; Bohemia by George Podiebrad; and Auftria by Ulric count of Ciley, the kiug's uncle, who was appointed guardian of his perfon. The count endearoured to fupplant John Corvin, but in rain; 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 limfelf killed at Belgrade by the friends of that family. In 1457, Ladillaus went to Prague, in order to celebrate his muptials with Magdalen of France, daughter to Charles VII.; but in the midf of the feltivities, he was taken fuddenty ill, and died, not without fufpicion of poifon. Mud. Univer. Hift.

Ladislaus VI., king of Hungary, fon of Cafimir IV. of Poland, was chofen king of Bohemia in 1470, and was foon involved in a war with Matthias king of Hungary, which was terminated by a peace in I 475 . At the death of Mathias in 1490, Ladiflaus was clected to fucceed him. He had, however, to make his way to the throne againit the holtile oppofition of his competitors, one of whom was his own brother. At length he was quietly feated; but being of an indolent and pacific difpofition, he wes ill fitted to contend with the diforders which haraffed his kingdom: and from his great bulk and inactivity, he acquired from his fubjects the appeliation of an ov. The 'Turks laving threatened Hungary, he was, during his whole reign, coufiantly at war with the Turks, and other neighbouring powers. Ladifans, though not warlike, was attentive to the dutiss of his high ftation, and employed much time in collecting all the Hungarian lavs, and the decrees of the monarchis, into one body, which has ever fince formed the bafe of the conititution and jerifprudence of the country. He died in 1516. Univer. Hith.

Ladislaves, kings of Poland. See Uladislade.
Ladislacs, or Lancelot, king of Naples, called the Piberal and vietorious, fucceeded his father, Charles Duras, in 1386. He was before count of Provence and king of Hungary. He obtaince the latter crown in 1403 , during the imprifonnent of Sigifmund, who compelled him to return to Italy: On the death of his father, he was oppofed by Lewis II. duke of Anjou, which occafioned fome bloody wars. The pope at firtt efpoufed the caufe of Lewis, but afterwards took the part of Ladifaus, who, however, marched againit Rome, and having taken it, turned his arms on the Florentines, whom he compelled to fue for peace in 1413 . He died in 1414, aged 3 S , being poiloned. as it was reported, by his miltrefs, who had been bribed to
perpetrate the bloody deed by the Florentines. Univer. Hitt. Tablettes Chronolugiques, par Du Frefnoy.

LADDIZIN, in Geagraply, a town of Poland, in the palatinate of Braclaw; if miles S. of Braclaw.
L.ADLE of a Gun, the inftrument whercwith the powder is put into the piece.

It is made of a plate of copper bowed in form of a half. cylinder, rounded at one end, the other being fixed upon a long taff: this fillid with powder, the gunner carries, with his left hand under the end of it, to keep the powder from falling out, till he cinters it in the muzzle of the piece; when he las 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 fuficient for the charge.

Smali ladles, with flort handles of wood, are alfo ufed in filling the fuzes of fhells, or any other compofition for filling the cafes of rockets, \&c.

Ladie-Boards, thofe boards difpofed on the circumference of the vater-wheels of over-fiot mills; forming hollows, or receptacles, not unlike ladles, to receive the water that falls upon the wheel. See ${ }^{\text {Water. Wheel. }}$
I. A DOCO, Los Codos ie, in Gcography, mountains, which commence in Portugal, and are continued into Spain, feparating Galicia from the Atturias.

LADODA, a town of Hindooftan, in the fubah of Agimere; 20 miles S.E. of Roopnagur.

LADOGA, Nov, a town of Ruflia, on the fouth coaft of the lake Ladoga; 56 miles E. of Peterßurg N. lat. $60^{\circ} 2^{\prime}$. E. long. $21^{\circ} 44^{\prime}$.

Ladoga, or Ladoz/koi, Lake, lies in the government of Vyborg, between the gulf of Finland and the lake of Onega ; its fouth-welt extremity lying about 30 miles ealt from Peterburg. 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 largeit lakes in Europe. It produces a great number of feais. On account of the perilous florms to which it is liable, and the feveral fand-banks that are ever fhifting their pofition, Peter the Great, in 1718, caufed the famous Ladoga canal to be dug along its chore, from the Volkhof into the Neva. It was begun by order of Peter, and finifhed under the reign of the emprefs Anne. This canal is 104 verfts long, 10 fajenes broad, $1 \frac{1}{2}$ fajene
 nected with the Baltic; by the Svir, with the Orega; and by the Volkhof, with the Ilmen. Into the canal flow the rivers Lipke, Nafa, Sheldika, Lava, and Kabona; into the lake the rivers Patha, Sias, Oiat, \&c.; whereas the Neva alone runs out of it. Both fhores of the lake belong to Ruffia, which have every wherc a flat coaft and a fandy wach. On this fhore it has alfo a few low fifhery iflands, and a fandy bottom. That part of the northern fide which lies in the government of Olonetz has marble on its ccaft, whence fome of thefe beautiful kinds of Finnifh marble are brought to St. Peterfburg. As the bed of this lake, for a great extent, is in the loweit 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 fume to the laurus or bay-tree. We find the werd in a compofition prefcribed in Galen, from the works of fome of the empirics of his time; but it never was uled by the more regular authors.

LADOS, in Geography, a fmall iland in the Eaft Indian foa, N. lat. $6^{\circ}$ 11'. E. long. $99^{\prime} 4^{\prime}$.

## L $\wedge \mathrm{D}$

I.ADRE, in the Manege, denotes dull. See Horse.

Ladrones, Marian, or Mary-Anne, Lflands, in Geography, a group of illands in the North Pacitic ocean, forming a chain of 200 leagues, and occupying a fpace of about 450 miles in extent. Magellan, who dilcovered this archipelago in 152 t , impofed on them the name of Ladrones, (Thieves or Robbers,) becaufe the natives. like thofe of many other illands, who had no idca of the exclufive right of property, manifelled a difpofition to pilfer, and a confiderable degree of addrefs in the execution of their deligns. Thefe iflands were alfo called "Iflas de las Velas," from the great number of failing craft which came from thicfe illands to meet Thips, when they prefented themfelves there for the purpofe of anchoriny. Towards the middle of the 17 th century, in the reign of Philip IV. of Spain, thefe iflands were called the "Marians," in honour of Mary-Anne, the queen of Philip. In 1564 or 1565 , Andreas Miguel Lopes Legafpi took poffeffion of them in the name of the crown of Spain; but he neglected them as unworthy of his artention, and purfued his voyage to the Plilippines. The iflands of Ladrones were forgotten till the zeal of a celebrated Jefuit, Santerores, interefted the derotion of queen Mary-Aine of Auftria, regent during the minority of her fon Charles II., and excited her to caufe the gofpel to be carried into thefe iflands, which Magellan had found means to annex to the poffertions of Spain, by difcovering a new route, that eluded the ridiculous line of demarcation eltablilhed by the fee of Rome, in the plenitude of its power. In 1658, the Spaniards prefented themfelves at the Mary-Anne iflands, with the crofs in one hand and the fword in the other; and with thefe two weapons, which lent one another mutual aid, their pretendel right to the poffeffion of thefe iflands could not fail to be acknowledged. They had no difficulty in making themfelves mafters of Guahan or Guaham (now called Guam), the principal of thefe iflands, and the molt fouthern of the Archipelago; and by degrees they fubdued all the others.' Pigafetta, who accompanied Magellan, defcribes the people of thefe illands as naked, their hair and beards long, tall, and well-proportioned, with an olive complexion. They coloured their teeth black, like the inhabitants of the Pelew iflands; and in their manners and cuftoms they refembled one another. Till the arrival of the Spaniards, the inhabitants of thefe iflands confidered themfelves as the only men in the world, being affured that the firtt man was made of a piece of rock taken from Funa, a little ifland near Guam; but, according to others, he was made of earth in the latter ifiand. When they were vifited by the Spaniards and Dutch, they inferred that thefe ttrangers were brethren, who had loit the primitive Guamefe language. In colour, fpeech, manners, and government, they much refemble the Tagals, or people of the Philippines, before the Spanifh conqueft. They were then very populous; Guam, which is 40 leagues in circuit, having 30,000 inhabitants. The women employed themfelves in dyeing their teeth black, and their hair white. The nobles were treated with great refpect, and thought it criminal to connect themfelves in marriage with a common girl; neverthelefs, the people were not eullaved, or even fubjects, though they treated their nobles with great reverence.
Their houfes were divided into four apartments, feparated by palm-leaves. In their abfolute 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, whofe tkulls were preferved in the houfe; and they manifeft 3 an anxiety left the anitis, or ghoft, fhould diturb their fifhing, or nocturnal repofe. Although Guam is the largeft of
thefe inands, Thinian has attracted the greater degree of at tention in confequence of the romantic defeription griven of it in Arfon's voyage. (Sce Gunar and Tinian.) The number of thefe iflands has been differently thated from 9 to 16 ; but it does not appear that above three or four are inhabited. Their failing veffels, called frons, evince confiderable akill in naval architecture. For an account of them, fee the article Boat. La Peroufe leads us to conclude that thefe iflands are volcanic; but their natural hif. tory is little known. They cultivate various feeds and fruit, and particularly the bread-fruit. For their productions of this kind, fee Tiniax. In fir Geurge Staunton's account of the embafly to China, we have fome infurmation of a recent and authentic kind with refpect to thefe iflands. The grand Ladrone he reprefents as a high-peahed ifland; and he mentions another near it, whofe fummit is fome what lower and more level. The latitude of the grand Ladrone appeared to be $21^{\circ} 52^{\prime} \mathrm{N}$., and the longitude $113^{\circ}$ ${ }^{3} 6^{\prime}$ E. of Greenwich. The latitude of another illand, called Cbooktchoo was $21^{3} 55^{\prime}$ N., and its longitude $113^{\circ} 44^{\prime} \mathrm{E}$. The obfervations from which thefe latitudes and longitudes are deduced were carefully made, and therefore they niay be deemed correct; though they differ from thofe ftated by other geographers. The margins, or rocks, of the Ladrone inlands next the fea are of a black, or dark brown colour, owing to the action of the falt-water; and the fpray and dafhing of the waves have corroded their furface, fo as to give them a honey-comb appearance. Some fprings are found on thefe inlands; and the water is neither brackiff nor chalybeate, nor in any refpect mineral in its tafte. 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, decompofed and pulverized by the joint action of the furr and rain in a fucceffon of ages. The rock confifts of a mixture of clay, calx of iron in a fmall proportion, and a great deal of filiceous earth and mica. The fea all round is of a dirty-yellowilh muddy colour, and of no great depth. The bottom is mud and clay.

The Ladrones, and clufters of iflands between them and the fouthern extremity of China, are fo near to each other, and to the main land, and are alfo fo broken, as well as fo irregular in their form and polition, as to appear like fragments, disjointed from the continent, and from each other, at remote periods, by the fucceffive violence of mighty torreats, or in fome fudden convullions of nature. Thefe fragments have now a very barren and unpromifing afpect. In particular fpots, however, there are fome fcattered patches of pleafing verdure; but, in general, little better thani naked rocks appear; and fcarcely ever a tree or fhrub is vilible among them. Thefe inlands ferve chiefly as retreats for pirates, and for the temporary abode of finhermen. To the north of the Ladrones are many fmall iflands, extending to
Todos los Santos, N. lat. Todos los Santos, N. lat. $30^{\circ}$; thofe further to the N . belonging to Japan. This group may either be arranged, fays Pinkerton, among the Ladrones, or might, perhaps, admit of a dittinct appellation. For a more ample account of the Ladrones, we refer to the Supplement of De Brofles, vol. ii. p. 492, and to the article Tinian.

Ladnones, three fmall iflands in the Pacific ocean, on the coalt of Vcragua; 8 miles S.E. of Cape Boruca. N. lat. $8{ }^{\circ} 20^{\prime}$. W. long. $83^{\circ} 16^{\prime}$.

LADROON, a river of Africa, which runs into the Indian fea, S. lat. $22^{\circ} 36^{\prime}$.

LADVOCAT, John Baptist, in Biograpby, a man of letters in France, was born in 1\%09. He was, at the ufual age, admitted a member of the fociety of Jofuits, and for Aa 3
fome

## I. A E

Some time occupied the cure of Domremi, the birth-place of the celbrated Joan of Arc ; but in 1740 he was appointed roval profeffor at the Sorbonve, and in two years after hic was elected librarian. The good duke of Orleans having foumled a Hebrev profeflorfhip in the Sorboune, Ladvocat was appointed, in 175 t, to fill that office, which he kept till his death, in the year 1765 . His works are "A Geographical Dictionary ;" "sn Hiltorical Ditionary ;" "A Hebrew Granmar," and feveral theological tracts. the is reprefented as remarkably mild, humane, and undifgruifed in his manners.
Ladvocit, Lewis Fr.iscis, a philofophical writer, and dean of the chanber of aicounts at Paris, where he died in 1735, in the ninety-firlt year of his age. As an author, his principal work is entitled "Entretiens fur un nouvean Syfteme de Morale et de Phyfique," which ahounds in folidid reflections, and well digetted reafonings. Some objections being made to the principles contained in thefe converfations, 1, advocat, in 1728 , replied by publining " $A$ new Syftem of Philofophy foumded on the indifputable Nature of Things, emmpared with the Opinions of the ancient Plilofophers relating to the frit Principles of Nature, \&c.:" to which is added a treatife on the nature of the foul, and the cxitence of Cod. Ladvozat was an able nagiftrate, and a good mina. Moreri.
LADY, in Geografby, a town of Rufla, in the governmient of Simulenko, and before the late difinemberment of Poland, a Ruffian frontier town.
LanY's J/and, an ifland in the Athantic, near the coaft of S. Carolina, in America, between Port Royal iffand and st. Helenn. N. lat. $43^{\circ} 30^{\prime}$, W. long. $80^{\circ} 3 z^{\prime}$.
Lady's Beld-Strazu, or CbeffoRennet, in Butany and the Materia Mradica. See Galiusi.

## Ladx's Bozuer. See Ceenatis.

Ladr-Bird, in Zoology. See Hemispiterra, and Sca. naveus. Coccinclle permatata. \%

Lady-Ebapel, a namie invented by modern architects and virtuofi to fignify the chapel which is generally found in our aucient cathedrals behind the fkreen of the high altar. It is fo denominated from its being generally dedicated to the blefied Vrggin Mary, called Our Lady.

Lady's Comb, in Botany. See Shepherd's Needlc.
Lady's'Cuf/bion. See Saxifiage.
Lady-Day, in Lazy, the 25 th of March, being the Annunciation of the Holy Virgin.

Lady's Finger, in Botany. See Anthyllis.
Lany's Mintle。See Alchemilla.
Lady's Seal. Sce Tambs.
Lady's Slipper. See Cyphipedium.
Lady's Smock, the common name of a perennial weed offen met with in pafture grounds. The flalk is upright, found, and fmooth, the leaves are winged, with the lobes of the tower oncs roundif, and thofe on the talk oblong. The flowers are large, handfome, and white, or purplifh, confifing of four obturfe veined petals. The feeds are contained in erect compreffed pods, about an inch in length, divided into two cells, which, when ripe, burft with a touch, and throw out their feed to a coniderable diltance. It has fometimes the vulgar names of cuckow-Hower, Canterburybells, \&c.

Ladx's Tracers. See Twyblade.
Lady of the Thifitio. See Tustre.
Ladx, Prefentution of our. See Puesevtation.
LADYKIRK, in Geograpby, a town of the ifland of Runaldifa. N. lat. $58^{\circ} .5^{\circ} 8^{\prime}$. W. long. $2^{\circ} 49^{\prime}$.
LegliUs, Cares, in Biography, a noble Roman, the particular frieide of the firl Scipio Africannas, accompanied
that commander to Spain, and was infrumental in thic capto ture of New Carthage. When Spain was reduced under the Roman power, Leilius was fent by Scipio to treat witie Syphax, and after this he wals employed to ravage the coalk of Africa. In conjunction with Maffinifita, he defeated Syphax, and brought him prifoner to Rome. He commanded the Italian horfe at the battle of Zama, and had a confiderable flare in the fuccefs of the day. He was mads conful in the year soo B. C.

Lemius, CAus, fiunnamed Sapiens, fuppofed to have been: the fon of the preceding, was equally dittinguifted with the former by his friendiflip with the fecond Scipio $A$ fricanus, fo that Ciccero reprefents him in his treatile "De A micitia," as. explaining the real nature of friendniup with its attendant pleafures. In this work, which is known to every well educated youth, Lexius appears as the clicf fpeakcr. He was ant eminent orator, and a fucceffful cultivator of polite literature. He was fignalized by his prowefs in the war with Spain, but is chiefly celebrated by the civil honours to which hic attained. His oratory is defcribed as of the mild and elegant kind. He was a member of the college of augurs, and pronounced one of the moft famous orations in that capacity. He was conful in the year B. C. 140. Whenhis friend Scipio quitted all concern in public affairs, Lexlius accompanied him to his couutry retreat, preferring the pleafures of retirement and friendthip to the honours of the world. He is fuppofed to lave had a thare in the compofition, or, at leatt, in the correction, of Terence's comedics. His modelty, humanity, and the manner in which he patronized literature and learned men, are as illuflrious as the greatnefs of his mind, and the integrity which he difplayed as a flatefman. Univer. Hitt.

LENA, among the Ancients, a thick, fhaggy, upper garment. See Chlizena.
LAER, Peter VAN, in Biograpby, a landfape, cattle, and converfation painter, known in Italy by the name of Bamboccio, from the nature of the fubjects 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 16i 3 , and being endowed with excellent faculties of perception and imitation, he practifed the art he adopted with very great fuccefis. His hand and his imagination were equally rapid; and fo readily would the former exceute the dicates of the latter, that he rarely found it neceflary to make previous thadies for his pietures; but fketching flighlyy the fubject on his canvas, he finified the work witheut more delay. He had the great, advantage of poffeffing an excelleat 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 cou'd reprefent it with great truth without its being placed again before bis eyes.
His pitures are of a fmall fize, but very pleafingly executed, with an exceilent tone of colour.
In the hatter part of his life he was feverely tormented with an afthma, of which (not being endued with patience enough to bear its miferies tranquily), he contrived to rid himflif by drowning, in the Goth year of his age.
LAERTA, in Nstural Hilfory, a name given by authors to a fpecies of velpa or wafp, whofe fing is faid to be fatal = but this is an crroncons opinion. This wafp is larger and longer bodied than the cummion kiud, but fmaller than the hornet. It feens of a very irritable difpofition, attacking animals of any kind that come in its way.

LAET, Join de, in Bigarapby, diretior of the Fan India company, was born at Aniwerp, where he died in
s649. He was a. great proficient in the languages, and compofed or edited leveral works relating to geography and civil hifory, as "Novus Orbis;" "Hilloria Naturalis Brafilix;" "De regis Hifpanix Regnis ct Opibus;". "Refpublica Belgarum ;" "Gallia;" "'Turcici imperii Status. ;" "Perlixe imperii Status." Thefe works ate ftill in confiderab'e repute, as well on account of the hittorical 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 Reipulsicx. Laet gave a new edition of the works of Vitruvius, enriched with notes of varions critics. Laet's account of Amcrica, which is found in his "Novus Ohbis," involved the author in a controveriy with Grotios relpecting the origin of the inhabitants. It has been much ufed by more modern geographers.

LAETIA, in Bolany, named by I oeflinp, in memory of John de Laet of Antwerp, whee publifhed a Latin hiftory of America in folio, in $16_{3} 3$, , dedicated to king Charles I. of England. Haller fpeaks with refpect of his botanical remarks, as throwing light upom tbe plants of Marcgrave, and tending to reconcile liss delcrptions with thofe of Clulums and the Spanifh botanits.-Lima. Gen. 267 . Schrej. $355^{\circ}$ Willd. Sp. Ml. v. 2. 11t, 3. Mart. Mill. Dict. v. 3. JuIf. 293. (Guidonia; Browne Jam. 249. Linn. in Loell. It. 190. Thamina; Browne Jam. 245.) -Clafs and order, Polyandras Morogynito Nat. Ord. Tiliacer, Jult.

Gen. Cl . Cal Perianth inferior, of tive oblong, coneave, refexed, coloured, withering leaves. Coro either wantug, or of five petals. Stam。 Filaments numerous, capillary, rather faorter than the calyx ; anthers roundifh. Pijf. Germen fuperior, oblong; ftyle thread-fhaped, lunger than the flamens; figna capitate, depreffed. Peric. Capfule roundifle with three or four angles and as many furrows, flethy, of one cell and three or four valves finally recurved. Seids nus merous, angular, each clothed with a pulpy tunic.

Eff. Ch. Corolla of five petals, or wanting. Calyx inferior, of five leaves. Capfule flefhy, of one cell, and three or four valves. Sceds rumerous, with a pulpy tunic.

Obl. We have endeavoured to profit by the obfervations of Suartz, compared with thofe of Browne and Loefling, in order to give a jult idea of the fruit, of which we regret having never examined any fpecimen. Neither is any fufficient reprefentation of it extant.

1. L. apezthta. Lima. Sp. Pl. 733. Jacq. Amer. 167. t. ics. Swartz. Obf. 219. LoeA. It. igo n. 65.-Petals none. Stalks axillary, three-flowered. Leaves clliptic-oblong, obtufe, minutcly ferrated, fmooth and fhining. Gathered by Jacquin in woods at Carthagena, South America, flowering in $A$ pril and May, bearing fruit in Augult. A tree 20 feet high, throwing out fpreading branches from the very bottom of its trunk. Leaves about the ends of the fhort alternate tapering lateral ihoots, ftalked, above an inch in length, elliptic-oblong, or cbovate, obtufe, fmooth and Thining, very minutely ferrated. Ficuers white, compared by Jacquin to thofe of Hawthorn, both in appearance and fcent, llauding molly three together, on fulitary axillary ftalks, not half fo long as the leaves. . Fruit, according :o Jacquin, ovate with three blunt angles, the fize of an olive, generally fourd more or lefs eaten by birds or infects, but he feems to fpeak of it as fmonth; Loefing defcribes it as yellow and downy, neariy globofe, with four obfcure angles and as many furrows. We are unable to determine whether thefe writers both fpeak of the fame fpecies, though fuch is the general opinion. Loeßing found his near Comana.Lamarck fufpects the L. apetala to belong to the Ludia of Commerfono See Ludla.

## 1. AI

2. L. Guidonia. Swart\% l'rodr. 83. (Guidonia; Browne Jam. ${ }^{2+9}$. t. 29. f. 4 ?)-" Petals none, Stalks terminal, lingle-fiowered. Leaves ublong, pointed, ferrated and downy." -Native of Jamaica. Swurrz. Browne calls his plant Rod-wood, and fays it "grows to a conliderable lize, being elteened a fine timber, and much ufed in all forts of buildings. The lines between the valves of the fruit are of a beautiful red, as well as the placentas". We know not why Swartz quotes him with a mark of doubt, nor have we ever feen any fpecimen of this fpecies from cither of thefe botanitls.
3. L. Thamnia. Swartz. Prodr. 83. Fl. Ind. Occ. v. 2.950 . (Thamria; Browne Jam. 245.) - Petals nonce Stalks axillary, forked, many-flowered. Leares cllptic-oblong, fomewhat crenate, frooth and fining -Native of Jamaica. Browre gathered it on the red hills above the Angels, but fays it is not common. His own fpecimen is befura uc. This is a firab, dis: feet high, with roundilh, fmooth, (lightly zigzag lirunctes, whofe young ends are comprefied and coloured. Leazes alternate, on round fmooth thalks half an inch long, elliptic-oblong, with a blunt point, fmooth ard fhining, filightly ctenate, two or three inches in lenoth, marked with chucid dots readily feen when the leat is held againtt the light. Flswer-falks from the young fhoots, axillary, much hurter tlan the leaves, forked and as it were jointed, minutely downy, as are the caly x -leaves. The focuers are not numerous, larger than the common Myrtle, the two outer leaves of the calyx purplifh, inner white, all refexed. Sianns downy. Andoers yellow, Fruit with four, rareiy five, angles, and as many valves, which are revolute whin ripe. Seeds numerous, with a purplifh tunic. Swartz found this plant on the fouth coalt of Jamaica, in bufhy chalky fots, flowering in the fprint. We have borrowed moft of his defcription, comparing it with Browne's fpecimen.
4. L. comileta. Limn. Sp. Pl. 733. Jacq. Amer. 15.7. t. 183. f. 60 . Lamarck. Dict. v. 3. 374.-Petals fiveStalks many-flowered, axillary, Leaves ovate-oblong, fineiv ferrated, rugofe, fmooth. - This was gathered in wouds at Carthagena by Jacquin, from whore book alone we have ar. y knowledge of it. The flem is fhrubby, branched, nine feet high. Leaves about tirree inches long, of a broad ovate fomewhat oblique figure, rugofe, veinj, finely but fharply ferrated, fmooth, flaiked. Commen fioner-flaiks downyFruit yellowih red, often flightly trangular, ripening in Augult and September. The tlowering feafon is June. The petals are as long as the calyx, but nothing is faid of their colour, Jacquin having feen then in a faded ita:e only.

Not one of this genus is known in the gardens of Europe, nor have any dried fpecimens, except the above-mentioned, fallen in our way.

LAEUANGER, in Geograply, a town of Norway, in the diocefe of Drontheim; 46 miles E.N.E. of Drontheim.

LÆVIUS, in Biography, a Latin poet, who probably flourilhed about the time of Cicero. He wrote a poem entitled "Erotopagnia," or "Love games," which is quoted by Aulus Gellius, and Apuleius. He compofed alfo a poem entitled "The Centaurs," which is quoted by Feltus under the title of Petrarum.

## LA FERE, in Gegraply. See La Fere.

Lafitau, Josebin Erincis, in Biography, bom at Bourdeaux, entered the fociety of Jefuits, and became a miffionary among the uncultirated. nations of Nurth America. On his return home he wrote a work entitled "Les Morurs des Sauvages Americains compares aux Mœurs des premiers tems," in two volumes to.: "A Hiftory of the difcoveries of the Portuguefe in the New Werld," in two

## L A G

vols. flo, which maintains a high reputation. He died about the year 1740 .

Laritau, Peter Francis, brother of the above, was a native of Bourdeaux, and became diflinguifhed 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 bifhopric of Silteron in Provence. He died in the year 1764, at the age of feventy-nine. He was author of the "Hiltory of the Conilitution Unigenitus," two vols. 1 mmo.; "Hittory of Clement IX.," in two volumes, and "Sermons," in four volumes, belides feveral de. votional and practical treatifes.

## LA FORCE, in Gcography. See La Fonce.

LAFORDSWICK, (Saxon, blaforl, i. e. dominus, and Fsuic, proditio, infidelitas crsa dominum, the betraying of a lord or matter. This word is found in king Canute's laws. c. 6I. and in the laws of king Henry I.

LA FRESNAYE, in Grostaphy. Sce La Fressame.
LAFVENSARI, a fnall ifand in the gulf of Fiulaid. N. lat. $59^{\prime} 57^{\prime}$. E. long. $45^{\circ} 3^{2} \mathbf{2}^{\prime}$.

LAGA, in Antiguity, denotes les or hazo: whence are deduced Saxon-lage, Danc-lage, \&c.

Laga, in Geography, a river of Sweden, which runs into the North fea; four miles W. of Laho!m.

LAGAMAN, a town of Candahar; 60 miles N.E. of Cabul.

LAGAN, or Lagos, in our Ancient Sca Lazus, fhip. wrecked goods, left by the fea, lying on the fand, either afhore, or out at fea.

The word feems formed from the Saxon legan, or lugan, jusere, to lie. Though others deduce it from the Latin ligare, is bind; and fuppofe 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 ufually joined with jotfon and forfon; which fee.
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 weft by Dromore, becomes the boundary between the counties of Down and Antrim, from the neighbourhood of Moira until it flows a little below Belfaft into that large eftuary called Belfaft Lough. There are many villages, befides the confiderable towns of Lifonrne and Belfaft, on this river, and its banks are adorned with numerous bleach greens. Great exertions have been ufed to improve the navigation of this river, and a canal joins it to Lough Neagh.

LAGANUM, in Natural Hifory, the name of a genus of the echini marini, of the general clafs of the placentæ. The characters of the lagana are, that they have their mouth in the centre of the bafe, 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 fpecies.

LAGA RES, in Geograpby, a town of Portugal, in the province of Beira; it miles S.S.W. of Vifeu.

LAGAU, a town of Brandenburg, in the New Mark; 25 miles S.E. of Cuttrin. E. lat. $52^{\circ} 28^{\prime \prime}$. E. long. $15^{\circ}$ $26^{\circ}$.

LAGEMAN, (Lagammannus) bomo babens legen, or bomo legalis fen legitimus: fuch as we call now good men of the jury. The word is frequently ufed in Domefday, and the laws of Edward the Confeflor, cap. 38 .

LAGEN, Lagen. 1 , in ancient time, was a meafure of wine, containing fix fextarii : whence probably is derived our $\not A_{a}-$ gon. The lieutenant of the Tower has the privilege to take unam lagenam vini ante malum et retro, of all wine hhips that come up the Thames; and fir Peter Leicefter, in his Antiquities of Chefhire, interprets lagena vini, a bottle of wine.

Lagen Bay, in Geography, a bay on the W. coat of the ifland of Ila, S. of Lagen point.

LAGENS, a town of the illand of Flores, one of the Azores, containing near 1400 inhabitants.
LAGENULA, in Potany, from lagkna, a bottle, becaufe the form of the fruit is like that of a little bottle or flagon. Loureir. Cochinch. 88.--Clafs and order, Tetrandria Monogy yiizo Nat. Ord. Cucurbitacea, Linr. Juff?

Gen. Cly. Cial. Perianth inferior, of four ovate-oblong, reflexd, permanent leaves. Cor. letals none. Neetary flefhy, with four erect, fome what approximated, lobes. Stam. Filaments four, awl thaped, equal to the calyx ; anthers ovate, incumbent. Pijft. Germen conctaled by the nectary; ftyle thick, fhorter than the flamens; Higma fimple. Peric. Berry frail, bottle-flaped, with a narrow neek, of two cells, add centaining two feeds. Seeds folitary, convex on one lide, angular on the other.

Eff. Ch. Calyx of four leaves, inferior. Petals none. Nectary four-lobed. Berry of two cells. Secds folitary.
I. L. petata. Calleí by tlie Cochinchinefe Cấy rát nhb lá. A moderate-fized Jbrub, found out the hills of Cochinchina. The feem climbs by means of tendrils, and is branched; deflitute of prickles. Leaves pedate, of five ovate, crenate, downy leaflets. Flowers whitith green, in terminal, fpreading, fubdivided clufters..
Such is Loureiro's defcription, which in moft refpects indicates a plant of the Gourd or Bryony tribe, except the germen being fuperior. It fhould feem therefore to range with a few more genera, mentioned by Juffieu, at the'end of his Cucurbitacee, which differ from the character of that order in the fituation of their germen.

LAGERSTRGMIA, fo called by Linneus, in commemoration of his friend Magnus Lagerttrem, a director of the Swedin Eaft India Ccmpany, member of the Royal Societies of Upfal and Stockholm, who communicated to him many natural productions, and fome other curiofities, defribed in the fourth volume of the Amanitatios Academica, under the title of Chinenfia Lagerfiramiana. Amonglt thefe was an exquifitely carved horn of a Rhinoceros, now in the hands of the writer of this article, which reprefents a leaf of the Cyamus $N_{\text {elumb }}$, accompanied by the fower 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 Marigo, and the Mangoilan, celebrated oriental fruits. This feems to exprefs the fuppofed beginning of animal life, with its dependance on the vegetable kingdom, and throws light on the mythological hiftory of the $C_{\text {yamus, }}$ to which article, written by our lamented friend the late Rev. Mr. Wood, in our roth volume, we refer the reader. -Linn. Gen. 269. Schreb. 361. 833. Willd. Sp. Pl. v. 2. 1178 . Mart. Mill. Dict. v. 3. Ait. Hort. Kew. v. 2. 230. Juff. 33 I. Lamarck Dict. v. 3. 375. Illuftr. t. 473 . (Munchautia;' Linn: Mant. 153. Schreb. 515. 833. Mart. Mill. Dict. v. 3. Juff. 331. Murr. Gott. Præfot. I. Adambea; Lamarck Dict. v. 1. 39.)-Claifs and order, Icofandria Monogynia. Nat. Ord. Calycantheme, Linn. SaVicarie, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, bell. Shaped, angular, permanent, with fix deep, Tharpifh, triangular teeth. Cor. Petals fix, roundih or obovate, wavy ; their claws thread-fhaped, inferted into the calyx. Stanio Filaments numerous, thread-haped, unequal, inferted into the calyx, and exceeding it in length; anthers roundifh, incumbent. Pi/d. Germen fuperior, roundifh; ftyle threadflaped, declining, longer than the flamens; ftigma obtufe.

## 1．A G

## L A G

Peric．Capfule ovate，pointed，of fix eells and fix valves， rarely but four．Seeds numerous，angular，comprelled，at－ tached to the central hexagonal column．

Eff．Ch．Petals fix，their claws inferted betwixt the tecth of the bell－haped fix－cleft calyx．Stamens unequal． Capfule of four or fix cells，with many angular feeds．

Obf．L．perviffora has but four，or uccafionally only three，cells and valves to the capfute．

1．L．indica，Linn．Sp．Pl．734．Curt，Mag．t． $405^{\circ}$ J．Miller Ic．－（Tsjin kin；Rumph．Amb．v．7．6x．t．28．） －I＇etals pointed，crifped．Six Hamens much longer than the reft．Panicle terminal．Leaves roundifloval，imooth． －Native of China，Cochinchina，and Japan．Kæmpfer fays it is very rare．The Hortus Kerecenfis records its having been introduced into this country by the late duke of Nor－ thumberland，in $\mathbf{1 7 5 9}$ ．Nothing could be a more defirable acquifition to the green－houfe or flove．In the latter it blooms moft freely，and is increaled readily by cuttinys． T＇he $/ b r u b$ is about the fize of a Pomgranate－tree，rather ftraggling，fmooth，with augular twigs．Leaves oppofite or alternate，nearly feffile，an inch or two in length，of a broadifh rounded elliptical form，flightly pointed，entire， finely dotted，fmooth，except fome fhort pubefcence at the rib and veins on both fides．Stipulas none：Buds axillary， ovate，comprefied．Flowers in a large，terminal，fomewhat racemofe panicle，of a fine rofc－colour，not unlike a double fitock at firlt light，but far more delicate and without feent． The petals are heart－fhaped，pointed，exceffively crumpled and curled，with long flender claws．Anthers yellow．

2．I．Regina．Roxb．Coromand．v．1．46．t． 65 ．（L． Flos Regine；Retz．Obf．faic．5．25．Adambea ghabra； Lamarck Diet．v．1．39．Adambor；Rheer．Hurt．Mul． v． 4 ． 45 ．t．20，28．）－Yetals 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 Augul．A moderate－fized tree，with fpreading branches，angular and winced when young．Leaves from thite to five i，ches in length，elliptic－oblong，entire， fmooth，generally oppofite，on very fhort ftalks．Panicle compound，fpreading．Flowers two inches broad，with rofe－coloured，round，bluntih，fhort－clawed petals，and very numerous，purplifh，almoft equal flamens，with yellow anthers．Capfules the fize of a large oblong acorn，pointed， woody，fmooth，accompanied by the reflexed calyx at their bafe，which is cowny while in flower．

3．L．birfuta．Willd．n．3．（Adambea hirfuta；La－ marck Dict．v．1．39．Katou－A damboe；Rheede Hort． Mal，v．4．47．t．22．）－Petals pointed．Six ftariens much longer than the re！t．lanicle terminal，muclr branched． Leaves oblone，pointed，hairy－Native of the provinces of Mala and Poiga in Malabar，according to Rheede，from whofe work alone we have any knowledge of this fpecies， and who reprefents it as the wild ftate of the preceding，dif－ fering in being taller，with downy or hairy leaves and lrancbes．The fruit allo is roughifl with fine hairs．In his plate morcover the petals are lefs wavy and much more pointed，and he mentions that five ftamens（we have ventured to prefume fis from anatogy）are alone confpicuous in each flower．The famens of $L$ indica emable us to underflamd this，and it is probable that the reft of the filaments are ghorter than the calyx，fo as to have paffed unobferved． Lamarck，after having firft，on Rheede＇s authority，defined and named this \｛pecies，fuggefts in his Dictionary，v． $3 \cdot 376$ ， that it may probably be only a variety of the lait．We muft leave this point in doubt，after having collected all the information in our power．

4．L．ATunchaufia．Lamarck Dict．v．3．375．Willd． n．4．（Munchaufia fpeciofa；Linn．Mant．243．Murray Gott．t．1．）－Petals bluntifh，wavy．Stamens all nearly equal．Clutter terminal，many－flowered，nearly fimple． Leaves ovate，pointed，almolt entire，fmooth．－Native of China，according to Limnxus．His fpecimen is marked as coming from India．Lamarck，in his Ditt．v．3．375，con－ founds this with L．Reginc，from which it is neverthelefs very diftiact．The leaves are not half fo long，much thin－ ner，and are ovate，with much longer and flenderer foot－ italks．The only leaf we have feen agrees precifely with that drawn by Murray，except in being fill lefs entire，the upper part being bluntly ferrated．＇The flazecrs are copious， racemofe rather than panicled，but they appear to differ very little in themfelves from thofe of $L$ ．Rcgime，the petals in Murray＇s plate being erroneoufly made flat，obovate and obtufe．Willdenow probably took his fpecitic character from thence，the plant being very rare，even in dried col－ lections．

5．L．parviflort．Roxb．Coromand．v．1．4ヶ．t． 66. Willd．n．5．－Petals wavy，blunt．Six fameris much longer than the refl．Flower－ttalks axillary and terminal，about threc－flowered．Leaves oblong，obtufe，downy beneath．－ Native of the Circar mountains of India，flowering during the hot feafon，ripening fced in Auguft and September， The inhabitants call it Chinamgbie，and ufe the woud for various economical purpofes．This is a little trice，differing from all the foregoing in the fmallnefs of its flowerers，which are lefs than the common Myrtle，white，chiefly axillary， ufually three on each of the flalks，which grow in pairs， and are（like the leaves）about two inches long．The 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．Profeffor Willdenow，from mifundertand－ ing the Englifh defcription，defcribes the leaves as fca． brous．They are fmooth and hining above，downy at the back．S．

Lagerstromit，in Gardening，contains a plant of the exotic tree kind，for the green－houfe，of which the fpecies cultivated is L．indica．
Mretbod of Culture．－This plant is capable of being im－ creafed，either by layers or cuttiags of the young branches． The layers fhould be made from the young floots of the preceding fummer，and be laid down in the cutumn．When they are well rooted in the fucceeding autum，they fhould be taken off and planted out in feparate pots．

The fips or cuttings fhould be made from thoots of the fame year＇s growth，and be planted out early in the fummer：in pots of light earth，being plunged in a bark hot－bed，and covered with fmall bell hand－glaffes，due thace and water being given．When well－rooted in the fyring following， they may be taken up and planted in feparate pots，filled with light mould，being afterwards managed as cthier green－ houfe plants．

Thefe plants afford varicty in collections of potted plants of different kinds．

LAGETTA，in Bctany，the Lagetto or Lace－bark of Jamaica．Juff．77．Lamarck．Dict．v． $3.3 \%$ ．Ithuftr． t．289．（Daphne Lagetto；Sviartz．Ind．Occ．v．2． 680. Willd．Sp．P1．v．2． 419 Frutex foliis majoribus，cordatis， nitidis，petiolis femiyoilicaribus infidentibus；Browne Jan．． 371．t．31．F．5．Laurifolia arbor，folio latiore，longo，mu．－ crovato，lævi，fplendente；cortice interiore in telas plarimas． livearum æmulas，extenfili；Sloane Jam．v．2．22，t． 10 © f．1，2，3．t．169．f．1．）See Daphne．

This tree is a native of the loftier mountains of Jamaion and Hifpaniola．Swartz fays it is thirty feet high，with a

## I. $\Lambda \mathbf{G}$

fomn' as thick as a man's thigh, the wood white and folid, the nuter bark cracked and greyilh; branches round and finooth. Letaves alternate, on thort ftalks, ovate or fomewhat heart-lhaped, more or lefs pointed, entire, from four to tix inches lonk, evergreen, very frnooth and hining, veiny, Hat except a dight undulation at the edges; the under fide paleit. Sp:ikes or claficrs terminal, either fample or panicled, each farcely a finger's length, of few flowers, which are white, four lines long, ovate, four-cleft, the mouth below the ftamens clofed with woul. Stamens eight, very fhort. Germen ciothed with long upright hairs. Drupa invelted with the permanent calyx, its pulp fwect and whitifh, its coat rough with puazent brifles. Sced ovate, brittle.

We cannot find fufficient reafons to make this a diftinet genus from Daphene, but having feen only a fingle leaf, without any parts of fruetification, we prefume not to decide with politivenefs. The inner bark of this tree is very beautiful and remarkable, confirting of many lavers, which are ealily pulled out laterally, into a fine white filky reticulated web, like lace or gauze, three or four feet wide, which has been uied in ladies' drefs on many occafions; and Charles II. is fuid to have had a cravat made of it, prefented to him by tir Thomas Lynch, then governor of Jamaica. Swartz afferts that articles of drels made of this web, may be walhed in foap and water without injury.

LAGGA, in Geography, a town of Sweden, in, the province of Upland; 9 miles S.E. of Upfal.

LAGHI, a town of Arabia, in the province of Hadramaut, on the coalt of the Arabian fea; 12 miles N.E. of Aden.

LAGNASCO, a town of the Ligurian republic; II miles N.W. of Genoa.

LAGNIEUX, a town of France, in the department of the Ain, and chief place of a canton, in the diftrift of Belley ; 22 miles N.E. of Lyons. The place contaius 2553, and the canton 10,266 inhabitants, on a territory of $207 \frac{1}{2}$ kiliometres, in $1+$ communes.

Lagny, Thomas Fantet de, in Biograbhy, 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 purpofe, firft at the college of Lyons, and next at the univerfity of Thouloufe; but having accidentally met with Fournier's. Euclid, and a treatife on algcbra, his genus for mathematics was developed, and he refolved to devote himfelf to the purfuit of his favourite fcience. He came to Paris in the ycar 1686, and was foon after appeinted 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 libratian to the king with a confiderable penfion. He died in the year 1734, and in his latt moments, when he no longer knew the perfons who furrounded his bed, one of them, through a foolifh curiofity, anked him "What is the fquare of 12 ?" to which he replicd, as it were mechanically, 14.4. His works are, 3. News Methods for the Extraction and Approximation of Roots : 2. Elements of Arithmetic and Algebra: 3. On the Cubature of the Sphere: 4. A general Analyfis, 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 dilcoveries. He delivered the meafures of angles in a new fcience, called "Goniometry ;" in which he found the value of angles to great accuracy by means of compaffes, without fcales or tables of any kind. He paid great attention to "Cyclometry;" or the method of meafuring the circle, and ecalculated by means of infinite feries athe ratio of the circ:mo

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ference of a circle to its diameter to 120 plaees of figares. Moreri.

Lagny, in Gegrapby, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the diltrict of Meaux, feated on the Marne, and containing three parith churches; 15 miles E.N.E. of Paris. N. lat. $48^{\circ} 53^{\prime}$. E. long. $2^{\circ} 46^{\circ}$. The placo contains 1836 , and the canton 12,257 inhabitants, on a territory of $157 \frac{1}{2}$ kiliometres, in 31 communes.
LAGO, a town of Italy, in the department of the Lower Po; 4 miles N. of Comacchio.

Lago Megiore. See Langensee.
Lago Niro, a town of Naples, in Bafilicata, at the font of the Apennines, near a lake from which it receices its dame ; 12 miles N.E. of Policatro.

LAGOA, a town of the ifland of May, one of the Cape Verde iflands.-Atro, a town of Portugal, ia Algarva; 5 miles N.E. of Silves.-Nlfo, a river of Africa, which runs into the Atlantic, N. lat. $6^{3} 55^{\prime \prime}$ - Alfo, a bay of the Indian fea, on the coalt of Africa. S. lat. $33^{\circ}$ $10^{\prime \prime}$.

Lagoa. Sce Dedagoa.
Lagon d'Allafeira, a lake on the W. coaft of Portugal, near the fea: 12 miles S.S.W. of Lifbon.

Lagon d Obidos, a lake on the W. coaft of Portugal, which difcharges itfelf into the fea, four miles N.E. from Cape Carvaciro, in the province of "Eframadura.

Lagoa de Patos, a bay on the coalt of Brazil. S. lat. $29^{\circ} 25^{\prime}$.

Lagoa de Pefcara, a bay on the coall of Drazil. S. lat. $2 I^{\circ} 30^{\prime}$.
I.AGOAS, As, a town of Africa, in the country of Ma. tamba, on the Sierra Leonc. N. lat. $8^{3} 40^{\prime}$. W. lung. $10^{\circ}$ $50^{\prime}$.
 lip), denotes, in Surgery, the deformity more commonly named a hare-lip. See Hane-lip.

LAGODA, in Gengrapby, a town of Brazil; 85 miles W. of Fort Rio Negro.

LAGOECIA, in Botany, fo named by Linneus, from $\lambda x y \omega 0$, a bare, and caxes, a dwelling, or foct, the plant being, according to Bellonius, Obf. 32, (in Cluf. Exot.) called in the ifle of Lemnos Lagochyneni, which means the form or feat of the hare-LLimn. Gcin. 112. Schreb; 156. Willd. Sp. Pl.v. 1. 1184 . Mart. Mill. Dia. v. 2. Ait. Hort. Kew. ed. 2. v. $2.53 . \mathrm{Sm}$. Prodr, Fl. Graec. v. 1. 162. Juff: 227. Lamarck Illuttr. t. 1.42. Gæertu. t. 23. (Cuminoides ; 'Tourn. t. 155.)-Clafs and order, Pentandria Monogynia. Nat. Ord. Umbellata, Linn. Umbelliferre, Juff.

Gen. Cl. Cal. General Involucrum of eight leaves, cut like a feather, fringed, reftexed, containing a fmall umbel ; partial one of four leaves, in feather-like capilary fegments, furrounding a folitary flower-ltaik, fhorter than itfelf. $P_{e-}$ riantb fuperior, of five leaves, in many capillary fegments. Cor. Petals five, two-horned, fhorter than the perianth. Stam. Filaments five, capillary, the length of the corolla; anthers roundifh. Pif. Germen roundifi, under the bafe of the perianth; ftyle as long as the ftamens; ftigmas two, one of them abrupt. Peric. none. Seed folitary, ovate-oblong, crowned with the perianth.
Obf. Grertner 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. Pctals cioven. Seed folitary, inferior.
I. L. Caminoides. Wild Cumin. Linn. Sp. Pl. 294 (Cuminum fiveltre; Math. Valge, vo 2. 117. Camer. Epit.

## L A G

519. Kypuroy ayproy; Diofc. lib. 3. cap, 60.) -This is the only known fpecies of its fingular genus, found in fields and vinesards, not uncommonly in Greece and the Levant. Its name in modern Greek is, according to Dr. Siththorp, Aypophavi, or Wild Marjoram; and Bellonius deferibes its fcent and tafte as like that of Origasum heracicolicurn. Diofco. rides fpeaks of the feed as a warm, rather acrid carminative, more powerful than the Garden Cumin. 'The ront is annual, tapering. Stem ten or twelve inches high, branched, zigzag, round, itriated, fmooth, leafy. Leazes pale green, fmooth, finply pinnate, with about a dozen pair if fellile, roundif, deeply cut, nearly oppofite leaflets, and an odd one; the upper leaves become very much diminifhed, and brilltepointed. Umbels terminal, globofe, denfe, halle an inch wide, befet with flining, filvery, brifty points.-A figure of this is deftined to apyear in the Flora (iraca, v. $3 .+{ }^{2} 243$. - We know not how the idea of a hare's form can bear any analogy to this plant, except it alludes to the feed, nefling amongit the fine briftly coverings of the Howers like a hare amongit grafs.

Lagoecia, in Gardening, contains a plant of the herbaceous kind, of which the fpecies cultivated here is the wild or baftard cumin, L. cuminoides.

Method of Culture.-Thefe plants may be increafed 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 fcatter, they come up and form good plants. They afterwards require only to be kept clean from weeds, and in the former cafes planted out when of fufficient growth where they are to grew.

Plants of this kind afford ornament and variety in the borders and other parts of frubberies and pleafure grounds.

LAGOON Island, in Geography, an ifand of the Pacific ocean, difcovered in lieuteiant Cook's voyage in r $7 / 6$. It is of an oval form, with a lagoun 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 confilts of a beach or reef of rocks: it has alfo the fame appearance in three places on the N . fide : fo that, the firm land being disjoined, the whole looks like many iflands covered with wood. On the welt end of the ifland is a clump of trees, appearing like a tower, and about the middle are two cocoar nut trees, which rife above all the reft, which in approaching the ifland appear like a fl.g. The whole ifland is covered with trees of different verdure ; but none could be diftinguifhed 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 themfelves with fomething of a light colour. Their habitations were under fome clumps of palm-nut trees, which appeared to Cook and his companions, who had long feen nothing but fea and fey, except the dreary hills of Terra del Fuego, to be a terreltrial paradife. S. lat. $18^{\circ} 47^{\prime}$. W. long. $139^{\circ}$ 28. Variation $2^{\circ} 54^{\prime}$ E. Hawkefivorth's Voyages, vol. ii.

Lagoon, Middle, a gulf on the coaft of Yucatan, in the bay of Horduras. N. lat. $18^{*} 7^{\prime}$. W. long. $88^{3} 59^{\prime}$. North Lagoon is a gulf in the fame bay. N. lat. $18^{\circ} 40^{\prime} . \mathrm{W}$. long. S8 $58^{\circ}$. South Lagoon in the fame bay lies in N. lat. $17^{\circ} 54^{\prime}$. W. long. $83^{\circ} 59^{\circ}$.
LAGOPHTHALMIA, or Lagophthames:, (derived from ravwos, a bare, and of $\theta x \lambda \mu 0 \%$ an eje, denotes, in Surgery, a particular cafe, where the patient experiences an -inability of clofing the cye-lids fo as to cover the eye. It is the defeet to which the term oculus leporinus, or liare-eye, has

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fometimes been applied. The ectropium, or gaping of the eye-lide, if the affection is coufined to the upper palpebra, now and then reccives one of the foregeing appellations. Some writers, however, with nuch reatun, are defirous of reitricting the term luy ththathe t, or larophishalmas, to cafes of fimple retraction of the cye-hel, unatlended with any degree of evertion.

Various and many are the insoaveniences which may be the confequence of this incapacity of properly covering the oye with the cye-lids. The tears are inceffinetly dropping over the check, becaufe the alternate opening and clofure of the eye-lids, fo effenti.1 to the propulfion of this fecretion into the puncta lachrymalia, are impeded. In a llrong light the patient is quite blinded ; for it is impobithe for him to leffen the quantity of rays which fatl upon the cye, by making the eyc-lids approach each other. From this caufe vifion gradually becomes very much weakered. Nor can the patient fieep well in any apartments which adnit the light. And, in addition to thefe unpleafant circumftancer, we mult mention the painful in lamed tate of the eye, frequently induced by the irritation which it fuffers from the ludgment of duft, and other extraneons fubflances upon it.

A preternatural fwelling, or protrufion of the eye from the orbit, is fometimes the caufe of lagophthalmus, which in this circumftance is to be regarded only as a fymptom of another difeafe, and generally gets well whth the primary affection. In the majority of cafes the defect is fituated in the upper eye-lid.

Several fpecies of lagophthalmus are noticed by Richter. In fome, though not many intances, the difeafe depends upon a weaknefs, or paraly fis, 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 accomplifhed with difficulty. The treatment moft likely to prove beneficial confitts in applying corroborant and itimulating applications. Rubbing the flin of the eye-lids orce or twice a day, with a drop or two of fenneloil, electricity, frictions upon the eyc-lids with the tinctura cantharidis, blizers near or imazediate'y upon the eyc-lide', the application of cold water to the eye by means of compreffes wet very oftea in the courfe of the day; Sccare plans in repute. Letting the water of a flower-bath fall upon the hinder part of the head; cold applications iffifted with the interval employment of bark, ard camphorated remediec, are all likely means to do grood in cafes of the paralytic lagophthalmus.

A fifure in the lower, and efpecially in the upper eye-lid, whether an original malformation, or the confequence of a neglected wound, may produce a confiderable expofure of the ege-ball, when the patient attempts to thut his eye; for at this period the margins of the lit will be drawn furtheft afunder. This particular cafe requires a fimi'ar operation to that for the hare-lip. (Sce Hake-tip.) But inftead of the twilted future, the furgeon is to employ the interrupted. See Suture.

The moft common kind of lagophthalmus is undoubtedly that which originates from a contraction of the integuments of the upper eye-lid, in confequence of wounds, abfeffes, burns, \&c. Here the obfervations, elfewhere made concerning the diagnofis and cure of an analogous cafe, are ftrietly applicable. See Ectropium.

Sometimes lagophthalmus appears to depend upon aninčurated thickening and contraction of the levator palpebre fuperioris, and of the fkin of the eye-lid together. In this cafe no furgical operation will avail in curing the difeafe, and every chance of beaefit lies in a trial of other plans.

## L A G

In order to preferve the fight, it is proper to guard the cye with a green flade from the effects of throng light, until the infirmity is completely removed.

LAGOPODES, in Ornithology, a name given to a divifion of the genus Titrao, diftinguifhed by a naked fpor above the eyes, and hairy legs. See Tembao.

LAGOPUS, in Botany, from $2 a \gamma \mathrm{w} 0$; a hare, and me;, a foot, a name which has been applied to feveral different plants, whofe foft hairy heads of flowers have fuggefted the idea of a hare's foot. Among thefe are a fpecies of Plansago: one of Gnaphalium, called by Linuxus dioicun; fome graffes; and feveral of the Diadelpbia clafs." There are grounds of fufpicion that the Lagoecia, (fee 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 juftify.

Lagopus, in Ornithology. See Grous, Red, Ptarmigan, and Tetrao.

Lagopus, in Zoology, is the name of a fpecies of the canis, with a fraight tail throughout of the fame 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 chicf place of a canton, in the difrict of Orthés; 8 miles S.E. of Orthés. The place contains 1700, and the canton 10,588 inhabitants, on a territory of $177 \frac{\pi}{2}$ kiliometres, in 23 communes.

LAGOS, a fea-port of Portugal, in the province of Algarve, fituated in a bay of the Atlañtic, to which it gives name, defended by feveral forts: the harbour is deep, but full of rocks. This place is the refidence of the viceroy of Algarve, and contains two parifh churches, four convents, and about 4600 inhabitants; 96 miles S. of Lifbon. N. lat. $37^{\circ}$. W. long. $8^{\circ} 39^{\prime}$-Allo, a river of Africa, which rifes in Benin, and runs into the Atlantic, Nolat. $5^{\circ}$ $10^{\prime}$. Its navigation is ohflructed by a bar at its mouth. Alfo, a town of Mexico, in the province of Guadalajara; $3^{6}$ miles N.E. of Guadalajara.

LAGOSTOMA, (from $\lambda x y w 0$, a bare, and $s o \mu z$, the mouth,) is a term in Surgery, fignifying the hare-lip.

LAGOUSA, in Geography, a fmall illand in the gulf of Engia; 3 miles N. of Engia.

LAGOW, a town of Auftrian Poland; 16 miles N. of Sandomirz.

## LA GRave. See La Grave.

LAGRimoso. See Lacrimoso.
LAGUA, in Geography, a town of the inland of Cuba; So miles W.N.W. of Villa del Principe.
la Guayra. See Guayra.
LAGUEN, one of the fmall Philippine iflands, near the north coaft of Samar. N. lat. $12^{\circ} .43^{\circ} .{ }^{\circ}$ E. long. $125^{\circ} 9^{\prime}$. LAGUERRE, Lovis, in Biography, a painter of hiftories on ceilings, ftaircafes, halls, \&c., and an affiltant and imitator of Verrio; with whofe name bis own has been moft unpropitioufly immortalized by Pope, in that characteriftic verfe,
" Where fprawl the faints of Verrio and Laguerre."
Laguerre, though the fon of a Catalan, was born in France; and his father being matter of the menagerie at Verfailles, he had the honour of having Louis XIV. for his god-father, and after him he was named. At firft he was -intended for the church, and was placed in the Jefuits' college for education; but having a hefitation in his fpeech, and therefore not fuited to fupport their ambitious projects, and
laving exhibited fome tafte in drawing, the god-father recommended to his parents to bring him up to the profeffion of painting.

He then fludied in the fchool of Le Brun, and in the Royal Academy of Paris; and made fo much progrefs, 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 ftaircafes, in the houfes of the principal nobility of the country, particularly at lord Exeter's at Burleigh, at Devonflire Houfe, 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 alcaft to demand very high refpect, 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 fuperior clafs. In a few years, it is probable his name will repofe for perpetuity on the records of liflory, and the unlucky fatire of Pope above mentioned.

His death happened in the year 1721, and in a place very feldom difturbed by fuch an event, viz. in the theatre of Drury-lane. He had gone there to fee the Illand Princefs aceed for the benefit of his fon, who was newly entered upon the flage as a finger; but before the play began, he was feized by an apoplexy, and carried away fenfelefs.

## laguna, in Botany. See Laguntea.

Laguna, in Geography, a town of South America, in the province of Venezucla, on the weft fide of lake Maracaybo; 80 miles S. of Maracaybo.
Laguxa, or St. Chrifobal 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 ufed to be reckoned the capital of the illand, the gentry and lawyers living there, and the courts of juftice being held in this town; though the governor-general of the Canary iflands refides at Santa Cruz, as being the centre of their trade both with Europe and A merica. The place, though pretty extenfive, fcarcely deferves to be dignified with the name of a city. The difpofition of irs ftreets is very irregular; but fome of them are of a tolerable breadth, and have fome good houfes. In general, however, Laguna is inferior in appearance to Santa Cruz, though the latter is fmall compared with the former; and it is faid to be in a declining ftate; vineyards being now planted where houfes formerly ftood: whereas Santa Cruz is daily increafing. Laguna is fituated on an eminence, in a fertile plain of confiderable extent. Befide vines, it bears wheat, Indian corn, potatoes, and a fpecies of bean not unlike a lupin. From grounds ftill higher, water is conveyed to a variety of fountains in this city, as at Santa Cruz, in an aqueduct compored of wooden troughs, and fupported by poles fixed into the earth. To the plain now mentioned fucceeds a ridge of hills, of gentle afcent, from the fummit of which may be eafily traced the windings of a pleafant walley, ftretching to the weltward, along the feet of a range of hills that feparate it from the fea-coaft. The town of Ticoronta and numerous little villages form a fcene agreeable and picturefque. The bofoms of the mountains are well cultivated, and their more rugged fides are chiefly covered with the fpontaneous plants of warm regions, fuch as the Cacalia kleinia, the Agave americana, the Cactus tuna, befides others of little ornament or ufe, No lat. $28^{\circ} 28^{\prime}$. W. long. $16^{\circ} 20^{\prime}$.

Lagina.

## L A G

Laguna Efoura, a cape of Portugal, in the province of Beira; 7 miles S.W. of Guarda.
LAGUNEA, in Botany, named by Cavanilles in memory of Andrew Laguna, a Spanifl botanift and phyfician of the 16 th century, who made a tranflation of Diofcorides, with a commentary, into his own language, and wrote alfo Some botanical as well as medical works.-Schreb. 463. Willd. Sp. Pl. v. 3. 733. Mart. Mill. Diet. v. 3. (Laguna; Cavan. Difl. 173. Juff. 273. Lamarck Illuftr. t. 577. Solandra ; Murr. in Linn. Syft. Veg. ed. 14. 623. Julf. 273. Lamarck Illuftr. t. 580. Cavan. Dift. 55. Triguera; Cavan. Diff, 41. t. 11.)-Clafs and order, Monadelphia Polyandria. Nat. Ord. Columnifera, Linn. Malvacea, Juff.

Gen. Ch. Cal. Perianth fimple, inferior, of one leaf, bell-fhaped, flightly angular, cut about half way down into five fegments, permanent. Cor. Petals five, ovate-oblong, obtufe, fpreading, attached to the bafe of the tube of the flamens. Stam. Filaments numerous, 25 to $3^{2}$, united below into a tube, at the top of which, as well as at its fides, they become feparate and diftinet; anthers roundifl. Peric. Germen ovate-oblong, fuperior; ftyle thread-fhaped, longer than the ftamens, either with five fpreading branches at the top, or only five notches; ttigmas capitate. Peric. Capfule ovate-oblong, obfcurely five-fided, with five cells and five valves; the partitions contrary to the valves. Seeds \{everal, roundifh, with three angles.

Obf. The Solandra of Murray has a deeply five-cleft calyx, and five diltinct ftigmas; Laguna of Cavanilles has a five-toothed calyx, burtting at one fide, and a . Itigma with Gire notches or teeth. Schreber has very judicioully united the two, from obferving fimilar differences among many fpecies of the genus.Hibijcus.

Eff. Ch. Calyx fimple, five-cleft. Stigmas five-cleft. Capfule of five cells, with contrary partitions.
I. L. lobata. Lobeal Lagunea, Willd. n. I. (Solandra lobata; Murr, in Comm. Goett. for 1784. 21. t. I. Cavan. Diff. 279. t. 136. f. I. Hibifcus Solandra; L'Herit. Stirp. v. Y. 103. t. 49. Ait. Hort. Kew. ed. X. v. 2. 455.) -Leaves heart-fhaped, three-lobed, unequally ferrated.-Native of the Ille of Bourbon. Root fibrous, annual. Stent branched, two feet high, round, clothed, like every other part of the herbage, with prominent hairs. Leaves alternate, on long ftalks, heart-fhaped, more or lefs 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 italks, in long terminal clulters, with bracteas like the ftipulas. Corolla white, about half an inch or more in diameter. It is a plant of little beauty, compared at leaft with the generality of its natural order.
2. L. ternata. Ternate Entire Lagunæa. Willd. no 2. (Solandra ternata; Cavan. Diff. 279. t. 136. f. 2.) Leaves ternate and fimple, entire.-Native of Senegal, whence Adanfon brought fpecimens, the only ones of which we have any account. The root appears to be annual. Stems feveral, about a foot high, flender, round, downy, like the other parts. Leaves alternate, diltant, on long Athlks, moflly ternate, the upper ones fimple; leaflets oblong, narrow and entire, the fide ones fmalleft. Stipulas fmall, acute. Flozvers on longifh, fimple, folitary, axillary or lateral italks, fhorter than the leaves. Of the corolla we have no information.
3. L. aculeata. Prickly Lagunea. Cavan. Difl. 173. t. 71. f. 1.-Leaves ternate, cut. Stem prickly.-Found near Pondicherry. The fem is a foot and half high, muri-

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cated. Leaftets nearly equal, obtufe, cut. Flowers yellow. Sometimes the leafets are more than three.
L. Paterfonia, Sims in Curt. Mag. t. 769. (L. fquamea; Venten. Malmais. t. 42. Hibifcus Paterfonius: Andr. Repof. t. 286.) found in Norfolk illand by Col Paterfon, a very handfome fhrub with a large purple flower, appears to us at beft but a doubtful Lagunaa, nor is the account of the fruit given with fufficient accuracy in Andrews, for us to judge relpecting this matter.

LAGUNILLA, in Geograply, 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 province of Cordova; 30 miles E. of Cordova.
LAGUNILLAS, Las, a town of Peru, in the diocefe of La Paz; 39 miles N. of Potofi.

LAGURUS, in Botany, from גaywos, a bare, and ovex, the tail, alluding to the appearance of the fpike or head of flowers. Hare's tail Grafs.-Linn. Gen. 37. Schreb. 52. Willd. Sp. Pl. vo 1. 453 . Mart. Mill. Die. v. 3. Ait. Hort. Kew. ed. 2. v. I. 173. Sm. Prodr. Fl. Græc. v. 1. 68. Fl. Brit. 143. Juff. 3o. Lamarck. Illuftr. t. 4 र. Gærtn. t. I. Clafs and order, Triandria Digynia. Nat. Ord. Gramina, Linn. Julf.
Gen. Ch. Cal. Glume fingle-flowered, of two long. linear, very thin, fpreading, feathery valves. Cor. of two firmer valves; the outermof longeft, terminating in two fmall ftraight awns, with a third awn from the middle of the back, twilted and more or lefs bent backward; inner valve fmaller, narrower, pointed, beardiefs. Nectary of iwo lanceolate blunt fcales, tumid at their bafe. Stam. Filaments three, capillary; anthers oblong, pendulous, cloven at each end. Pijf. Germen fuperior, oblong; ftyles two, thort; ftigmas 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 twitted one.
I. L. ovatus. Linn. Sp. Pl. i19. Sm. Engl. Bot. t. 1334. Fl. Grec. Sibth, v. I. 7I. t. go. Schreb. Gram. t. 19. f. 3.-Native of fandy open places in the fouth of Europe and north of Africa, llowering early in fummer. Being found in Guernfey; it is admitted into the lift of Britifh plants. The root is annual, compofed of downy fibres, like all graffes that grow in driving fand. Stem folitary, various in height, downy and foft like the leaves, whofe fheaths are long and rather tumid. Spike ovate, at firft erect, but foon bent to one fide, or drooping, from the power of the wind; it is not unaptly compared to the tail of a hare, which it refembles in denfity, fhape, lightnefs, and whitenefs. The name in modern Greek,

Lagurus cylindricus of Linnæus being properly removed to Saccharum, the above ftands a folitary fpecies of its genus. We know not of its having any ufeful property, except ferving to decorate flower-pots in winter, mixed with any everlalting flowers.
Lagurus, in Zoology. See Mus.
LAGUYO, in Geography, a town of Africa, on the Gold Coatt, in the country of Fantin.
LAHAAR, a town of Hindooftan, in the circar of Gohud; 40 miles E. of Gwalior. N. lat. $26^{\circ} 9^{\prime}$. E. long. $79^{\prime} 35^{\prime}$.

LAHADSI, a town of Arabia, in the province of Yemen; 16 miles N.W. of Aden.

LAHALL, a town of Sweden, in the province of Weft Gothland; ro 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 Perfa, in the province of Ghilan, on the Ifperud, fituated on an eminence ; eisht miles E. of Refld.

LAHISZIN, a town of Poland, in the palatinate of Brzefc ; 12 miles N.E. of Pink.

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. $15^{\circ} 44^{\circ}$-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 Lohnftein.
I.AHNSTEIN, or Lounstens, a town of Germany, at the conflux of the Lohn and Raine; four nuikes E. of Coblentz.

LAHO, a town of Africa, on the Ivory Coaft, which has been reprefented as a large and popuious place, extending a leagne along the coalt; the fhore being compofed of a beautiful yellow fand, againt which the fea beats with great rioler:ce. The natives, who are well fupplied with all kinds of provifions, are of a mild, tractable, and gentle dipefition; but ready to feize any opportunity for raifing the price of their ivory, according to the demand, and the number of fhips they obferve on the coait. They are vifited by interlopers of all nations, the free flips of England, Holland, Denmark, and furmerly the Hanle towns, whence the occalions of raifing their price frequently occur. Laho is planted, like Axim, with a great number of cocoa-trees; and thus the neighbouring countries of both diftricts very much refemble one another. Cape Laho is fituated in N. lat. $5^{\circ} 10^{\prime}$, equally diftana from Cape Palmas and Cape Tres Puntas, and the wellern frontier of that diffrict, called the country of the " Good People." Beyond Cape Laho the coaft falls in directly N.E., forming a fine bay, at the head of which opens the mouth of the lithle river, called Jaque Lahu, or Das Balbas, running directly N. and S. but not navigable. Farther ealtward is Korbi Laho, the little pool, called the "Bottomlefs pit," fo called both by the Englifh and Dutch, becaufe feveral onfucceffful attempts had been made to found it ; but at laft it was Iound to be no more than 60 fathoms; the difficelty of founding it refulting from a tide at the bottom which carried away the lead fatter than they could furnila line. Excepting this pool, there is no anchorage for feveral leagues along the coalt. The produce of the adjacent country conlilts of cloths and fuffs of Quaquas, ivory, and provifions. The negroes of this part are fingularly fkilful in fwimming and diving ; for if any pieces of coral, iron, glafs, \&ec. are thrown over board, the negroes will dive after them with fuch rapidity as to catch them before they reach the bottom.

LAHOLM, or Lagehoem, a fea-port town of Sweden, in the province of Halland, at the moath of the Laga, near the fea, with a good falmon fifhery, fortified by the Danes, and ceded to Sweden by the peace of bromtebro; 12 miles S.S.E. of Halmottad. N. lat. 56. 40'. E. lon $\therefore 12$ 45'.

LAHOOR, a town of Thibet, on the Setlege; 34 miles N.W. of Gangotri. N. lat. $233^{\prime} 0^{\prime}$. E. long. ${ }^{7} 6^{\prime} 25^{\prime}$.

LAHORE, or PanJab, a fubah or province in the N.W. part of Hindooftan, bounded on the N. by Cafhmere, 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 feparates 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 extenfive, and very fertile; affording, in addition to all the neceffaries of lifes wine, fugar, and cotton-wool: the laft of which fupplies the manufactories of the province. It is watered by the Indus on the W., and the Setlege on the E., and alfo by the Behut, Chunaub, Rauvce, \& 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 thofe of Kemaoon, which proceed from the fame ridge of mountains. See Panjab.

Lahore, a city of Hindooftan, and capital of the country above defcribed, fituated on the Rauvee. This city was the refidence of the firlt Mahometan conquerors of Flindooftan, before they eftablifhed themfelves in the central parts of the country. It owes its modern improvements, however, to Humaioon, the father of Acbar, who made it his refidence during a part of his troublefome reign. Thevenct fays, that, incleding the fuburbs, it was three leagues in length at that period, and when he faw it, about the year 1665 , the city itfelf was above a league in extent. Schauguive, fon of Acbar, allowed the Portuguefe to build a church there; and fome of its furniture remained at the time of Thevenot's vifit. It has 12 gates. It is now the capital of the Seik3; but by the defertion of its inmabitants, it has loit not only a confiderable part of its population, but much of its ancient fplendour. Here are manufactures of carpet., cotton, \&c. Ice is brought from the northern mountains to Lahore, and fold there all the year. The famous avence of fhady trees, fo much fpoken of by the early Indian travellers, began at Lahore, and extended to Agra, near 500 Englifh miles. N. lat. $31^{\prime} 50^{\prime}$. E. long. $73^{\circ} 50^{\circ}$. See Serks.

LAHOREY, a town of Hindooftan, in Baglana; 20 miles $S$. of Bahbelgong.

LAHORPORUM, a town of Hindooftan, in Oude; .25 miles W.N.W. of Kairabad.

LAHR, a town of Germany, in the bifhopric of Munfter ; 12 miles N.W. of Munter.

Lair, or Lobr, a lown of the principality of Naffau Saarbruck Ufingen, the capital of a lordfinip, on the river Schutter; 18 miles S.S.E. of Strafburgh. N. lat. 48 21\% E long. $7 \times 57^{\prime}$.

LAJA, La, a town of Peru, in the diocefe of La Paz; 14 miles N.W. of La Paz.

LAJAPOUR, a town of Hindooflan, in Guzerat; 10 miles S. of Surat.

LAIBEEDY, a town of Africa, in the country of Tunis; 18 miles S.E. of El Jemma.

LAICA, a torn of Abyffinia; 100 miles S. of Miné.
Laica vi rcmovenda. See VI.
LAID-UP is applied to a thip, when the is either moored in a harbour during the winter feafon, or laid by for want of employme.t ; or when the is become incapable of farther fervice.

Laid under meetal. See Metal.
LAIDA, in Geography, a town of Bengal; 14 miles S. of Curruckdeagh.

LAID. LLA, a town of Hindooftan, in Golconda; 1o miles N . of Warangole.

LAIGLE, a town of France, in the department of the Orme, and chief place of a cauton, in the diftrict of Mortagne.

## L. A I

Mortagne. The place contains 5947, and the cantom 14,388 iahabitants, on a territory of $207 \frac{1}{3}$ kiliometres, in 19 communes.
LAIGNES, a town of France, in the department of the Cote d'Or, and chief place of a canton, in the diftrict of Chatillon ! 19 miles W.S.W. of Chatillon-fur-Seine. The place contains 1559 , and the canton 11,103 inhabitants, on a territory of $497^{\frac{1}{t} \text { kiliometres, in } 23 \text { communes. }}$

LAILAKARI, a fmall iffand on the E. fide of the gulf of Bothnia. N. lat. $65^{\circ} 14^{\prime}$. E. long. $25^{\circ} 9^{\prime}$.

LAINEZ, James, in Biograpby, a Spanifh Jefuit, and the firlt general of the order after the death of the founder, (fee Loyola,) was born in the year 15:2. He ftudied 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 flare in drawing up the conflitutions for their government. Upon the death of the general, he fucceeded as fuperior of the fociety, but was not formally elected till the year 1558. He affifted at the council of Trent, where he fupported the papal authority to a very extravagant degree. He obtained from pope Paul IV. the perpetual generalhip of the order, together with the following extraordinary privileges, ciz. the right of making all manner of contratts, without the privity or confent of the fociety: that of givisg authority and authenticity to all comments and explanations of the conftitutions: the power of making new, and altering the old ones, and alfo to ef. tablifh prifons, for the confinement of refractory and dif. obedient 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 Pviffi, where he difputed with Beza and Peter l-fartyr. After his return to Rome, he refufed a cardinal's hat, which was offered him by the pope. He died in 1565 , leaving behind him fome theological and moral treatifes. Moreri.

LAINO, in Geography, a town of Naples, in Calabria Citra; 19 miles W.N.W. of Caffano.
LAJOUN, a town of Perfia, in the province of Mazanderan, near the coalt of the Cafpian fea; 12 miles $E$. of Refhd.
LAIR, in Agriculture, a term applied to land in a fate of grafs or fward. See Lay and Layer.

Lair, Layr, or Layer, among Sportfinen, denotes a place where deer harbour by day.

Lair, or Layr of a deer, is the impreffion which the beaft has made on the grafs and ground where he has lain down, or repofed.

Lair, among Hufbandmen, alfo denotes a place where cattle ufually relt, under fome fhelter; the ground being enriched by their dung.

LAIRE, Francis Xavier, in Biography, who was born at Vadans, in France, in 1739, and died at Sens in the year $\mathbf{1 8 0 0}$, was celebrated for his knowledge of bibliography, and publifhed, 1. Memoirs tow rds the Hiftory of great Men of the $15^{\text {th }}$ and 16 th Centuries, with a Supplement to Mattaire's Annals of Typography. 2. Specimen Hiftoricum Typograptix Romanxe cum Indice Librorum. 3. Epittola ad thbate Ugolini. 4. On the Oiigin and Progrefs of Printing in Franche Compte, and cther pieces.

LAIR ESSE, GERARD, a painter of hiftory and portraits, born at Liege in $16 .{ }_{f} 0$. His father firft inflructed him in the art, and he is fuppofed alfo to have been a difciple of Bertholet, whofe manner he wery much followed in his practice.

For a lonz time the ait of painting was an unprofitable purfuit to him; but as he made his pictures gay and agree-
able, he at latt, by the help of Vyterburgh, a picture nere chant at Amfterdam, acquired confiderable credit.
His Ityle of painting was a compound of thofe of Pouf. fin and the old French fichool. While he aimed at imitating the beft Italian malters, he never avoided thofe falfe airs of the head and limbs, which feem rather taken from the 将e than from nature; fo that his works do not rife to the level of true merit.

He was blind for fome years before his death : but having refected upon the principles of the art, and being a communicative man, he was conflantly attended by artits and amateurs, who were gratifed by his inltrutions. Thofe treatifes on defign which go under his name were not written by him, but collected from his obfervations, and publifhed after his death, by a fociety of artifts. He died in 1711 , at the age of 71 .
LAIS, the famous courtezan, born at Hyccara, a fmall city in Sicily; and being carried into Greece by Nicias the Athenian general, began her conquuells by mufic. We mention it not among the encomiums of the art ; but almoft all the celebrated courtezans of antiquity were originally muficians. According to Athenreus, (lib. xiii.) mufic was thought a neceffary female accomplifhment in the time of Darius; for Parmenio wrote Alexander word, that he had taken at Damafcus three hundred and twentynine of the Perfian monarch's concubines prifoners, who were all we'l fkilled in mutie, and performed on the flute, and other inftruments. Lais was fuppofed to be the daughter of the courtezan Timandra and Alcibiades. She began tirft to exercife 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 Demolthenes, of whom fhe required for one night ten thoufand drachmas, refufing to comply with her demands, faid, "he would not buy repentance at to high a price." As a caprice, fhe was more indulgent to the difgufing Cynic Diogenes. Arittippus, another philofopher, but much more amiable, almot ruined himfelf in facrifices to this terreftrial divinity, who loved him lefs than Diogenes. When he was rallied on her coldnefs, he faid, "I cannot flatter myfelf that either wine or fifh is in love with me, yet I enjoy, and feed on them both with great pleafure." This female fometimes ridiculed the frailty of the philofophers whom the had captivated. "I do not underitarid what is meant by the aufterity of philofophers; but with this fine name, they are as much in my power, as the reft of the Athenians." After having corrupted all the youth of Corinth and Athens, fhe went into Theffaly, to fee a young man with whom fhe 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 ftatues to her memory.

LAISBY, in Geography, a town of Swedifh I.?pland, in the lap-rnark of Umea; 100 miles N.W. of Umea.

LAISCHEV, a town of Rulfia, in the government of Kazan, at the union of the Kama and Volga; 20 miles S. of Kazan. N. lat. $55^{\circ} 20^{\circ}$. E. long. 49 14.

LAISSAC, a town of France, in the department of Aveyron, and chief place of a canton, in the diftrict of Milhau. The place contains 1083 , and the canton 7453 inhabitants, ou a territory of $172 \frac{1}{2}$ kiliometres, in 12 communes.
LAI-TCHEOU, a city of China, of the firlt rank, in the province of Chantong, is built on a promontory, and has a convenient harbour, a numerous garrifon, and feveral armed veffels to defend the coatt. The jurifdiction extends over feven cities, two being of the fritt clafs. N. lat $37^{\circ} 9^{\prime}$. E. long. $119^{\circ} 46^{\prime}$.

## L $\Lambda$ K

1. AITY comprehends fuch of the people as are not included under the denomination of clergy; and may be divided into three diltinct itates, viz. the civil, the military, and the maritime. For the origin of this diftisction, fee Clergy

LAK, in Geography, a town of Hungary; 18 miles E.S.E. of Canifcha.

LAKE, in Phyfical Geograply, a body of water, molly of confiderable extent, fituate, uncounected with the ocean, in an inland place, and commonly in the immediate neighbourhood of lofty mountains. The form of thefe collections of waters is various; but thofe that receive and emit riscrs, are generally of an elongated fhape, and their longett diameter is in the direction of the rivers that traverfe them. Lakes are generally divided into four claffes: 1. Such as neither receive nor emit rivers. 2. Such as emit rivers, without vifibly receiving any. 3. Such as receive one or more rivers, without enitting any. And, 4. Such as both receive and fend 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 cafe in the deferts northward of the Cafpian fea, and in the plains between the Ural mountains and the Irtifch, and in the valt defert of Baraba, between the Irtifch and the Obb. The foil of thefe countries is defcribed by the accurate Mr. Patrin as being uniformly compofed 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 molt part only depreffions or bafons filled by the rains and melted fnow: their greateit extent is fcarcely ever above three leagues in circumference, and generally they are much fmaller. Their depth, too, is ufually very inconfiderable, for it feldom exceeds a fathom, and is frequently not beyond a few feet. Moit of them are only temporary; for towards the end of the fummer they are generally found dry.

A remarkable circumitance, as obferved by the fame naturalift, is that in the fame plain, at the diftance of a few hundred paces, fome of thefe lakes are frefh-water lakes, while the water of others is abounding either with fea falt, or with fulphat of magnefia (Epfom falt) ; or they are impregnated with both thofe falts, either uniformly mixed, or each of them in a feparate part of the lake; in fome cafes the fea-falt and the Epfom falt are formed at the fame period; in others the latter of thefe falts manifeets itfelf only towards the end of the fummer.

The caufe of the faltnefs obfervable in fome lakes has been by molt authors on this fubject afcribed to falt fprings at their bottom; and probably they are in the right with regard to moft of them; but in the above inttance, feveral circumftances unfavourable to that hypothefis exift in the nature of the foil, and the mode and determinate quantity in which thofe falts are depofited at the bottom; whence Patrin conceives that the lakes in queftion, as well as molt other falt lakes of the fame kind, owe their faltnefs to principles or particles, with which they are furnifhed immediately from the atmofphere, in the fame manner as nitre is formed in particular fituations in warm climates, ceafing 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 freth-water lakes, and that fuch as do not fend forth any are falt lakes, appears to be inconfiftent with experience ; lince, on one hand, the great lake Titicaca, in Peru, fuppofed to be eighty miles in circumference, and giving out no river, is by Laet, Acofta, Garcilaffo della Vega, and others, defcribed as a frefh-water

## I. AK

lake ; while the largeft of all falt lakes, the Black fea, difcharges its redundant waters, with a rapid courfe, through the Bofphorus 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 faltnefs increafes with time; and on this foundation, he propofes a method for determining the age of the world.

To the lakes of this firit clafs likewife belong thofe lodged in the craters of extinct volcanoes, or at lealt in depreffions confidered by molt geologifts as the remains of volcanic energy. One of the molt remarkable, on account of its elevation, is that which travellers relate to exift on the fummit of the Adam's peak in Ceylon. This mountain is feen at a diflance of forty leagues; which appears to indicate its height to be at leaft that of Mount Ritna. Its cone, which is difficultly accellible, has 200 paces in diameter at its fummit, and in the middle of the platform is fituated a lake of confiderable depth. Ribeiro's Hitt. of Ceylon.

Dolomieu, in a letter to Faujas Saint-Fond, inferted in this naturalift's work, "Sur les V olcans éteints du Vivarais," defcribes a lake filling up the crater of an extinct volcano in the Serra de Eitrellia ; a ridge of mountains in the north of Portugal, denominated Mons Herminius by the ancients.

Allo the lakes of Agnano and Averne, near Naples, are fuppofed by many authors to have been craters of voicanoes. The former of thefe lakes, we are told by Lalande (Voyage. t. 6. p. 27.) appears fometimes to boil at its borders, efpecially when its waters are high. This ebullition, like that of the Acqua Zolfa near Rome, is occafioned by gafeous fluids traverfing the water. On the borders of this lake are the vapour-baths of San-Germano.
2. Lakes which emil rivers suithout recciving any.-Thefe are more numerous than the preceding. The more copious the fubterraneous waters by which they are fupplied, the more confiderable are the rivers fent forth by them. The Seliger lake, in the government of Twer, 60 leagues N.E. from Mofcow, gives origin to the largel river in Europe, the Volga; although no river is rifibly received by that lake. The fame may be faid of the lake called Kolo-nor, at the foot of the eaftern ridge of the Tibetan Alps, from which iffue two of the largelt rivers of Afia, the Hoanho, or Yellow river, and Kiam, or Blue river, which, after having traverfed part of the Chinefe empire, empty themfelves into the Japanefe fea.

Of the fame kind are the two fmall lakes in New Cattile, in Spain, called los ojos de la Guadiana, fituated near the Alcarraz mountains, and confidered as the fources of the Guadiana.

The lake of Mont-Cenis, though it does not emit a confiderable river, is yet remarkable on account of its great elevation, which is 6000 feet perpendicular above the level of the fea. This lake (together with the Cenife, which iflues from it) is fupplied by waters conveyed to it by fubterraneous channels, and which defcend 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. Sauffure is of opinion that it has formerly been fituated at a greater elevation; fince, at a height of more than thirty feet above its prefent level, traces of erofion produced by the Cenife are till remaining, as well as calcareous layers, exactly like thofe ftill depofited 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 thefe lakes occur

## L AKE.

even at a greatcr clevation, (about 700 fect above the level of the fea, ) fuch as the lakes of Liens, las Cougous, and Oncet, in the mountains above Barège. They are frozen over for the greateft part of the fummer, and are only partially deprived of their icy covering in the interval between the months of June and Auguft. The lake of Mont Cenis, on the other hand, had, at the end of Scptember, when Sauffure obferved it, a very mild temperatare. It is fo well ftocked with fifl, efpecially trouts, that, in the year 1780, it produced a yearly rent of 636 lives.
3. Lakes which receive one or more rivers, without emithing
any--Moft of thefe 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 lofs which the lake fuftains by evaporation. To this clafs belong, among others, the Cafpian fea, as it is improperly called, which receives the waters of the Volga, of the Ural, and of fome other rivers. This valt lake, which formerly occupied a much more confiderable fpace than at the prefent day, and not only included the lake of Aral, but probably had even a communication with the Euxine fea, (fee CasPIAN, ) ftill continues to decreafe, in proportion as the capacity of the rivers whichefupply it is found gradually to diminifh. Another lake of this kind is the Dead Jea, or lake Asphaltites, in Paleftine. See Aspialitites.
Such was the lake that formerly covered Ca/bmere, which fee. Lakes of this kind will be naturally formed in every cafe, where the waters of a river are inclofed, in any part of their courfe, by elevated lands. The firlt confequence of this ftoppage is, of courfe, the converfion of the inclofed 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 itfelf a paffage through the mountains. Hence it is that more lakes are found near the fources of rivers than in the lower parts of their courfe. If the river be inclofed 2 fter it has gained a great acceffion of water, and, of courfe, Arength; it will, indeed, at firt, form a lake, as before; but in time, the place at which it runs over, will be gradually fretted away, as in the cafe of the Behut. The Euphrates, in like manner, opens itfelf a paffage through mount Taurus; and the Ganges through mount Imaus; and even though the bafe of the mountain be of the firmeft texture, it will give way to the inceffant friction, through a courfe of ages; for either of thefe pafliages may have been an operation of many thoufand years. In the cafe of the Ganges, which paffes through mount Imaus, it may be fuppofed that the lower frata were fofter than the upper; for the upper ftill remain to a great height. In that of the Behut, the latter appears to have exitted long enough to depofit a vaft depth of foil, before it difperfed. Rennell's Memoir.

In the interior of Africa a vaft lake is faid to exift, which is fuppofed to receive the Niger. In America we have the lake Titicaca in Pern, into which runs a river, the fource of which is near Cafco..
4. Lakes which both receive and fend forth rivers, are the moit numerous of alls. They are generally found in vallies, or in plains, in the proximity of great chains of mountains. The moft remarkable among thofe of the Alps are-

The lake of Gcneva, traverfed by the Rhone. Its elevation above the level of the fea, according to De Luc, is 3126 feet, according to Shuckburgh 1152, and according to the obfervations of profeffor 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-
pafs an illand, and foon again unite. This lake formerly extended as far as Bex; and the village Port-Vallay, which is at prefent at the diftance of more than an Englifh mile, was fituate clofe to its banks. The lake of Geneva is fubject to an amnual 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 thofe parts called Seiches. It is moft Atriking in the neighbourhood of Geneva. 'The caufe of this phenomenon is not well undertood. Fatio attributed it to gnits of wind, by which the water of the fmaller lake is protruded beyond the fand-bank that feparates it from the larger; and on falling back produces a fluctuation. Jallabert, obferving that the Seiches take place without any gults of winds, looked for the caufe of this phenomenon in the fudden diffolution of fnow by which the river Arve, becoming fuddenly turgid, retards the courfe of the Rhone which iffues from the lake. Sauffure, on the other hand, has witnefled the fudden fwelling of the Arve, without any accompanying Seiches 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 Sauffure and Vaucher add, that fudden local variations in the preffure of the atmolphere, may contribute to the production of this phenomenon. Patrin is inclined to attribute fuch fudden fluctuations of lakes to the developement of fubterraneous gafes, which alfo, by mixing with the atmofphere, produce that violent agitation, which, according to him, cannot be the effect of a fimple difturbance of the equilibrium, but muft be looked for in a chemical fermentation taking place in the atmofphere. An ofcillation fimilar to the Seiches of the lake of Geneva, though in a lefs degree, has been obferved allo in fome other lakes of Switzerland. To the fame caufe Patrin afcribes the hollow found which fome lakes are known to emit, and which is not unlike the noife that precedes the eruption of volcanoes. Some writers inform us that fevera? lakes of Switzerland, and among them the lake of Geneva, give out a grumbling noife 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. Alfo 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 Swifs canton of that name, (alfo called the Vierwallädter fea, is fituated 1320 feet above the level of the fea, according to Pfyfer; 1314: according to De Luc ; 1350, according.to Trembley; and 1392 feet, according to Wyfs. The river, Reufs enters it at Fluelin, and is again emitted near Lucern. This molt romantic of all lakes is furrounded by rocks confifing partly of limeftone, partly of the calcareons breccia, called Nagelfuhe, and by fand-itone mountains. The line of demarcation between thefe two formations of rocks runs in a direction from. E. to W. 3 to the S . of this line nothing is feen but lime-ftone, and nothing but calcareous breccia and fand-ftone 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 traverfed by the river Aar, which enters the former of thefe lakes at its N.E.extremity, and leaves it at its fouthern end ; when, at the diflance of about two miles, its waters unite with thofe of the lake of Thun. The rocks of both fides of the lake of Brientz confilt of lime and clay-Aate.

## I. AK E.

Dr. Ebel tells us, that on the N . fide formerly large maffes of the molt beautiful varietics of red and white fluor fpar were found, which, from the pure Buase of lime, pafted into blackifl-grey granular carbonate of lime. The lake of Thun is fituated about 1780 feet abore the level of the fea, and a few fathoms higluer than the lake of Brientz. Its northern banks are entircly mountainous; half of the fouthern bank is flat and level. The rocks on the north fide confift ehiefly of the remarkable breccia and fand-ftone formation, of which Mount Rigi, in the canton of Schweitz, is compofed. 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 coarfe grained calcareous grit poffefling great tenacity, fo that on the application of blows, the included flones, inftead of becoming detached from their cells, are generally fean cloven afunder. Thefe rolled picecs confifi of various kinds of granite, gneifs, porphyry, flint, and fint-Ihate, horn-flune, granular and compact lime--tone, and a variety of red, clayey, ferruginous boulders, which, on farther decompofing and diffolving, ftain the cement in which they are imbedded with a red colour. The mountains on the S. and E. fides confirt of lime-flone. The teaperature of the lake of Thun, in the beginning of the month of July, at a depth of 350 feet, was found by Sauflure to be 4 of Reaumur, while, at the furface, the fame thernoonetce irdicated $1^{\circ}$. The water of the lake of Brientz, at the fame time of the year, at the depth of 500 feet, flewed the temperature of $30^{40^{\circ}}$ while that of the furface was $16^{\circ}$, and that of the amof phere $15^{\circ}$.
The Lake of Zuricb.-The principal niver which enters this lake, is the Linth or Limmat, which, after having received the Mag, fent forth by the lake of Wallenltadt, falls into the lake of Zurich, near a mouncain called the Bufl-berg. The eleration of this lake above the level of the fea is 1279 feet. During the hot weather of the fum mer months its waters are feen to rife higher, and to overflow its banks, owing to the infucnce of the heat on the valt glaciers, and maltes of frow of the Alpine chain of mountains. Several geognottic facts render it lighly probable that formerly the Rhine, in its courfe to Germany, traverfed both the lake of Wahlenifadt and that of Zurichi.
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 Conltance. Its clevation above the level of the fea is 1089 teet. It is navizable for veffels of 3000 crlt. Within a period of eight centuries, it has only twelve times been covered with ice. This beautiful expanfe of water formerly extended as far as the Rheinthal, or the valley of the Rhine: a change effected by the flow but unintervupted depofition of alluvial land at the mouth of that river.
The Langen-See, or Lago Maggitre of the Itelians, the Lactus Verbanus of the Romans, a lake on the borders of Switzerland, Piedmont, and the Milanefe territory, receives and fends forth the river Te efin. Its length from Tenero to Sefto, is 44 Italian miles; its greateft breadth, between Luvino and Ferriole, is above feven Italan miles; its elevation above the level of the fea 762 feet, according to Pini, but only 6.6 according to Sauflure ; its depth, at the chapel of la Bardia, oppofite Locarno, is 335 feet. Many confiderable rivers empty themfelves into this lake, fuch as the Telfin, the Verafca, the Maggia, the Torcia, and the Trefa; in fhort it receives all the waters of the immenfe group of mountains that encompafs it.
The natural character of the Lago Maggiore is a fublime wildernefs, blended with the milder beauties of the Italian foil; a narrow compafs gradually widening into a valt es.
panfe. Towards the north and weftward it is furrounded by elevated granitic mountains; while the caft and north fides exlubit a feries of fmaller hills, which gradually lofe them. felves in the plain of Lombardy. From Magadino to Luvina, on the N.E., the dark and rugged mountains of Gamborogno rife 6000 feet above the furface of the lake; and the wooded Pino, with the mountain of Canobbio, which appear to clofe the lakc, form a long balin, abounding with filh, and known by the name of Lago di Locarro.
On the Piedmontefe fide of the Laso Maggiore, at Bar veno and its neighbourhood, are the quarries of granite, which have furnifhed the magnificent columns that decorate the churches and palaces of Milan. In thofe parts are likewife found the beautiful cryltals of feldipar, that were firlt difcovered by Pini. At the mouth of the river Toccia are the quarries of red and white granite, and behind Mergozzo thore of the beautiful variety of marble, of which the cathedral of Milan is conftructed. At Grantola are feei the veltiges of an extinguifhed volcano, which is, however, not confidered as fuch by the learned Abbate Pini, who vifited it in 1790 .
The Lake of Como, about 24 miles from Milan, receives, among other fmaller rivers, the Adda, which is again fent forth at its eaftern extremity. The elevation of this romantic lake, the favourite fpot of the younger Pliny, is, according to Oriani, 654 feet above the fea.
The Garda, a lake of Italy, between the Veronefe and Brellan, is traverfed by the Mincio.
A remarkable lake belonging to this clafs, on the French fide of the Alps, is the Lac de Joux; in the Jura mountains. It is traverfed by the river Orbe, which on iftuing from this lake, is ingulfed in valt funnels, hollowed out by its own waters in the calcareous Itrata, which at prefent are feen in a vertical pofition, owing to the effects of the rupture they expcrienced at the time when the revolution took place, which produced the lake ; and this fame river, after a hidden courfe of three quarters of a league, re-zppears in a valley, 680 feet below the funnel-hhaped cavities that conveyed it to its fubterranean channel ; from whence it proceeds towards and traverfes 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 Alia has tiwo very confiderable lakes of this de. feription, viz. the lake Norzaijinn, in Clinefe Tartary, at
the fouthern bafe of the Altzic the fouthern bafe of the Altaic chain, where it is traverfed by the Irtifch and the Baikal, in Eat Siberia. This latter is traverfed by the river Angara. (See BAIK.AL.) M. Pas. trin, who has twice vifted this remarkable lake, has defcribed the highly deftroying effects which is waters, in their \&rat dual formation of the bafin, have produced in the flratified mountains that bound its welfern fhores. But it is not the Baikal alone which has thus formed its own bed, for the fame caufe has prevailed at the formation of thofe valt Canadian lakes, the lake Superior, Huron, Erie, and Ontario, connetted together by the river St. Laurence, which takes its courfe through their flupendous batins.
We are indebted to Sauffure for fome very interefting obfervations refpecting the temperatu $\omega$ of the waters of the principal Alpine lakes. It appears from the experiments of this celebrated naturalift, made with a thermometer of his own invention, that even in the hotteff fummer months, the cold which prevails at the hottom of thofe lakes far exceeds that obfervable in the dep th of the fea. The following are amang the refults he obtained.
In the lake of Geneva, on the 6 th of Auguif, at a depth ot 312 feet, the thermometer (having Reaunurur's fcale) indi-

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reated a temperature of $8 \frac{10}{2}$; that of the furface was $5^{\circ}$, and that of the atmofphere $20^{\circ}$. On the 11th of February, in a depth of 950 feet, (namely, near the rock of Meillerie, being the deepett part of the lake,) the temperature was $43^{\circ}$; that of the furface $4 \frac{1^{\circ}}{}{ }^{\circ}$; that of the atmofphere $1 \frac{30}{}{ }^{\circ}$. It is to be obferved that as the elevation of this lake (according to Deluc) is 1126 feet above the level of the Mediterranean, the bottom of its bafin is fituated only 176 feet above the fame level.

The waters of the lake of Annecy, fituated 210 fect above the lake of Geneva, had, on the $14^{\text {th }}$ of May, and at a depth of 163 feet, the temperature of $4 \frac{1}{2}^{\circ}$, while that of the furface was $11 \frac{1}{2}^{\circ}$, and that of the air $10^{\circ}$.

In the lac du Bourget in Savoy, the thermometer, on the 6th Oet., at the depth of 240 feet, indicated $4 \frac{\pi}{3}^{\frac{1}{\circ}}$; at the furface $14^{\frac{10}{\circ}}$; in the air $10{ }^{10}$. Sauflure obferves, that the cold of the water of this lake cannot be afcribed to any foreign caufe, fince it receives no ftream from the Alps, and its communication with the Rhone furnifhes 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 abore that of Geneva, the temperature, on the 7 th of July, at the depth of 350 feet, was obferved to be $4^{\circ}$; the temperature of the furface was $15^{\circ}$, and that of the atmofplere 16. At the fame time the temperature of the lake of Brientz, which is contiguous to the lake of Thun, was $3 \frac{1}{1}^{8^{\circ}}$ at the depth of 500 feet.

The waters of the lake of Lucern, fituated 19I feet above the lake of Geneva, had, on the 28 th of July, and in a depth of 600 feet, the temperature of $3 \mathrm{~T}^{\circ} \mathrm{c}^{\circ}$; temperature of the furface $16_{T 0^{\circ}}$; of the air $188_{\mathrm{T}}^{6}{ }^{\circ}$.

Lake of Conffance. - The temperature on the 25 th of July, at the depth of 370 feet , was $3{ }^{4}{ }^{\circ}{ }^{\circ}$; on the furface of the water $14^{\circ}$; in the air $16^{\circ}$.

Lago Maggiore.-On the 19th of July, at the depth of 335 feet, the temperature was $54^{4} 0^{\circ}$; at the furface $20^{\circ}$; in the air $18^{\circ}$. 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 Sauflure made on the temperature of the fea, gave the following refults. On the Sth of October, the farne thermometer, immerfed at Porto Fino, on the coaft of Genoa, to the depth of 886 feet, indicated $105_{10}^{\circ}$, while the temperature at the furface was $165_{10} 5^{\circ}$, and that of the atmofphere $15^{\frac{3}{10}} \mathrm{C}$. At Nice, on the 17 th of October, and at the depth of 1800 feet, the temperature proved to be $100^{6} 0^{\circ}$, while that of the furface of the water was $160^{\circ}$. 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 mals of water which proves an obftacle to the free communication of the external caloric, and that the low temperature obferved in the lakes of the Alps is owing to a particular and local caufe.

Befides the general caufe 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 refpect, according to the circumfances under which they take place. All rivers emptying themfelves into lakes, convey thither more or lefs of the fubftance 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 thofe high mountains from which ftreams, in their defcent, may carry away the detritus of rocks, the more fpeedily its bafin will be filled up; while, on the other hand, a lake fituated at a greater diftance, in the middle of a plain, and receiving only fand

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and mud, part of which is carried off again by its outlet, will experience a much lefs rapid diminution. Some naturalifts have thought it poffible to determine the relative antiquity of lakes, by the extent of the alluvial land depofited in their bafins by thofe rivers which enter them; but, according to Patrin, it is a matter of great difficulty to obtain fatisfactory data on this head, and no gencral rules can poffibly. be laid down without a previous and careful examination of all the circumftances attending. the locality of each particular lake. Thus; for inftance, (fays the fame author,) we fee 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 thofe produced by the Rhone are fcarcely 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 meafure choked up with their detritur. The valley of Chamouni, according to Sauffure's obfervations, was alfo formerly a lake; but fituated at the foot of the highelt mountains of Europe its bafin bas long fince been levelled by the alluvial land carried into it from all fides by the Aveiron and other ftreams. The lac du Bourget, on the other hand, which occupies the middle of a valt bafin, where it receives its calm waters unfraught with foreign matter, is lefs than many others fuhject to the influence of this particular caufe of the diminution of lakes.

The large lakes, with which the northern regions abound, ferve for very good purpofes, inafmuch as the warm vapours arifing from them ferve for a defenfative againft the pinching cold of thofe climates. To this it is owing, that Ireland, Scotland, \&c. are lefs affected with frofts than much warmer countries.

They alfo furnifh exhalations and vapours, which diril on the countries bordering upon them in refrefling fhowers, 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. Frafer gave a perfect account of it to the Royal Society. It never freezes though the winters be ever fo fevere, and is full of fprings in alnooft every part; and its waters, in the time of the fevereft frofs run fluid, and fmoaking for fix miles down the river into which they are difcharged, while every thing is frozen about them. The river runs very flowly notwithitanding, and from this fmoke of the water there is raifed a fort of fog which overfpreads 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 fulnefs, fummer and winter. Due weft from the river into which the lower lake difcharges itfelf, 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 ealily feen that this was once dry land, and an inhabited country. There are found there large bodies of trees felled, and lying ftraight along: the wood of thefe is black, but it is very found, and there are many tumuli, or heeaps of itones, to be feen under water in different parts of the frith, one of which is acceffible at low water, and theze have been found in it urns, which prove that they have been all burying-places. Phil. Tranf. N $2 ; 3 \cdot$ p. ${ }^{2} 3$ r.

As the fea wafhes 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 the ase, and other infruments upon them; and at the depth C c
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of fisteen fect, in the fteep banks of the neighbouring river Beuly, 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 thefe were felled by the conquering Romans, and perlaps thefe are of fome fuch origin.
"We have many" fungularities offering themfelves to our viw in the lakes of our own country; that of their freezing at peculiar feafons is not one of the leaft. Philofophical 'Trant. $\mathrm{N}^{\circ}$ If4.

Lake. Biluminous. The exitence of an expanfe of miseral pitch, fufficiently extenfive to merit the appollation of a lake, is a circumflance fo very remarkable, that it will not be deemed improper to fet apart an article for the deEription of the bituminous lake of the ifland of Trinidad. A deferjption of this celebrated pitch lake was firlt given Ly Mr. Anderfon, in the Philofophical Tranfactions for r-i.n, and fome notices relative to it were communicated hy MIr. T'ooin, in the eighth volume of the Linnean 'Iranlactions; but we now poffefs a more complete account of it by Dr. Nugent, who vifited it in October, Ino $n$, and whofe memoir is publified in the firtt volume of the Tranfactions of the Geolugical Suciety.

The pitch lake of Trinidad, by the French called La Braye, is fituated on the north fide of the gulf of Paria, on the high point La l3rayc, a confiderable hend-land, principally compaled, at its fouthern fide, of a kind of porceJan jafocr. It is not eafy to tate precifely the extent of this collection of pitch; the lines between it and the neighFowring foil not being always well detined; and indeed Dr. Nivgent fuppofes it to form the fub tratum of the furrounding tract of lend. It may, however, be faid, that it is bounded on the north and weft firdes by the fea, on the fouth by the jut mentioned rocky eminence of porcelain jafper, and on the eait by the ufual argillaccous foil of the country; the main body may, perhaps, be eflimated at three miles in circumference; the depth cannot be afcertained, and no fubjacent rock or foil can be difcovered. That part of this expanfe, which may properly be called a lake, is lituated higher than the acioning 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 ftrong fulphureous and pitchy focll is perceived; and on a nearer approach, the bituminous plain itfelf opens to the view, appearing at firft fight to be an expanfe of fill water, frequently interrupted by clumps of dwarf trees, or inets of rufles and flhrubs. Dr. Nugent (from whofe memoir this article is abttracted) was fo ftruck by the fingularity of the fiene, 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 aftes; and at the feafon when this traveller wifited the lake, not fufficiently fmooth to be flippery; it was not adhefive, though is received the impreffion of the foot, and the confiltence was fuch as to bear the travellers without any tremulons motion whatever; but in the dry feafon the furface is probably in a ftate approaching fluidity, as is thewn by pieces of wood and other fubltances 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. Numberlefs proofs are given of its being at times in this foftered flate; the negro houfes of the ricinage, for intance, built by driving pots in the earth; frequently are twitted or funk on one fide. In many places it eems to have actually overfown like lava, and prefents
the wrinkled appeapance which a nluggifh fubitance would exhibit in motion.

This bituminous plain is interfected by numerous interfices or chafms, 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 feccral feet, and many almolt unfathomahle. The people of the ifeighbourhood derive their fupply of water from this fource, and refrefh themfelves by bathing in it; the water is perfectly uncontaminated by the pitch, and fifh are caught in it. The arrangement of the chafms is fingular ; the fides are invariably fhelving from the furface, fo as nearly to meet at the bottom; but they bulge out towards each other with a confiderable convexity". Thefe crevices will now and then clofe up entirely; when marks or feams are left behind.
'I'he bituminous fubltance forming this lake prefents different appearances in different fpots: in fome parts it is black, with a fplintery or a conchoidal fracturc, of confiderable fpecific gravity, and with little or no luftre, refembling particular kinds of coal, and fo hard as to require a feverc blow of the hammer to break it; in other parts it is fo much fofter as to be ealily cut with a knife or fpade, when the interior appears veficular and oily. In one place it bubbles up in a perfectly fluid ftate, and in one of the neighbouring plantations it is faid to occur of a bright colour, fhining, tranfparent, and brittle, like bottle glafs or relin. The odour in all thefe inflances is ftrong, and like that of a combination of pitch and fulphur, which latter fubltance, 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 extinguifhed whenever it is removed, and in cooling the bitumen hardens again. It may be converted to many ufeful purpofes, and is, indecd, univerfally ufed 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 cafe this valt collection of bitumen would afford an inexhauttible fupply of an effential article of naval fores, and being fituated on the margin of the fea, would be wrought and thipped with little inconvenience 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 rusgred, which Mr. Anderfon attributes to fome convulfion of nature from fubtervaneous fires, in which idea he is confirmed by having found in the neighbouring woods feveral hot fprings. He is of opinion, that this tract has experienced the effects of the volcanic power, which, as he fuppofes, elevated the great mountains on the main and northern fide of the ifland. As the production of bituminous fubttances has been attributed to the action of fire on beds of coal, Dr. Nugent was particular in his inquiries with regard to the exiltence of fuch 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, i:clines to the fide of the Huttonian geologits, grounding his opinion on the general character of the country, and fevcral local appearances, fuch as the amazing quantity of alluvial foil and bituminous fubflances brought down by the river Orinoko, and depofited on the fhores of the gulf of Paria, and the weft fide of Trinidad; as allo the traces of fubterrancan fire, fuch as hot fprings, vortices, frequent earthquakes, and two fingular volcanic nounds at Point Icaque.
"A valt river like the Orinoko," he fays, "muft for ages have rolled down great quantities of woody and vegetable bodies, which, from certain caufes, as the influence

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of currents and eddies, may have been arrefted and accu:mulated in particular places; they may there have undergone thofe transformations and chemical changes which varions vegetable fubltances 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 lefs combined with filiceous and argillaceous carths, which forcing its way through the furface and afterwards becoming infpifated by expofure to the air, may have occafioned fuch feencs as I lave ventured to defcribe. The only other country accurately refembling Trinidad, of which I recollect to have read, is that which borders on the gulf of 'Iaman, in Crim Tartary. From the reprefentations of travellers, fprings of naphtha and petroleum equally abound, and they defcribe votcanic mounds precifely fimilar to thofe of Point Icrequi. X’allas's explanation of their origin feems very fatisfactory, and I think it not improbable that the river Don and fea of Azof may have acted the fame part in producing thefe appearances in the one cafe, as the Orinoko and gulf of Paria appear to have done in the other. It may be fuppoled that the deftruction of a foreft, or perbaps 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 ifland is of a recent alluvial formation, and the land all along this coalt is daily receiving a confiderable accelfion from the furrounding water. The pitch-lake, with the circumjacent tract, being now on the margin of the fea, muft, in like manner, have had an origin of no very diltant date; befides, according to the reprefentation of captain DIallet, which has been frequently corroborated, a fluid bitumen oozes up and rifes to the furface of the water on both fides of the ifland, 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 foil."

The obfervations 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 gufhes out, railing the water five or fix feet, and covers the furface for a confiderable fpace with petroleumt, or tar."-" On the E. coaft," he adds, "in the bay -of Magaro, there is another gulf or vortex fimilar 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 vanifhes away immediately; and in about twenty-four hours afterwards, is found along the fhore of the bay a quantity of bitumen or pitch, about three or four inches thick, which is employed with fuccefs." The fame author likewife quotes Gumilla as ftating, in his Defcription of the Orinoko, that "about feventy years ago, a fpot of land on the weftern coaft of this inland, near half way between the capital and an Indian village, funk fuddenly, and was immediately replaced by a fmall lake of pitch, to the great terror of the inhabitants." Mallet's Topographical Sketch of the Ifland of Trinidad.

Lake of the tew Mountaizs, a piece of water, that lies wefterly from Montreal, being properly the mouth of Ottawa river; 20 miles long, and 5 broad. It is furrounded by cultivated fields of the Iroquois and Algonquin Indians, whofe village ftands on a delightful point of land, that projects into the lake. Each tribe has a Roman Catholic mifionary. They attend public worfhip in the fame church. Their paftors have taught them to read and write. Their avarriors are about 500.

Lake of the Woods. Sec Woods.

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Lake Riter, a river of America, which runs into lios Mifilippi, N. lat. $4^{\prime, 3} 33^{\prime}$ W. Iong. $95^{\circ}$.

Lake Rivaz, Lithle, a river which runs into the Mifflippi, N. lat. $45^{\prime} 3\left(3^{\prime} . W\right.$. long. $94^{\prime} 23^{\prime}$.

Lakts, Subdrranean. That there are in many phace immenfe fubterranean lakes, can fearce be doubted, becaulis we fee them in fone placco ; but their efitects are often per. ceived where they are not feen, and puaz! the people who attempt to account for thofe effects upon other principles. The famous Zirchnizer lake in Carniola, whel fills and empties itfelf, at times, in an impetuous manner, bring 13 . up with its waters fifh, and even wild fowl, communicate's with another immenfe fubterrancan lake in the mouseain Savornick; and according to its lilling or emptying, the upper one is alfo filled and cmpticd. "Sce Duck.

The grotto Podfpetfchio, in the fame country, gives another intance of fuch a fubterranean lakc. The people of the neighbouring country enter the fide of the mountain where this lake is, by a fmall opering, 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 gro on to the edge of a valt fubterranean piece of water: They gen with torches, and find the water very claar 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 arother, falling down a precipice into another lake, and that with fuch a noife, that the report of a pittol cannot be heard near it. Stones thrown in every way are heard to fall into water, and there is great reafon to fuppofe the lake a German mile long; for at this diftance there is another water difcovered through fuch another cleft of the rock, which flands at the fame horizontal height as this, and is fubject to the fame accidents at the fame time. This valt body of water fometimes all runs off in a few minutes, and leaves the bafor dry, and after fome weeks it fills again with a frightful noife. As thefe 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. Tranf. Nigr.

We have in England many of thefe refervoirs, the water of which is always remarkably clear and cold, and is fo loaded with fpar, that it generally incrufts things very quickly that are put into it; and when raifed into vapours, as a part of it fometimes is, by the fubterranean heat, or carried up with other vapours, ftops at the ceiling of the vaults, and there forms Italactita, and other fuch concretions. In many of thefe lakes alfo are found the round balls of fpar, called fulagmitc. They are compofed of feveral crults gathering round fome central nucicus, and often exceed the fize of a fchool-boy's marble. Phil. Tranf. $\mathrm{N}^{\mathrm{J}} 144$.

In Pen-Park hole, in Gloucefterfhire, there is a remarkable inftance of this, that ftrange cavern containing one of the largett of the lakes in our kingdom.

It was accidentally difcovered by fome miners: it is twenty-nine fathoms deep from the furface, being a raft cavern of the fhape of a horfe-fhoe, furrounded with rugged rocks and rough walls of earth, containing in the midtt of it a river or fubterrancan lake, twenty fathon broad and eight fathom deep, of the fame cold and petrifying water with the other refervoirs of this kind.

LaKE, or LaQUE, a preparation of different fubitances into a kind of magiftery for the ufe of painters, dyers, \&c. One of the fineft and firft invented of which was that of gum lacca or lacque; from which all the rett, as made by the fame procefs, are called by the common name lacqubs. See Lac or Lacca.

We may oblerve more generally, that all vegetable colours, which are foluble in water, are found to have a certain degree of affinity for fome earths and metallic oxyds. Thefe combinations are called lakes. Thus, if a folution of alun is added to an infufion of madder, a mutual decompofition takes place, and part of the alumine falls down intinately 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 ufed in dyeing. Both are generally ufed for water colours, and in oil painting as tranfparent colours. Thefe pigments are almoft invariably compoled either of alum, or fometimes the folution of tin, and fome other watery folution of a colouring natter.

Of the red lakes, that made with cochineal is the molt beautiful, and of the greateft value. It is called carmine, from its being applied to imitate the colour of the flefh. For the method of preparing it, fee Cochineal. See alfo Carmine.

On the receipt for making carmine, introduced under the article Cocrineal, a correfpondent has made the following obfervation.

The carbonat of foda and alum, added in the firft inftance, would be mutually decompofed, and the alumine, with the colouring matter, would be precipitated with the dregs, which are afterwards feparated from the clear liquor; fo that when the white of egge 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 procefs 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 firlt inflance, if it is at all neceflary, for the purpofe of clearing the coloured folution, a property for which that fubftance 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, confilting of the alumine united with the finer parts of the colouring matter, may be expected. The remaining colouring matter, which is of lefs beauty, is then ufed for the red lake.

Inftead of ufing cochineal for making carmine, a much clearer colour may be extracted from the refufe of fcarlet cloth. The bits of cloth are boiled in a folution of potahh, 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 lefs intenfity, proportionate to the quantity of this earthy bafis. In Doffe's Handmaid to the Arts, we are told that the beft of the lakes conmonly fold is made from the colour extracted from fcarlet rags, and depofited on the cuttle-bone ; and that it may be prepared in the following manner: diffolve a pound of the belt pearl afhes 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 fcarlet fhreds, and boil them in a pewter boiler, till the fhreds have loft their fcarlet colour; take out the fhreds and prefs them, and put the coloured water yielded by them to the other: in the fame folution boil another poilnd of the fhreds, proceeding in the fame manner; and likewife a third and fourth pound. Whilt this is doing, diffolve a pound and a half of cattle-fifh bone in a pound of Atrong aqua-fortis, in a glafs receiver, adding more of the bone, if it appear to produce any ebullition in the aqua-fortis; and pour this ftrained folution gradually into the other; but if any ebullition be oceafoned, more of the cuttle-filh bone muft be diffolved as bcore, and added, till no ebullition appears in the mixture. The crimfon fediment depofited by the liquor thus prepared
is the lake: pour off the water, and flir tlie lake in two gallons of hard fpring water, and mix the fedinent in two gallons of, frefh 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 fhould be added to each quantity of water before it be ufed. Having thus fufficiently freed the lake from the falts, drain of the water through a filter, covered with a worn linen cloth. When it has been drained to a proper drynefs, let it be dropped through a proper funnel on clean boards, and the drops will become fmall cones or pyramids, in which form the lake mult be fuffered to dry, and the preparation is completed.

Lakes are alfo made from madder and Brafil wood. The former is much more permanent than the latter, but does not poffers the fame beauty of tint. In order to make thefe lakes, ftrong infufions of thefe fubitances are firt obtained. The Brafil wood infufion is beft made by boiling the chips in pure water, and filtering the folution. (See Brasis, Wood.) The infufion of madder (fee Madder) is beft made in cold water, by which the purelt part of the colour is only diffolved. To each of thefe folutions are added a clear folution of alum, and then as much of an alkalias will precipitate fo much of the alumine as will make the colour of the precipitate of proper intenfity. A fmall quantity of muriate of tin increafes the brilliancy of thefe lakes.

A beautiful lake, it is faid ( $u b i$ 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. Diffolve three pounds of the beft pearl athes 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 colourlefs. But if any appearance of purple be feen, add a frefh quantity of the folution of alum by degrees, till a fcarlet hue be produced. Then purfue the directions given in the firft procels with regard to the fediment. If half a pound of feed-lac be added to the folution of pearl afhes, 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 ufed in the coloured folution, lake will be produced that will fland well in oil or water, but it is not fo tranfparent in oil as without the feed lac. The lake with Brafil wood may be alfo made by adding half an ounce of anotto to each pound of the wood; but the anotto muit be diffolved in the folution of pearl ahes. There is a kind of beautiful lake brought from Cbina; but as it does not mix well with either water or oil, though it diffolves entirely in fpirit of wine, it is not of any ufe in our kinds of painting. This has been erroneouly called fafflower. Handmaid to the Arts, vol. i. p. 61, \&c.

In making yellow lakes, the colvured infufions muft be fuch as to make the moft permanent dye. (See Dyeing.) The precipitation of the colour is performed precifely in the fame way, and by the fame fubitances, as the red lakes. A. very excellent yellow lake may be made from the infurion of querciiron bark. That from turmeric is very beautiful, but is not permanent. The process for the making of this is as follows: 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 veffel, 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 liqwor, and gradually add to it a frong folution of roch-alum in water, till the yellow matter is all curdled. together, and precipitated; after this pour the whole into a

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filtere of paper, and the water will run off and leave the ycllow matter belind. It is to be wafhed many times with frefh water, till the water cones off inlipid, and then is obtained the beautiful yellow, called laque of turmeris, and ufed in painting.
In this manner may a laque be made of any of the tinging fubflances that are of a formewhat frong texture, as madder, logwood, \&s.; ; but it will not fucceed in the more tender fpecies, as the flowers of rofes, violets, \&ic. as it deftroys the nice arrangement of parts in thofe fubjects, 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-afhes and lime reafonably ftrong; in this boil, at a gentle fire, frefl broom-flowers till they are white, the ley having extracted all their colour ; then take out the flowers, and put the ley to boil in earthen veffels over the fire ; add as much alum as the liquor will diffolve; then empty this ley into a veffel of clear water, and it will give a yellow colour at the bottom. Let all fette, and decant off the clear liquor. Wafh this powder, which is found at the botom, with more water, till all the falts of the ley are wafhed off; then feparate the yellow matter, and dry it in the fhade. It proves a very valuable yellow.
All the lake colours are changed by acids and alkalies. An acid renders the red lake more fcarlet, and the yellow paler; while an alkali gives a purple tint to the red, and an orange or brown tint to the yellow. Artils fometines take advantage of this property to change their coluurs. The acid ufed for this purpofe fhould be the muriatic do. luted, and the alkali aqua ammonia.
Lake, Orange, is the tinging part of anoto 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 fying, and alfo for putting under cryytal to imitate the vinegar garnet, may be prepared by boiling four ounces of the beft anotto and one pound of pearl-afhes half an hour in a gallon of water ; and ftraining the folution through paper. Mix gradually with this a fclution of a pound and a half of alum in another gallon of water; defifting, when no ebullition attends the commixture. Treat the fediment in the manner already directed for other kinds of lake, and dry it in fquare bits or round lozenges. Handmaid to the Arts, vol. i. p. irg.
Lake, Rofe. See Rofe Pink.
Lake of Madder. Sce Madder.
Lake-fflberis, in Rural Econnmy, a common name applied to fuch as are carried on in lakes, or other ftagnant waters. See Fish and Ponds.
Lake-wed, in Botany. See Arsmart.
LAKEN, in Geography, a town of Pruffia, in the province of Oberland ; eight miles E. of Mulhaufen.
LAKSHIMAN, in Hindoo My Pthology, an incarnation of the mighty ferpent Selja, (which fee,) born of Sumitra, fecond wife of Dafaratha, raja, or king of Ayadeha (Onde): Lakihiman was thus the half brother of Rama, and became incarnate for the purpofe of affifting him in his wars againft Ravana, the tyrant of Lanka. (Šee Lanka, Ravana, and RAMA.) Lakhhiman was farther connected with Rama by efpoufing Urmila, daughter of Janaka, the adoptive parent of Rama's wife Sita. See Janaka and Shta.
LAKSHMENI, one of the eight regular wives of Krifhay $y$ and he being the Apollo of the Hindoos, thefe right wives may puffibly be only a perfonification of the natural notes. (See Krishma.) Her name is fometimes written Lakhhimany.
LAKSHMI, is the faktio or confort of Vinnu, the pre-
fervative power of the deity. (Sce $\mathrm{S}_{\mathrm{K}} \mathrm{TTI}$ and $\mathrm{V}_{\text {isirnv. }}$ ) The extenfive feet of Vaifhnava, or worfhippers of Vifhnu, efteem Lakfhmi as mother of the world, and then call her Ada Maya; and fuch Vaifhnavas as are faktas, chat is. adorers of the fupremacy of the female energy, or natureactive, worhip her extenfively as the type of the eternal Being, and endow hier with fuitable attributes. (See farthicr hereoin under Lisva, Maya, and Sakta, Sects of Hindoos; Vaisisava, and the articles before referred to.) Sive is reprefented by the poets and painters as of perfect beauty. Hindoo females are now commonly named afticr her : and there are few in the long catalogue of their deitics whofe various names and functions are fo frequently alluded to in converfation and writing, either on theogony, mythology, poetry, or plillofophy. Her terreftral manifeetations have been frequent, and her origin various. As Rhemba, thie fea-born goddefs, the arofe one of the fourteen gems from the ocean when churned by the good and evil beings for the amrita or beverage of immortality. (See Ruemba.) Shie then affumes the character of Venus Marina, or Aphrodites of the Greeks; who, as Hefiod and Homer fiug, arofe from the fea, afcended to Olympus, and captivated all the gods. The operation of churning the ocean is noticed under Kurmavatara, and the production of Rhemba, Sri, or Lak flmi is thus deffribed in the 36 th fection of the firlt book of the Ramayana. (See Ramayaxa.) "The gods, the afura, and the gandharvas, again agizating the Iisa, after a long time appeared the great goddefs, inhabiting the lotus; clotied with fuperlative beauty, in the firlt bloom of youth, covered with ornaments, and bearing every aufpicious 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 goddefs Padma, or Sri, adored by the whole univerfe, Padma by name. She took up her abode in the bofom of Padma-nabha, even of Heri,"' that is, of Vihnnu, of whom thefe are names. Sri, as this deity is frequently called, diftinguifhes her more particularly as the godders of fortune, the word meaning proferity; but it is not given excluffively to Lakfhmi. (See SRr, PADMA, and Kamisa.) Others of her names are derived from the lotus, which is the emblem of fenale beauty, and efpecially applicable to this goddefs. (See under thefe articles.). Heripriya denotes the wife of Heri or Vihhnil. As the deity of riches or fortune Lak fhmi would be invoked for increafe of wealth, by a defiring Hindoo, rather'than Kuvera, the Plutu: of their Pantheon. (See Kuvera.) In this charater fhe is fometimes called Locki, or Laki, meaning ffickle; and it may be only a fhortening or rapid pronunciation of Lak hami, her mott common name, which is derived from the Sanfrcit word lakjb, light, Splendour ; equivalent to the Latin lux, and it meaus farther luck, luxury, fortune, \&c. This goddefs (as the fakti, or confort of Vinnuu, or Krifhna) 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, Lakhmi is generally reprefented as a mere woman; fometimes, however, four-armed; oftcn holding a kimal, or lotus, in an eafy and elegant atttrude, and always very handfome. With her lord Vifhnu fhe is frequently feen on the ferpent Selfa; he repofing, fhe in refpectful attendance, while a lotus fpringing from Vifhnu's navel to the furface of the fea (for this fecene is fubaqueous) bears 'in its expanded caly $x$, Brahma, the creator of the world, about to perform the work of renovation. (See Kalpa and Sesha.) Sometimes fhe is feated with her lord on Garuda, or Superna, cleaving the air, of which Vifhou is a perfonification: (See.

Surerna.)

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Superna.) In Vilhnu's molt fplendid avatara, or incarnation of Krinhna, fhe became manifetted as Rukmeni, or Radha, the molt adored of the amorous deities, and mother of Kama, the god of love; here again correfponding with our popular Venus, the mother of Cupid. (See Kama, Kmana, Radia, and Rukmexr.) In the avatara of Rama, Lakfhni was his faithful foufe in the form of Sita, as noticed under thofe articles. In that of Narfingha, fle was Narfinhi, or Nitimhi; when Varaka, Varahi; and as the Salkti of Narayam fhe is by her own fectaries called Narayani; and in molt of the many incarnations of Vifhus flic appears to have defcended with him, frequently under her own celeitial name: as his conlort generally, the is called Vaifhnavi. See reipectively thofe articles.

The following extract from Moor's Hindoo Pantheon will thew the veneration paid to this popular and benchicent deity, of whom a mileh-cow feems an apt fymbol. "In the Sradha, or obfequies in honour of deceafed anceftors, Lakfhmi is, among other deities, earne:lly invoked, particularly when, as the ritual expreffes, a votary is defirous, by gifts to Brahmans, of obtaining celeftial blifs for the defunct." A donation of a milch-cow is attended by many appropriate ceremonies, finifhing with the following prayers; the acceptor holdiag, during the recital, the facred animal by the tail.
I. May the goddefs, who is the Lakfini of all beings, and refides anong the gods, alfume the fhape of a milch-cow and procure me comfort.
2. May the goddefs, who is Rudrani in a corporeal form, and who is the beloved of Siva, affume the flape of a milchcow and procure me comfort.
3. May fhe, who is Lakfhmi repofing on the bofom of Vifhnu; fhe, who is the Lakflmi of the regent of riches; the, who is the Lakfinmi of kings, be a boon-granting cow to me.
4. May fhe, who is the Lakfhmi of Brahma; fle, who is Swaha, the wife of fire; the, who is the exerted power of the fun, moon, and ftars, alfume the fhape of a milch-cow for my profperity.
5. Since thou art Swadha, the food of them who are the chief among the manes of anceftors, and $S$ waln, 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 aufpicious goddefs for immortality and happinefs. 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, Swaka, the fakti, or energy of Pavaka, or firc.

Lakfhmi allo prefides over marriages, and is confidered, indeed, among certain fects of Hindoos, as the general fource of all happinefs. She is found, by mythologits, to have characteriflic attributes and powers fimilar to the Ceres 'of the Greeks (Sri is, in one cafe, Sris, correfponding here, likcwife, in name), and the lis of the Egyptians. On thefe, and other points connected with the fubject of this article, fee fir William Jones, and Mr. Colebroke, Afat. Ref. vols. i. iii. and vii. Many plates of her in her vazous forms, and Puranic legends and anecdotes, are like.
wife given in Moor's Hindoo Panthcon, whence this articto is chiefly taken. See alfo Gentoos.

LAKTEA, in Gcography, a fea-port of Sweden, in Eaft Bothnia, at the mouth of a river near the gulf of Bothnia. N. lat. $64^{\circ} 25^{\prime}$.

LALA, in Ancicnt Geograply, 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 Hindoottan; 28 miles W. of Benares.

## LALAND. See Lafand.

LALANDE, James de, in Biography, was born at Orleans in 1622, and became diftinguimed in the profefiion of the law. He was famed as well for his extenfive and very profound erudition, as by the public and private virtues which he maniffted, in paffing through a long life, in the exercife of various important functions. He attained to the higheft rank in his profeffion in his native place, and was made mayor. He died in`1703, fincerely regretted by all who knew him ; he was author of feveral works, of which the moit important were "A Commentary upon the Cuftom of Orleans;" and "A Treatife on the Ban, and Arrier. ban." His integrity, beneficence, and zeal for the interefts of his countrymen, obtained for him the honourable title of "father of the people." Moreri.

Lalande, Josepi, Jerome le Français, a celebrated French aftronomer, was born at Lourg, in the department of 1 'Ain, on the 1 th of July 1733, of very refpectable parents. His father, who was polfefied of property, intended him for the bar, and accordingly fent him to Paris to ftudy the law, to which, for fome time, he applied with fo much ailiduity, as to more than anfwer the moft fanguine expcctations of his friends, when the fight of an cbfervatory awakened in him a propenfity, which deranged the projects of his parents, and became the ruling paffion of his life. He put himfelf under the inftructions of Le Monnier, one of the then molt celebrated aftronomers of France, and profited fo much by the leffons of his able inftructor, as to afford him the highelt degree of fatisfaction, who, on his part, conceived for the young man a truly paternal affection, and was determined to promote his interelts. 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 difance from the earth. To accomplifh this purpofe, it was neceffary he fhould be feconded bv an obferver placed under the fame meridian, and at the greatelt diltance that could be conveniently chofen on the globe. Berlin was fixed on, and Le Mornicr fignified his intention of undertaking the bufinefs himfelf, but the moment when he flould be ready to depart, he had the credit to get his pupil appointed in his ftead. Frederic, to whom Maupertuis had explained the delicacy and difficulty of the enterprize, could not forbear fhewing fome aftoniflument when the youthful altronomer was prefented to him, "However," faid he, "the Academy of Sciences has appointed you, and you will juftify their choice." From that moment his age, i.cing only eighteen, was an additional recommendation; he was admitted at court, welcomed by the academy, and became intimate with the moft diftinguihed perfons at Berlin. On his return, the account which he gave of his miffion procured him free accefs to the Academy of Sciences, and its Tranfactions were enriched every year hy important trommunications 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 defcription of feven arts, as different from each other, as they are re-
mote from the objects of his habitual meditations." He publifhed the French edition of Dr. Halley's tables, and the hittory of the comet of 1759 , and he furnifhed Clairault with immenfe calculations for the theory of that famons comet. Being charged in 1760 with the compilation of the "Commoifance des Temps," he entirely clanged the form of that work, and of this collection he publifhed thirty-two votumes, viz, from 1775 to $180 \%$.
In $r_{7} 6 \neq$; appeared the firlt edition of his ", Traité Aftronomique," which he afterwards completed, and upon which lis chief claim to glory retts. Lalande was the firt who calculated the perturbations of Mars aud Venns, and ia the theory of Satellites, in which but little progrefs had been made, he esplained a motion which Baillie claimed as his own difcovery. A litcrary difpute arofe out of this circumilance, which, however, was conducted with every regard to decency, and the probabic refult, as feen by difintercetted fpectators, was, that both had been led to the fame difcovery. He compofed all the altronomical articles for the "Encyclopedia of Y verdun:" thofefor the fupplements to the "Eacyclopédie de Paris," and thofe for the "Encyclopédie Me. thodique," fublituting for the articles furnihed by d'Alenbert, and which he had compiled from the works of Le Monnier, fuch as were more complete and m:ore modern, from his own obfervations and improved theories.

To his written works he joined oral inftruttions during a fpace of forty-lix years; for from the year 176 br he had replaced the firlt mailer, De Lifle, in the chair of aftronomy, in the college of France, and gave a new lultre to this curious part of public inftrustion in a celebrated fchool, which poffeffed the molt diftinguifhed profeflors of every kind, and which enjoyed and merited the extraordinary privilege of outliving the tremendous thornis of a revolution, and efcaping the almolt univerfal deftruction which levelled all around it. As a profeffor, he taught with fo much ability that his fchool became a feminary of difciples who peopled the differeni obferratorics of the world. In the mardit of his other labours he drew up his "Voyage d'Italic," the moit complete collection of curious cbjects that travellers can confult; his "Traité des Canaux;" and his "B Bibliographie Aftronomique," which is an immenfe catalogue of ail the works that lave appeared on the fubject of that fcience.

In the year ${ }^{1793}$, Lalande publihed "Abregè cee Navigation hiltorique, theorique, et practique," containing many valuable rules and tables; and in 1802 he publihed a reev edition of Montucla's hiltory of mathematics, in 4 vols. 4to. the latt two volumes being prepared from Montucla's papers, with the affitance of La Place, La Croix, and other French mathematicians. He publifhed alfo this year a collection of tables of logarithms, fines, tangents, \&c. acapted to the pooket.
Afociated to almot all the difinguifhed fcientific focieties in the world, he was their common bond of union by the correfpondences which he taintained; and he promoted a circulation of intelligence from one to another. He employed the credit ariiling from the univerfal reputation which he erjoyed, for the general benefit of the fciences and their cultivators. To the extraordinary ardour and activity of his character, he joined a love for the truth, wlich he carried to the borders of faraticifm. Every degree of concealment appeared to him unworthy of an honeft man, and he therefore, without referve, u:tered his fentiments on all occalions, and by the bluntnefs of his manners, he fometimes made himfelf enemies, who not only calied in quettion his real merits, but who excited agzaint him a crowd of detractors, and becaufe they could not rival his high reputation, they attempted to blaft his well earned fame. He was not without his fingu-
larities and failings, but they were trificre in comparifun of his commendable çualities, yet his long and important tervices were frequentiy forgoten in the recollection of trivial failings.

In a work, not of the moft liberal caft, now under publication, in this country, Lalande has been cha:ged with profanenefs and atheifm, but no authority is produced to fupport fuch charges, which, if true, otaght to have been fanctioned by fome fort of proof, or by well afcertained facts; and if not true, the editors of that work are guilty of a crime againtt fociety not eafily obliterated. One of his culogifts fays, " he always manifefted a benevolent difpofition, and approved himfelf a man of honour, probity, courage, full of activity for all ufeful things, and of love and zeal in behalf of his fellow creatures. To imitate the great bencfactor is the moit worthy homage we can pay to the infinite goodrefs ; the fupreme intelligence which groverns the uriverfe." He rendered ineltimable fervice to fcience curing his life, and confulted its intereits after his death, by foundin! an annual prize to the author of the beft aftronomical memoir, or molt curious obfervation. He died April $4^{\text {th }}$ 1807 , in the 75 th year of bis age. Eulogy pronounced. over his grave by De-Lambre and Dupont.

Lalixde, Michel Richardde, mafter of the king of France's band, maitre de chapelle, and compofer in ordinary of the chapel royal, and chévalier de l'ordre de St. Michel, born in $165 \%$, was the fifteenth fon of a tailor at Paris, and brought up a chorifter of St. Germain l'Auxerrois. Excited by a Itrong pafion for mufic, he foon furpaffed his matter Chaperon. The violin was the firft initrument to which he ferioully applied; but being recommerded to Lulli, as a performer in the opera orcheitra, he was fo piqued at being rejected, that he broke his liddle, and renounced the practice of it for ever. The era of his profperity was, the being employed in teaching mademoifelle de Noailles, wha married the Marcechal de Grammont, and the Maréchal faid fo many kind things of him to the king, that he was appointed mulic-matter to mademoifelles de Blois, ard de Nantes. In 1683, his majelty having created two new places of chapel-maters, gave one of them to Lalande, whofe compolitons pleaied the king fo much that he anpointed him fuccefively to the two places of chapel-mater, that of chamber-mufician to his majelty, and mafter of hisband; and foon after conferred on him the order of St. Michel. The king married him to Anne Ribel, who had an admirable voice, and fasg wonderfully. He had only two daughters by this marriage, whom he loft in myI at 24 years of age. In 172 I he loft lis fpoufe, asd the year following, wanting confolation and a companion, he married. the demoifelle de Cury, daughter of the furgeon to the princels of Conte, but foon after being feazed with a confumptive cough, and pein in his chelt, 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 higheit reputation, and fet feveral operas, but he never would let any of them be ferformed under his name. It was under this able matter, (iays M. Laborde, the zealous defender of French mufic of every kind,) that a new fpecies of church mufic liad tirth, which altonifhed and ravilied the whole court. "He banithed the ufual monotony and drynefs of the choruffes and recitatives. His fugues were compoled on hevely fubjects, and mixed with agreeable fymphonies, and agreeable melodies, which, before his time, had no exiltence. He was the firft who had the time beaten by a coryphreus, and compoled pathetic recitatives, and airs of fpirit. In floort, he wis the creator of church mufic; and evien foreigners, fince ilie time

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of Lalande, give the Erench the pre-eminence in this kind of mufic, over all the nations of Europe." Effai fur la Mufique.
The Englifh, the Germans, and the Italians, we profume, will difpute this point with M. Laborde, and remind him of their Purcel, Handel, Leo, \&c. We hcard fome of this fublime mufic, 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 coarfe and noify, with fcarcely a new paffage to make amends for the worlt finging which we had ever heard, in or out of the church.

LALANG, in Geography, an ifland near the N. coalt of Sumatra, in the ftraits of Malacca. N. lat. $I^{\circ} 45^{\prime}$. E. long. $99^{\circ} 20^{\prime}$.

LALASIDE, in Ancient Geography, a country of Afia Minor, which, according to Ptolemy, made part of Cilicia, fo called from the name of Lalafis, its capital. In the th century of the Chritian era, when the province of Ifauria was formed of a part of Cilicia and Cataonia, this country became a part of Ifauria.
LALASIS, a town of Afia Minor, in Ifauria.
LALBENQUE, in Geography, a town of France, in the department of the Lot, and chief place of a canton, in the diftritt 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; : 7 miles N.E. of Rachore.

LALI, a town of Thibet; 90 miles S. of Sarangpour.
LALIBALA, a town of Abyfinia; 140 miles S.S.E. of Gondar.

Lalibala, 2 town of Abyffinia; 90 miles S.S.E. of Gondiar.

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 diltrict of Bergerac, The place contains 1606 , and the canton 820 in'habitants, on a territory of I8j kiliometres, in 16 communes.

LALLARY Point, a cape on the S.W. coaft of the ifland of Banca. N. lat. $2^{\circ} 4^{8^{\prime}}$. E. long. $106^{\circ} 2^{\prime}$.

LALM, a town of Silefia, in the principality of Jauer; 20 miles W. of Jauer.

LALODA, a town on the W. coat of the inland of Gilolo. N. lat. $\mathrm{I}^{\circ} 4^{8^{\prime} .}$ E. long. $127^{\circ} 22^{\prime}$.

LALOO, a town of Hindooftan, in Bengal; 20 miles E. of Silhet.

LALOUETTE, in Biography, an elève of Lulli, beat the time at the opera in Paris, and compofed the mufic of feveral ballets and intermedes. He was one of the beft performers on the violin of his time, was alfo mufic-mafter at Notre Dame, and died in 1728 , aged about 75.

LALPET, in Geography, a town of Hindooftar, in the Carnatic; $\overline{7}+$ miles N. of Arcot.

LALSK, a town of Ruffia, in the government of Vo. jogda, on the river Luza; 40 miles E. of Ufting. N. lat. $60^{\circ} 50^{\prime}$. E. long. $47^{\circ} 14^{\prime}$.

LALSOOND, a town of Hindooftan, in the fubah of Agimere; 10 miles N. of Rantampour, N. lat. $26^{\circ} 44^{\prime}$, E long. $6^{7} 53^{\prime}$.

LALVITON, a town on the W. coalt of the inland of Samar. N. lat. $11^{\circ} 35^{\prime}$. E. long. $124^{\circ} 52^{\prime}$ 。

LAMA, a town on the W. coaft of the ifland of Celebes, 6. lat. $1^{\circ} 48^{\circ}$. E. lorg. $119^{\circ} 15^{\prime}$.-Alfo, a town of Waples, in Abruzzo Citra; 12 mileo E. of Sulmona.

Lasas, or Lamas, the title of an order of priefts among

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the weftern Tartars, on the frontiers of China; and particularly in Thibet, who are held in great veneration. Lama, in their language, is a priett or minilter of religion; and Lamifla is the wife of the Lama.
About the year 1426, the bonzes of Thibet aflumed the title of "Grand Lama." The moft powerful among them made Laffa the place of his refidence, and was acknowledged chief of all the lamas. He eftablifhed the law refpecting the yellow cap; for it muft be obferved, that there are two kinds of lamas, diftinguifhed by red and yellow caps. His fucceffor was the firlt who appointed a "typa," or prime minitter, whom he entrufted with the government of his ftates. The next in order was the firft who took the diffinguifhing title of "dalai-lama," by which he was raifed far above the reft ; for "dalai" fignifies "morally and phyfically extended, great, and almoft 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 eftablifhed himfelf, together with his troops, in the reighbourhocd of Lafla. In 1714, the Eleuthes made an irruption into Thibet, committed the moft horrid ravages, put a great number of the lamas to the fword, and fent feyeral of them into Tartary, inclofed 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 monafteries, and to employ themefelves 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 caufed it to march into Kokonor, from whence he drove the king of the Eleuthes, and then entered Thibet; while another body of Chinefe troops penetrated thither alfo by the province of Se-tchuen. The dalai-lama was re-eftablifhed, and the reft of the lamas were put in porfeffion of their pagodas. Thofe that remained of the troops of the Eleuthes made their efcape 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 incurfions of the Eleuthes, who, fince 1759, have been fubjects of the empire. The tribute which the fovereign of Thibet fends to the emperor of China confifts generally of gold or copper ftatues of the god "Fo," perfumes, amber, coral, precious ftones, woollen ftuffs, and fword-blades. The emperor alfo requires from the dalailama a certain number of veffels or fmall pitchers, filled with water from the Ganges. Ever fince the expulfion of the Eluth Tartars, the kingdom of Thibet is regarded as depending on the emperor of China, which they call Cathay: and at Laffa, the capital, two mandarins relide, with a garrifon of 1000 Chinefe to fupport the government; but their power does not extend far; for in reality the lama, whofe empire is founded on the fureft grounds, perfonal affection and religious reverence, governs every thing internally with unbounded authority. It is well known, that the dalailama is the great object of adoration for the various tribes of Heathen Tartars, who roam through the immenfe tract of continent which flretches from the banks of the Volga to Corea, on the fide of Japan;-the molt extenfive 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 fuperffition has ever the greateft influence, where it is removed fartheft from its object, the more remote Tartars abfolutely regard him as the Deity himfelf. 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 fhrine; 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. Accordng to Mr. 'Turner's account, the Thibetians conceive of him as immaculate, immortal, omniprefent, and omnifcient. They view' Lim only in the molt amiable light, as perpetually abforbed in religious duty ; and when called to beflow attention on mortal beings, as employed only in the benign office of dif. tributing confolation by his bleffing, and in exerciling the firtt of all attributes, forgivenefs and mercy. He is alfo the centre of all civil government, which derives from his authority all its influcnce. 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 agaia in the body of fume child, by certain tokens known only to the lamas or prielts, in which order he always appears. The dalai-lama, who prefided in Thibet in 1774, when Mr. Bogle was commiffioned by the governorgeneral of Berigal to vifit that country, was an infant, and was difcovered a few years before by the Teeftoo 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 immenfe palace on a mountain near the banks of the Burrampooter, about feven miles from Laffa. On this mountain there are many pagodas, in the molt fumptuous of which he refides. He pafles great part of his life on a kind of altar, where he fits motionlefs, in a crofs-legged pofture, on a large and magnificent culhion, and receives with the greatelt gravity the adorations, not only of the Thibetians, but of a great multitude of pilgrims, whe undertake long and difizult journics to go and worthip him on their bended knees, and to receive his benedictipn. The grand lama falutes no one; he neither uncovers nor rifes up to any perfon, whatever his rank may be; with the farne eyes he beholds at his feet the greateft princes and the meaneft of his fubjects. He contents himfelf with laying his hand on the head of his worfhipper, who imagines that he obtains, by this impolition alone, the remiffion of all his fins. His votaries conceive, that all the divinity of " Fo " relides in him; and they afcribe to him all the attributes and prerogatives already mentioned. Their whole care is employed in difcovering the place where it fhall pleafe him to be born again ; and even fome of the Tartar princes themfelves have allited in this interelting fearch; 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 diffovered, or rather, they only know what child the preceding dalai-lama appointed to be his fucceffor. The Teefhoo-lama has feveral palaces or caltles. The cafte in which the lama refides is built of tone or brick, with many courts, lofty halls, terraces, and porticos: and the apartments are in general roomy, and highly finifhed in the Chinefe ftile, with gilding, painting, and varnifh. Stair-cafes and windows are conveniences to which they are utter ttrangers. There is no accefs 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-houfe covers, contrived fo as to thut up on the weather-fide. Firing is fo fearce, that little is ufed except for culinary purpofes; and they truft altogether for warmth in their houfes 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 thofe who work them. Particular and diferiminativg refpect is paid Vol. XX.
to the forereign lamas after their death. The bodies of thefe are depofited entire in flrines prepared for them, which are ever after confidered as facred, and vifited with religious awe; whereas the bodies of inferior lamas are ufually burnt, and their athes preferved with great care in little metallic idols, which have places affigned them in their facred cabinets.

The lamas, who form the mot numerous as wel! as the molt powerful body in the thate, have the priefthood ertirely in their liands; and beffes they fill up meny munaltic orders, which are held in great vencration among them. The inferior cradations, from the prefident of a monaftery, who is always iflled lama, in addition to the name of the flation to which he belongs, are Gylong, Tohba, and T'uppa. On the eftablifment of the monaflery of Teefhoo Laombon, there were reckoned at that period no lefs than 3700 gylongs for the performance of cialy fervice in the Goomba, or temple: and four lamas, chofen from among them, fuper. intend and direct their religions ceremonies. (Sce Gylosas.). Youth intended for the fervice of the monattery are received on the pllablithment at the age of eight or ten years, and then called "Tuppa;" at fifteen they are ufually admitted into the order of "Tohba ;" and from that of Tolba, if they are found, upon examination, duly qualified, they are advanced to the clafs of Gylongs, between the age of 21 and 24 ; and with fufficient interef, they may then be promoted to the fuperintendence of fome endowed monaftery, and obtain the rank of lama. The priefts are hubited in long robes of yellow cloth, with a conical cap of the fame colour, having flaps to fall down and cover the ears. 'lhis peculiarity of colour diltinguifhes one of the two religious fects that divide almoft the whole of Tartary', from Turkettan to the eattern limits of this continent. The other colour is red; and the tribes are known as belonging to the red, or ycllow cap. The former differ principaily from the fectaries of the yellow, in allowing the marriage of their priefts. But the latter are conlidered as the molt orthotox, as well as poffefled of the greatelt iufluence. The emperor of China is decidedly of this tribe, and has fanctioned his preference of the yellow colour, by a funptuary law, which limits it to the fervice of religion, and the imperal ufe. The two fects are ditinguifhed by the appellations of Gyllookpa and Shammar ; the former having adupted the yellow colour, and the latter the red. Thrce samas are placed at the head of each fect; Dalai-lama, Teeflooo-lama, and Taranaut-lama, prefide over the Gyliookpa, who have their refidence at Pootalah, Tefhoo Loomboo, and Kharka. This fect prevails over the greatelt part of Thibet, and a divifion of it is eltablifhed in a province of the Deccan, called Seurra, or Sirrote. In like manner three lamas a'fo prefide over the Shammar, and have their refidence in llootan, in feparate monafteries. Great contentions formerly prevailed betweer thefe fects; and the Shammar was under a neceflity of retiring, and of fixing in a trait of country bordering on Thibet, towards the fouth, marked by a line, inhofpitable and intemperate in the extreme. Here they ellablifhed them. felves, as in a fecure afylum; while others, thyled Dukba, ftill live in tents and tend their flocks in a vagrant ftate. But to return from this digreffion.-The inhabitants of Thibet are not the only people who may attain to the dignity of lama. Tartari, and even Chinefe, have afpired to the priefthood, and repaired to Laffa in hopes of obtaining it. If they can be admitted among the difciples of the grand lama, the number of whom is fixed at 200 , they confider their admiffion as the commencement of their promotion, and the firlt ftep towards dignity and power; the fubaltern grand lama being chofen from among thefe difciples. When

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they have arrivel at this dignity, they live in Eplendour and opulence, and are continually timrounded by a crowd of adorers, who load thens with prefents. The richuct and mof conliderable of the Tartar lamas, who inkalit Thibet, are thofe whom the Clinefe call "Mong-fan ;" they pulfefs extenfive domains to the north of the procince of Yun-man, between the beautiful rivers of Kinche-kiang and Vouleang. Thefe lands were granted to them by Oufan-guei, who became mafter of Yun-nan, when the Mantchew Tartars fubdued China, in order to bring them over to lis party, and that by their means he might gain the fupport of all the lamas of Thibet. Although the Mantclew Tartars had never any lamas, they no fooner undertook the conqueft of China, than they protected them openly through policy; and foon after, government caured magnificent pagodas to be erected for them. The example was folloved by a grear number of princes, princeffes, and wealthy people, who vied with one another in zeal for building tem. ples for them, and thus the lamas greatly multiphied in China. They are alfo rich there; for moit of thefe lamas appear in public in veltments of red and yellow fattin, ornamented with the moft valuable furs. They are all mounted on excellent horfes, and followed by a number of donsitics, correfponding to their rank as mandarius; for the emperor pernits them to carry a cunlion and the other badges of dignity which belong to the quality of mandarin. The lamas of Thibet are lefs magnilicent in their drefs; wearing only a napped kind of woollen ftuff, cailed in Chira'" poulou," which is ufed for coverins feat, becaule it generally latts long and retains its colour. Belides a cap, the lamas have feveral bonnets, or tijras, that are the dithinguinhing marks of the different degrees of hoonour to which they have arrived. The cap, which ftrikes the Eurupean moll, very much refembles a billop's mitre : it is worn by them on horreback as well as on fuot. The obligations which the office of lama impofes are ueither. fev nor trifling; but there is not one among them who ensarges to ditclarge them all. They divide and flare the burden. One takes the clarge of obferving one precept, and another oblizes himfelf to pratife amother. They have alfo certain common prayers, whicl- they chaunt in a very agreable nannur ; and they are obliged to renounce the winities of the world, to live in celibacy, and to have no concera in trade or commerce.
The lamas are extremely fuperflitious, and much addicted to magic. Grolier's China, vol. i. Phil. Tranf, vel. 1 svii. part ii. Turner's Account of an Embalify to the Court of the Tefhoo Lama, in, Thibet, 1805 .
LATIALMON, in Gegrrapbj, a lofty'mountain and fpacious dittrict of Abyflinia, where is the pafs through which the road of all caravaus to Gondar lics; and where they take account of all bagexage and merchandize, which they tranfmit to the Nagade Ras, or chief officer of the culltoms at $G$ ondar. Here is alfo levied, with great rigour, and for the molt part with injuftice, a payment due to the proprictor of the ground. From its bafe this mountain has the appearance of being flarpp-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 aboinds with fprings, and feems to be the great refervir from which arife molf of the rivers that water this part of Abyfinia. A multitude of treams iffue from the fummit in all direc. tions; the fprings boil out from the earth in large quantities, capable of turning a mill. They plough, fow, and yeap here at all feafons; and the hurbandman mult blame lis own indolence, and not the foil, if he bas not three hasreels. In one place, fays Mr. Bruce, wc faw people
bufy curting down wheat; immediately next to it, others at the plough; and the adjoining lield had green corn in the car, 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 Gingerohha, though ligher than the mountains of Tigré, are equal in height to fume of thofe of Samen. The mercury in the barometer on the top of Lamalmon Hood at $20 \frac{7}{8}$ Englifh inches. The language of 1 ,amalmon is Amharic; but there are many villages where the language of the Falatha is fpoken. Thefe are the ancient inhabitants of the mountains, who Atill preferve the religion, language, and manners of their ancelors, and live in villages by themfelves. Their number is confiderably dimininned, and they are now wholly addicted to agriculture, hevers of wood, and carriers of water, and the only potters and mafons in Abyfinia. In general they live better than the other Abyffinians, which they, in revenge, attribute to their Akill in magic, not to fuperior induftry. Their villages are generaly ftengly fituated out of the reach of marcling armies, or otherwife they would be conttantly rilled, partly from hatred, and partly from hopes of finding money. The river Macara is the boundary between Lamamon and Waggora; and the latisude of fume fmall villages called Macara was $136^{\prime} 8^{\circ \prime}$. Bruce's Travels, vol. iii.

LAMANON, Robert Pacl, in Biograppy, a member of the Acadeny of Sciences at Paris, and member of the Mufemm in the fame city, was born at Salon, in Provence, in 1752 , of an old and refpectable family. He was deftined for the church, and fent to Paris to comp'ete his theological thudics. He rofe to the dignity of canon, but by the death of his father and elder brother he came into property, which enabled him to fullow the bent of his inclinations, by deroting limfelf to the phyfical fciences. He travelled through Provence and Dauphince, and faled the Alps a:rl Pyrenees: "at the fiyht of thefe vaft natural laboratories the bent of his mind burtt forth initantaneouly; he climbed to the fummit of rocks, and explored the abyfs of caverns, weighed the air, analyfed fpecinens, and, in this ardent fancy, having attained the fecrets of creation, he formed a new fyitem of the world." Upon his return home, he applied with great arduur to the fludy of metecrology, natural philofophy', and the other branches of the hiltory of mature. He fent three years at Paris, and gave to the learned focieties, 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 courfe of rivers, particulatly the Rhone. He again wifted Sxitzerland and Italy, going fir! 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 hinfelf in the arrangement of the interclting fruits of his foursey. It was at the time when Lananens was preparing for the prefs his great work on the "Theory of the Earth," that the French government conceived the valt project of compleing the difcoveries of capstain Cook: the A cademy of Sciences was entrufted with the care of felecing men capable of reaifying the common nutions of the fouthern hexifphere, of improving hydrography, and advancing the progrefs of natural hiftory ; they invited, at the recommendation of the ilultrious Condorcet, Lamanon to Ghare the danger, and to partake in the glory, of this great enterprize. He eageriy catched at the offer, haltened to Paris, refufed, in a conference with the minifer, the falary offered him, and taking a hatty leave of his friends, departed for Dreft. On the att of Auguit,

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y 785 , the armament fet fail under the orders of La Peroufe, an experieuced commander: the commencement of the vogage was highly profperous. After fome delays, and having embraced overy opportunity of making obfervations, the veffels arrived at the ifland of Maouna, one of the fouthern Archipelago. Lamanon, eager to affure himfelf of the truth of the accounts of that conntry, 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 periflued 1 amanon, a young man ardent in the purfuits of fcience, dilinterefted in his principles, and a zealous advocate for the interells of freedom. His culogit, M. Ponce, faid of him, "that he feemed born to bring about a revolution in fcience; the depth of his ideas, the energy of his character, the fagacity of his mind, united to that lively curiofity, that can draw in!truction out of every thing which he faw, and which leaves nothing unexplored, would have led him to the molt valuable difforeries."

LimANTEA, in Geograply, a town of Naples, in Calabria Citru; 12 miles S.W. of Cofenza.

LAMARCKIA, in Botany, is a cryptogamic, and, in every fenfe, very obfcure genus of marine plants, founded by the Abbate Jofeph Olivi, in his Zoologia Adriatica, an Italian work in quarto, publifhed at Baffano in 1792, and treating of various matters relative to the natural hillory of the gulf of Venice. What relates to the prefent genus is copied into Utteri's Annalen, $f=1 \mathrm{c}, 7,76$. It was named in honour of the celebrated French botanift John Baptilt Monet, Chevalier de la Marck, who, fince the French revolution, has adopted Lamarck as his furname. His indefatigable application and fkill in the fcience of botany, are evinced by his Dictionaire, and his Illufiration des Genres, fo often quoted by us. He has, however, for fome time withdrawn himfelf 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. I. 669, and the new edition of Hort. Kew. v. 1. 264 ; nor can we on any occation confent to the unauthorized and truly foolifh contrivance, of naming two different genera after one and the fame perfon. If we retain the Butea of Koenig, for inftance, it mult be in honour of the late marchionefs of Bute, not of the firft earl, already jully immortalized in the Stuartia of Linnxus. It is however extremely probable that Olivi might be ignorant of the Mionetia; or be might prefer for it the name Azima, fubfequently given by Lamarck himfelf, but whofe meaning we know not. See his Dict. v. I. 343 .

The Burfa marina of Crfalpinus and Bauhin, and the Vermilara retufa of Imperato, have given occation to the eifablifment of the prefent genus, whofe character is thus given by Olivi.

Plant rooted, fomewhat coriaceous, foft, compofed of minute bladders, perpendicular to the axis, which are membrayous, green, cylindrical, approxımated, terminating at each end in very flender, tubular, connecting tilaments. Fruaification confifting of finall globes, fcatered among the bladders and filaments.

The fpecies are
x. L. Burfa. Pouch Lamarckia. (Alcyonium Burfa; Linn. Syit. Nat. v. 1. 1295. Pallas Zooph. 352. Burfa maxina; Cæfalp. 608. Bauh. Pin. 368. Fucus Burfa; 'Tum. Fiit. Fucor. v. 3. G. t. s36. Engl. Bot. t. 2183.)
-Globofe, depreffed, hollow, with fine, fcattered, internal threads. - Found in the fca in various places, efpecially upon limeitone rocks, moft commonly attached by ita roots to fome fmall calcareous fragments. "Each plant is a hollow fpongy ball, from one to ten inches diameter, green, compofed of entangled, pellucid, jointed fibres, bearing numerous concentric oblong veficles, whofe obtufe fummits, reaching to the outfide of the ball, give it a papillary or velvety appearance. Such at leaft was the flructure of the fpecimens deferibed in Eingl. Bot, mor have we found the bladders connected at each end with the filaments. The roots were attached to fragments of flectls. No frutification could be detected, and the plant was referred to Fucus, after Mr. 'Turner's exampie, merely till the whole fubject of fubmarine plants fhould be better underftood. Ohns fays, that when cut it contracts mechanically, by means of the internal fibres, which he fuppofes gave rife to the opinion of its being an aminal, or Alcyonium.
2. L. Vermilara. Branching obtufe Lamarckia. Ver. milara ritufa; Imperat. Hilt. 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 colcur to F. tomentofiss. Mr. Woodward, who faw but one \{pecimen, brought from the Mediterrancan, found great difficulty in fettling its genus. Its it macture refembles an Uiva Itripped of the cuticle. There can be little doubt of ats generic affinity to the abave. S.

Lamarceia is alfo the name of a genus eftablihed by Moench, and adopted by Decandolle in his new edition of Lamarck's Flore Frangaife, v. 3. 30, as well as by Bivona Bernardi, in his Sicularum Planlarun, Cenuuria 1, n. 40. This genus confifls of one fpecies only, as far as we are informed on the fubject, which is Cynofurus aureus of Linnæus, figured in the Flora Greca, t. 79, a beautiful grafs, but we are at a lofs to imagine any character by which it can be feparated from Cynofurus; fee that article

A New Holland flrub, belonging to Tefrandria Monogynia, has been called Lamarckia dentata, in Donn's Horto Cantabr. ed. 5. 32. We are not acquainted with it characters, but prefume it is what fume have named Hoy 3 ferrata.

LAMAS, in Geograpby, a town of Portugal, in the province of Tras los Montes; is 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 diocefe of Truxillo; 180 miles E.N.E. of Truxillo.

LAMB, in Agricalture, a general name applied to the young of the fheep kind. When lambs come early in the feafon, great care fhould be taken to keep them dry and warm, as well as to provide a plentiful fupply of food for the ewes, and always to let them have the drieft paflures, as without due attention to fuch circumitances, much lofs will frequently be fuftained by their dying, or remaining long in a weakly ftate, almoft without growth.

It is obferved by Mr. Young, that "there is no bufinef3 on a farm that demands more care, attention, and a/fiduity," 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 itanding littered fold, on one fide of which there fhould be a fmall cottage hur, built to be warm, with a chimney and Itove'for heating mik' and a bed for the fhepherd to lie down upon. Here he is to neep through the lambing feafon, that he may be ready to watch, aflith, and tend any ewes that he fees very near lamb.
ing, and, if neceflary, to give the lamb fome warm cow's milk. Some of the confiderable Norfolk farmers, have, he obferves, thefe huts on four wheels, to draw about with the flock wherever they may be; but to have one littered and well fheltered ftanding-fold, on a moderate farm, and two or three conveniently placed on a large one, to take the flock to, without any ditant driving, is, he fuppofes, far preferable to that method. And he advifes, that upon inclofed farms, where the referve of rouen may be fuppofed to be much greater than is generally poffible 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 i: ीoouk be remembered, that all turnips fhould be confumed in February, which circumatance proves the valt importance of referved grats as a fubltitute. Towards the clife of Jniv the lambs of the flock thould be watened; in this bufinefs, it is noticed, that they are much earlier in Suffex, than in Suffolk. And that "clovei in blofom is, of all other food, the molt forcing ; fintfoin rouen exceilent; and if the farmer has neither, he ought to have made a reforve of a fweet good bite of frefh grats for them;" and that it is effential that due provifion thould have been made before this period. See Sirmer.
L.smb-houfe, in Rural Economs', by the farmer the common name of the place where lambs are fattened. It is fometimes termed fuckle. A proper rack and trough mould be fixed up in it. See Lamb fucking.

Lamb-fuckler, a common name applied to the perfon who practifes or carries on the bulinefs of fattening huefe-lamb. See the next article.

Lamb-fickling, a name ufed to fignify the art of fattening houfe-lamb.

It has been obferved by the author of the Agricultural Report of the County of Middlefex, that, in the performance of this bufinefs, the ewes which begin to lamb about Michaelmas, are kept in the clofe during the day, and in the houfe during the night, until they have produced twenty or thirty larbs. Thefe lambs are then put into a lamb-houfe, which is kept confantly well littered with clean wheaten ftraw; and chaik, previoully 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 againtt gnawing the boards, or eating each other's wool, a little wheat ftraw is placed, with the ears downwards, in a rack within their reach, with which they amufe themfelves, and of which they eat a fmall quantity: In this houfe they are kept, with great care and attention, until fit for the butcher. Whe mothers of the lambs are turned every night, at eight o'clock, into the lambhoufe to their offspring. At fix o'clock in the morning, thefe mothers are feparated from their lambs, and turned into the paltures; and at eight o'clock fuch ewes as have loft their own lambs, and thofe ewes whofe lambs are fold, are brought in, and held by the head till the lambs by turn fuck them clean: they are then iurned into the patture; and at twelve o'clock the mothers of the lanbs are driven from the palture into the lamb-houfe for an hour, in the courfe of which time each lamb is fuckled by its mother: At four ockcek all the ewes that have not lambs of their own are again brought to the lamb-houfe, 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 lanib will fuck, the fuperabundance is given to the twins, or to any other lamb whofe mother may not be ablé to furnifh it with fufficient food. The fhepherd mult in this cafe hold the ewe, or fhe would not fuffer the Atrange lan $b$ to fuck. From their timid nature, it is extremely effential
that they fhould be kept free fron every fpecics of un. neceffary difturbance. 'This method of fuckling is, it is ohferved, continued all the year. The breeders felect fuch 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 fucceeding months, at prices which sary from cne guinea to four, and the relt of the year at about two gumeas each. 'This is fevere work for the ewes, and fome of them die under excefs of exhaultion. However, care is taken that they have plenty of food: for, when grcen food, wiz, tumips, cole, rye, tares, clover, \&c. begrins to fail, brewer's grains are given them in troughs, and lecond-crop hay in racks, as well to fupport the ewes, as to fupply the lambs with plenty of milk; for if that fhould not be abundant, the lambs would become ftunted, in which cafe no food could afterwards fatten them. It is renarked, that grains were firlt given to ewes by the late Mr. Naylor, of this county, and that he allo was the firt perfon who pulled out all the remaining front teeth of a broken mouthed ewe; obferving that they fed much better without teeth than with the lofs of one or two.

The ewes for this purpofe thould 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 of before the lambs be taken into the houfe, or they will eat it, and thereby greatly prejudice their future growth.

And thele ewes are always, the anthor of the Middlefex Report fays, without exception, of the Dorfethire breed; and even of thefe there is not more than one in three that will lamb fufficiently early for the purpofe of houfe-lamb. The early lambing ewes are fought for by the breeders of this county with great duligence throughout the county of Dorfet, and at the fairs where fuch flock is ufually fold. The prices vary from 35 s. to 42 s .

Such lambs as can be warranted of a fair complexion after being burchered, are held in the highelt elteem, which thofe bought promifcuoully in Dorfetfhire, or at the fairs, cannot be: this preference induces thofe breeders and fucklers who are in the lecret, to felect rams which they can depend on for getting lambs whofe mest fhall be of that quality. The fucklers, falefmen, and butchers of London, he afferts, are aware that $f:$ ch lambs as have fharp barbs on the infide of their lips are certainly of a deep colour after being butchered; and all thofe whofe barbs are naturally blunt do as certainly produce fair meat. This knowledge has been the occafion of many lambs of the latter kind being kept for rams, and fent into Dorfet thire, exprefsly for the purpofe of improving the colour of the fleh of the houfe-lambs. The iffue of fuch rams can generally be warranted fair, and fuch meat always fells at a higher price : heace he fuppofes arofe the miftaken notion, that Middlefex rams were neceflary to procure houre-lambs. And it has been further obferved, that, " in order to conduct this fort of fattening with profit and fuccefs, a lamb-houfe or fuckle of proper dimentions muft be provided." And that, "it iṣ 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 divilions of different fizes at each of the ends, for feparating the lambs according to their ages, is fufficient for containing and conducting the bufinefs 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 feparated from them, fhould be kept apart with deal hurdles in the middle of the houfe, 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,

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advantage, in fituations at no great difance 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 prolit to be derived from the fyitem.

The principal objects in this fort of management are thofe of attending to the regular feeding of the ewes, the varying of their food with propriety, and keeping the houfe perfectly warm, clean, and fiveet, fo that the procefs of fatiening may proceed in a regular manner without any check being fuftained.

The writer of the Middlefex Report obferves, that a friend of his, who is well acquainted with the fubject, fays, the farmers of Middlefex do not now rear half fo many houlelambs as they did about forty years ago. In Surrey they are likewife falling off. The fuckling fyltem is removing to a greater dittance from the metropolis, to which place many fat lambs are now fent alive, in light fou:-wheeled covered carriages.

Lanb, Grafs, the name of fuch lamb as is principally fattened while the ewes are at grafs, or other kinds of green food. In the Report of Midd'efex, it is remarked, that the vicinity of Smithfield market, makes early grafs. lambs an object of confiderable importance to the farmers of that county. The Dorlet ewes are chiefly iclected for this purpofe. They are purchaled at Weyhill, Kingllon, and other fairs, forward enough to drop their lambs in January. The price from 30 . to $35^{s}$. 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 25 . to upwards of 35 s. 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 $10 . l$. amounts to 2 s .6 d . The whole of the itock is cleared within the year, and the profit or lofs thereby afcertained. The account in general is as follows:

Statement.


Lamb, Houfe, a term applied to that fort of lamb that is fed and fattened in houfes conltructed for the purpofe. The principal art in this bufinefs, as has been feen 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 Hufbandry, is a whitith fony loam. The name feems only a corruption of the word loam-carth.

Lamb Hea.l, in Geography, a cape of Ireland, forming the morthern point of the entrance to Kenmare river, in the county of Kerry. N. lat. $51^{\circ} 41^{\prime}$. W. long. 10 $1^{\prime}$.

Lamb Hcad, a cape on the S.E. coaft of the ifland of Stronfa, one of the Orkneys. N. Iat. $5^{8^{\circ}} 57^{\prime}$. WV.long. $2^{\circ}=5^{\prime}$ 。

Lamb Ifand, a fmall ifland of Scotland, in the mouth of the Forth , one mile N.N.W. from North Berwick.

Laksis's Lectuce, in Gardening, the common name of an early, well-known, herbaceous plant. See Valemana.

Lamb, Pajchal. Sce Paschal.

LAMBA, in Gegraply, one of the fimalier shetland iflands, between Shetland and Yelle. N. lat. $6245^{\circ}$. Wr. long. $1^{\circ} 39^{\prime}$.

LAMBALE, a town of Africa, in the country of the Foulis, on the Senegal ; 75 miles S.E. of Goumal.

LAMBALIE, a town of France, in the department of the Northern Coalts, and chitef place of a canton, in the diftrict of St. Brienc. The place contains $3 \mathrm{SO}_{3}$, and the canton 12,685 inhabitants, on a territory of 225 kiliometres, in 14 communes.

LAMB. 1 , a town of Afia, in the country of Guriel. on the Black fea; 50 miles S.W. of Cutatis.

LAMBANESS, a cape on the N.E. coall of the ifland of Unit. N. lat. 6I' $100^{\circ}$ E. long. 1 4'.

LAMBANLAOTE, a finall ifland on the eaft fide of the gulf of Bothmia. N. lat. $61^{\circ} 39^{\prime}$; E. long. $2115^{\prime}$.

LAMBASSA, in Ancient Geograply, a town of Africa, in Numidia, which became an epifcopal lee.

LAMBATIVES, or rather Lambitiven, in the Matcria Medica, a form of medicine to be licked off the end of a liquorice-ttick.

Lambatives amount to the fame with linchefes, lolocks, and celegmas.

LAMBAY, in Geograpby, an ifland belonging to the county of Dublin, Ireland, lituated in the Irifh lea; 2 miles eaft from the Mainland. It is ahout three miles in length, and $\mathrm{I} \frac{1}{3}$ mile in breadth, and is remarkable for salic quantities of rabbits and fea-fowl. Crabs, lobtters, and oyfters are taken in great plenty; and abundance of kelp is made on it. N. lat. $53^{2} 30^{\prime}$. 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 houfes, fome of which are built of brick, fome of cane and plaiter, and others altogether of cane. The inhabitants amount to about 8000 ; fome are opulent ; but the greater number confilts of poor Spaniards, Mulattoes, Meftizos, and Indians. The parifh church, constructed of ftone, is large and beautiful, and fplendidly adorned. It has four chapels, called "Ramos," with an equal number of priefts. This town is the refidence of a corregidor, who has many other towns under his juriddiction. It is wafhed by a river of the fame name, 95 miles W.N.W. of Truxillo. The high road from Piura to Lima paffes through this town. Some wine is made in the vicinity, and the poor are occu. pied in weaving coarle cotton cloths. S. lat. $640^{\prime}$. W. long. $79^{\circ} 56^{\prime}$.

LAMBDOIDES, in Anatomy, the future connecting the occipital to the two parietal bones, and fo named becaufe it confilts of two lateral divergent branches like thofe which compofe the Greek capital lambda. See Cranium.
LAMBECIUS, Petir, in Biograpby, was born at Hamburgh in 1625 , where he received the early part of his education, and from whence he proceeded to the univerfities of Holland and France to purfue and complete his ftudies. He made great progrels in polite literature and the law, and at the age of ninetcen he became known by a work on Aulus Gellius. He was elecied licentiate-in-law at Touloufe; he fpent two years at Rome with cardinal Barberini ; and on his return to Hamburgh he was appointed to the profefforthip of hiftory in $16 ; 2$; and in 1660 was made rector of the college in that city. He was rendered extremely uneafy by being charged with feepticifm, and by the temper of his wife, whom he had married probably becaufe the was rich, but who refufed to let him fare in her abundance. In 1662, he therefore abandoned his family and country, and went firit to Vienna, and from thence to Rome, where he
reas favourably received by Chriftins, queer of Sweden, and pope Alexander VII. He now openly abjured Lutheranifm, and declared himelf a Catholic, to which religion he had beer converted many years before. Returning to Vienna, he was appoiated fub-librarian, and then librarian-in-chief to the emperor, in which poft he died in 1680 . Lambecius was author of many works, as "Origines Hamburgenfes," in 4 to. ; "Codini et alterius ano. nymi excerpta de Antiquitatibus Comlantinopul." Greek, with a Latin verion and remarks, fol. 1655: "Prodromus Hitorice Litterarix," fol.; "A Colicction of Latin Difcourfes on varions Oecalions," to. 1660; but the moft laborious of his performances was entitled "Commentariorum de Augufla Bibliotheca Cxfaria Vindobonembi," in cight volumes, fulio. This work contains a hittory of she imperial library at Viema, with a deferiptive cataloguc of its mumerous MSS. upon a critical and hillorical plan. Moreri, Bayle.

## LAMbeNT Fime. See Frre.

Lambert', Anaa-Thereid de Marguriot de Councelles, Miurcbionejs of, in Biorruphy, a celebrated literary lady, was born at Paris in i $10+\%$. Her father died while fhe was an infant, and her mother took for a fecond hufband MI. Bachaumont, who was exceedingly careful to cultivate the promifteg talents of his daughter-in-liww. She married Heary 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 conclufion. When fle felt herfelf unembirrafied, and miltrefs of a confiderable eftate, the fixed her relidence at Paris, and devoted herfelf to letters, and the fociety which culivated them. The latter days of this lady were crowded with fufferings, which the confolations of religion ewabled her to erdure with fortitude. She jlied at a very advanced age in 173 , Her principal works are "Les Avis d'une Mere à fort Fils: et d"une Mère à fa Fille ;" "Nouvelles Reflections fur les Fernmes, ou Metaphyfique d'Amour ;" "Traité de l'Amitie"," Of thefe, and of her other works, the tyle is elegant, and the thoughts ingenious. The "Advice" to her children breathes all the tendernefs of a parent, joined to the correctnefs of fentiment of a philufophical moralilt. The heart of Madame de Lambert was as warm as her underftanding was enlarged; the ferved her friends with zeal, and delighted in acts of generofity.

Lasbert, Fraxcis, a French monk, who quited his convent to embrace the reformed religion, defcended from a noble family, was born at Avignon in the year 1487 . At the age of fifteen he entered himfelf among the Francifcan 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 thoughiful man, and $\lambda$ diligent enquirer after the truth; and in the courfe of his invertigations he faw reafon to renounce the doctrines of the Satholic church, and to adopt thofe of the Reformation. Ife, of courfe, found it neceerary to withdraw from his native country, and in 1522 he went into Switzerland. He became a popular preacher among the Proteltants, and having continued fome time at Batil, he fet out for Wittemberg to vilit Luther, in the year 1523 . With that eminent reEormer be grew into high efleem, and it was determined he thon!d go to $Z$ urich, to affilt in diffeminating the principles of the reformation through France. The project was abandoned, and he was fettled in fome employment in the univerfity of Wittemberg, where he molt probably continued till the year 1526 . In the following year he was appointed divinity-profeflor at the univerfity of Marpurg, and in 1530
he dicd at the age of forty-three. He was author of commentarics on alnoft all the parts of the Old and New Teftament, and of many theological and controverfial picces. Bayle. © Moreri.
lambyrt, Johs Hemry, an eminent mathematician and aftronomer, was born at Muhlhaufen, in the Sundgaw, a town in alliance with the Skifs cantons, Aug. 29th, 1728. Ifis father was by trade a ftay-maker, and with difficulty provided for the wants of his familf. Having no better profpects for his fon than by bringing him up to his own butimef, 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 corperation, till he was twelve years old. Here he dittinguifhed himfelf among his !chool-fellows, and fone attempts were made to provide him with the means of Aludying theology as a profeffion. Lincouragement fufficient for the parpofe could not be obtained, and he was under the neceifity of relinquilhing all thoughts of a ftudious life, and ubliged to begin learning his father's trade. Though occupied a! the day, yet he devoted a confiderable part of the night to the profecution of his ftudies; and to furnifh himfelf with cardies, he fo'd for half-pence or farthings finall drawings which the delinented while employed in rocking his infant filter in a cradle. He met with an old book on the mathematics which gave him inexpreffible pleafure, and which proved that he had a genius for fcientific purfuits. Seeing the turn which the young man had for knowledge, feveral learned men afforded him affiltance and advice, and they had the pleafure of firding him improve, under their patronage, with a rapidity beyond their molt fanguine expectations. He was now taken from the drudgery of the fhop-board, and M. Ifelin, of Bafil, engaged him as his amanuenfib, a fituation which afforded him an opportunity of making further progrefs in the belles-lettres, as well as philofophy and mathematics. In 1748 , his patron recommended him to baron Salis, pretident of the Swifs confederacy, to become tutor to his children, in which office he gladly engaged. His talents as a philofopher and mechanician began to difplay themfelves in his inventions and compolitions. After living eight years at Coire, he repaired, in 1756, with his pupils, to the univerfity of Gottingen, where he was nominated a correfpanding 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 friendhip of D'Alembert and Meffier ; and from thence he travelled to Marleilles, where he formed the plan of his work "On Perfpective," which he publifhed in the following year at Zurich. In 1\%60, he publifhed his "Photometry," and was elected a member of the Electoral Bavarian Scientific Society. Lambert was author of many other pieces befides thofe which have been already mentioned: among thefe were his "Letters on the Conitruction of the Univerfe," which were afterwards digelted, tranflated, and publifhed under the title of "The "Syltem of the World." In the year 1764 , he made an excurfion to Berlin, where he was introduced to Frederick II., who, fenible of his great fervices to fcience, gave directions to have him admitted a regular member of the academy; this appointment enabled him to devote himfelf wholly to the purfuit of his favourite ftudies. He enriched the tranfactions of feveral learned focieties with his papers and freatifes, fome of which he publifhed feparately. He died Sept. 25th, 177\%, when he was in the 5 cth year of his age. Molt of his mathematical pieces were publifhed in a collective form by himfelf in three volumes, in which almoll every branch
of mathematical feience has been enriched with additions and improvements. Eulogy prefixed to "The Syftem of the World." London, 1800.

Lamaent, Jons, a ditinguined general on the fide of parhament during the civil wars of Charles I., was defcended of a good family, and was, at the commencement of the troubles, a fludent of law. He had a fuperior command at the famous battle of Nafeby, and on account of his akill and prowefs he became a favourite of the independent party, who endeavoured to obtain for him the lieutenancy of Ireland, but the Prefbyterians carried it againit him in favour of Waller. He was conlided in by Cromwell, to whom he was confidered as fecond in rigour and military talents, and whom, it is faid, he equalle! in ambition. He oppofed the project of making Cromwell king, though he had a great hand in placiug lim protector at the head of the flate. He fell into difgrace, and retired with a penfion to Wimblecion, where he employed himfelf in cultivating his garden; but upon the death of the protector he returnced to public life, and was extremely ufeful to the party of Richard. Monk was the great rival of Lambert, and as the former was fucceffful, the latter was not only humbled, but made prifoner and committed to the Tower. At the reltoration, he and fir Heary Vane were excepted from the act of indemnity: he was brought to trial and condemned, but by humble fubmiffion he was reprieved at the bar. He was banihihed to Guernfey, where he furvived forty years. Hume.

Lambert, Geonge, was among the firl Englilh artifs 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 tafte led him to admire and to imitate the ftyle of Gafpar Pouffin in landfcape; and he has produced feveral works of confiderable merit ; which, if they have not the brilliancy and force of Gafpar, are rich, and abound with beauties of a gentler kind. He alfo painted ficenes from common nature, and at the Founding holpital may be feen one he prefented to that inftitution, which is deferving of very great praife. He was engaged to paint fcenes for the play-houfes, for which his pencil was peculiarly qualified, and, in concert with Scott, painted fix large pictures of their fettlements for the Laf India Company, which are placed at their houfe in Leaderhall-ftreet. He died in 1765 .

Lambert, Michel, was the favourite finging malter, and compofer of fongs in France, about the middle of the feventeenth century. He had fo many fcholars, that he was obliged so teach a confiderable number at a time, and at his own houfe, where he formed a kind of academy, and where he finithed every leffor with linging, to his own accompaniment, feveral fongs to a briliant and enraptured audience. Marcel, the celebrated da:cing-mafter, did the fame, dancing with his beft fcholars at the end of the leffons which he gave at hume 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, Abbéde St. Bemtin, in 1095 taught grammar, dialectics, theology, and mulic.

Thefe fciences, at that time, were equally refpected, mufic having no other object than the praifes of the divinity.

Lambert, de, Saint, publifhed, in 1702, "Les Principes du Clavecin," or Inftructions for the Harpfichord, containing, a clear explanation of all that concerns the clavicr, or keys, in their rutation on that inftrument; and "A Treatife of Accompaniment," for many infruments. St. Lambert,
in his influctions for the harpfichord, propofes the reducing all ciefs to one, in order that the two hands thould play from the fame clef. Monticlair has new-modelled this fyltem, to adapt it to the five lines, or thaff, and grencral compafs of the voice: and the abbé de la Callagne, in his lifennents of Singing, has adopted this fyttem and extended it. The batis of which being nothing more than tranfpofition, it is now become wholly ufelefs, by the clear and fimple manner in which mufic is taught, that is, without traufpofirion, and by playing every thing juft as it is written. This is M. Laborde's account of thefe publications, in which he feem; not to know, that the plan of abolifhing all clefs bnt nus belongs not to any of the gentlemen who have pultiihed it. in France, but io our countryman Salmon, who, in the tine of Charles II. publifhed "An Effay to the A dvancement of Mulic, by calfing away the Perplexity of differen: Clefs, \&ec." and when M. Laborde fays, that fuch a reformation is not wanted, becaufe mufic is now tanght in fo clear and fimple a manner, as to render all clefs but the treble and bafe ufed in harjpichord pieces unneceflary ; that inteiligent author forgets to tell us how performers un seyed inftruments are to be enabled to play, from the foore of a chorus for voices and inftruments, in which the rocal parts and many of the initrumental are all written in different clef. But for a further difcufion of this fubject, fee the article Cles.
Lasbbert, in Geograpby, a town of Canada, on the river St. Lawrence. N. lat. $45^{\prime} 34^{\prime}$. W. long. 73 14'.
Lambert Bay, a bay on the N.E. coalt of the ifland of St. Chrikopher; two miles S.W. of Muddy Point.

Laybirt's ${ }^{3}$ oint, a cape of the ifland of Barbadoes, on the W.S.W. coalt.

Lampat's Blik. See Azuref, and Breve, ultramarine.
LAMBERTIA, in Eotany, recerved its name from the writer of the prefent article, in honour of his highly valued friend Aylmer Bourke Lambert, ciq. F R.S. and F.A.S. a vice-prelident of the Linnean Society, one of the modt ardent and experienced botanilts of the prefent age, whofe ample herbarium and library are ever open to the cultivators of his favourite fcience, as his heart is to the beft fcelings of friendfhip. - His botanical treatife on Cinchona, his fumpthons work on the Fir tribe, and his varions elfays in the Tranfactions of the Limnxan Society, are amply fulficient to allert his claim to the honour in queftion-S. Sm. Tr, of Linn. Soc. v. 4 21.4.t 20. Cavan. Ic. v, 6. 31. Browr 'Tr. of Lian: Soc. v. 10. 187. Prodr. Nov, Holl. v. 1 386. Ait. Hort. Kew. cd. 2. v. 1. 2m_-Clafs and order, Tetrandria Monogynia. Nat. Ord. Adsaregata, Limo Pro. tce, Julf.

Gen. Ch. Cal. Involucrum of many oblong, Imburianted, coloured leaves, the inner ones gradually the largelt, containing from one to feven flowers, ieciduous. Perianth none. Cor. Petals fiom, cohering at the bafe, linear-lanceolate, equal, revolute from above their point of union bearing the itamens. Nectary of four glandular irales at the bate of the germen, fometimes united. Shans. Filamente none; anthers Cour, fellile at the inner fide of the revolute part of each petal, linear, at length recurved. Piff. Germen fuperior, turbinate, fringed at the top; ftyle threadfhaped; ftigma rather thicker, prominent, awl-fhaped, furrowed. Peric: Fullicle roundifh-wedge-flaped, fomewhat wody, more or lefs horned or tubercular, of one cell. Seats two, orbicular, comprefled, each encompaffed with a rounded wing. Common receptacle flat, without feales.
Eif: Ch. Petals four, cohering, ipirally revolute, bearing the itamens. Nectary of four 1cales. Stigma awhthaped. Follicle wocdy. Sceds two, bordered, Involu-

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erum of many leaves, imbricated, coloured, deciduous. ceptacle fat.

Obs. We have borrowed feveral corrections of the original characters of this genus, from the able performance of our fricnd Mr. R. Brown, publifhed in the Tranfasions of the Limncan Socicty, v. so, illuttrative of this who'e natural order of P'roteacec. If we differ from him in terming corolla what he calls caly, it is a matter of opinion, attended with much doubt. 'T'ine late Mr. Dryander, however, agreed in this point with us.

One fipecies of Lambertia only was originally known, the formofit, to which Mr. Brown adds three others. We hall give them in the order he has chofen. He remarks, that "they are all very beautiful florubs, with whorled branches. The leaves are three in a whorl, montly undivided, entire. Involucrums terminal, folitary, coloured, moftly fevenflowered, rarely fingle-flowered; in the former cafe the flowers are ranged in two whorls, correfponding with the difpolition of the foliage, and having an odd terminal one; hence it is probable fome fpecies with four flowers only may exill. The folicle is almoit wedge-fhaped, furnihed at the edges, upwards, with points, fométimes clongated into horns, and fometimes the fides are armed with prominences."
I. L. uniffora. Brown Tr. of Linn. Soc. v. 10. 188."Flowers folitary in each involucrum. Leaves abovate, with a foint, limooth, reticu'ated. Follicle pointed at one fide, without horns. "-Gathered by Mr. Brown in Lewin's Land, on the fouth coatt of New Holland, growing about rocky inlets, near the fhore.
2. L inermis. Ibid.-"Flowers feven in each involucrum; twice as long as is inner leaves. Style fmooth. Follicles pointed at one fide, without horns. Leaves oblanceolate or obovate, pointlefs"-Native of the flony lides of hills in Lewin's Land. - L. formofi, rar. longifolia, Andr. Repor. t. Go, agrees in muft refpects with this, though not cited in Mr. Brown's Prodromus, where he has omitted it as a fynonym of true formoftu. The fruit drawn in this plate may belong to the latter. The iuvolucrum is reprefented green.
3. L. formofa. Sin. Tr, of Linn. Soc. v. 4. 223. t. 20. Cavan. Ic. v. $6.3^{2}$. t. 547. (Protea nectarina; Wendl. Sert Hannov. fafc. 4. 5. t. 21.) -" Flowers feven in each involucrum; the leng th of its inner leaves. Style hairy. Follicle pointed at cne fide, two-horned at the other. Leaves linear-lanceolate, fharp-pointed, recurved at the edges." - Native of fony heaths near Port Jackfon, New South Wakes, from whence we received fpecinens among the firf that were fent to Europe by Dr. John White. The litives are green and fmooth above; white, and reticulated with veins, beneath. Involucrum and flowers of a fine rofe-colour or crimfon.
4. L? echinata. Brown ". 4.-"Leaves linear, fmooth, reticulated; dilated, lobed and pointed at their extremities. Follicles two-horned, thorny all over." -Native of the Itony 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 obferves, - on account of the leaves being lobed, which is contrary to the nature of the other fpecies.

LamDes $A$ ), or Lambese, in Ancient Geografby, (Tcezoute), a town of Mauritania Sitifenfis, lituated on mount - Audus. It was the moft confiderable town of the country, and the third legion of Auguftus was quartered in it. Its suins and infcriptions are still noticed.

LAMBESC, in Geography, a town of France, in the department of the mouths of the Rhone, and chicf place
e-
of a eanton, 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 $257 \frac{1}{\text { kiliometres, in } 7 \text { communes. }}$

LAMBESE, a town of Algiers, in which are magnificent ruins of an amphitheatre, a temple of Efculapius, \& c.; 45 miles S . of Contantine. See Lambesa.

LAMBETH, an extenfive parifh, feated on the fouthern bank of the river 'thames, in the hundred of Brixion, and county of Surrey, England. It is directly oppolite to Weftminfter, to which city it is connected by a handfome fone bridge acrofs the river. The whole is bounded by Southwark to the "alt, Newington Butts and Camberwell to the fouth, and Batterfea to the weft. The circumference is about 16 miles. In Domefday-book, it is faid to contain $20 \frac{1}{2}$ plough-lands. At the beginning of the feventeenth century, it appears, by the churchwardens accounts, to have confitled of 1262 acres of arable land, 1026 of pafture, 125 of meadow, 13 of ozier, 27 of garden ground, and 150 of wood, making in the whole 2603 ; the commons and wafte land, fuppofed to be about 330 acres, not being charged, will increafe it to: 2933 acres. At prefent, the whole extent is about 4000 acres ; of which about 1390 are occupied by houfes and other buildings, wharfs, manufactories, ftrects, and roads; $41 ;$ by pleafure gardens, including thofe of Vauxhall; 80 by market gardens; 300 by farming gardens; 40 by nurferies; 250 are now incloing from common; and 30 are to remain common. The parifh is divided into fix liberties or precincts, refpectively called the Billop's, the Prince's, Vauxhail, Marfh and Wall, Lambeth-Dean, and Stockwell; the whole containing, according to the return to parliament in the year 1800, 5009 houfes, and 27,985 inhabitants, of whom $514^{〔}$ were ifated to be cmployed in various trades and manufactures, and 955 in agriculture. Archbifhop Hubert Walter obtained from king John a grant of a weekly market, and a fair of fifteen days, upon condition that the fame fhould not be detrimental to the interelts of the city of London. In the archbilliop's MS. library, is a charter from the city, fignifying their confent, ftipulating only, that the fair thould begin on the morrow after the anniverfary of St. Peter ad vincula. The market and fair are both dilcontinued. The earlieft hiftorical fact on record relating to Lambeth, is the death of Hardicanute, which happened here in the year 1041, while he was celebrating the marriage feaft of a noble Dane. Here alfo, Harold, who ufurped the throne on the death of Edward the Confeflor, is faid to have placed the crown on his head with his own hands. Henry 111. held a folemn Chriftmas hcre in the year 1231; and a parliament on September 14, in the year following. A moft violent outrage was committed in Lambeth church, on Sunday February 19, 1642-3. The fory is varioelly told by the different parties; but it flands on record as an inftance of the fatal effects of civil difcord, from the outrages of which no place, however facred, is exempt.

Of the archbiflop's palace, the chief object of note in the parih, 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 ityles of various ages. It appears that this palace was, in a great meafure, if not wholly, rebuilt by archbifhop 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 afcribe it to a more early period. Under the chapel is a crypt, the arches of which are built with ftone, as is the chapel; the roof of the latter is of wood and flat ; the windows were formerly of painted glafs, pat up by cardinal Morton. In the chapel were interred the remains of archbihop Parker. The gredt

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Iall was rebuilt by archbifhop Juxton, after the civil wars, at an expence 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 crected the long gallery, which meafures $9 \circ$ feet by 16 . In this room are fiveral portraits of archbifhops, and osher illuttrious characters. In the great dining-room, 38 feet by 19, are alfo portraits of all the archbifhops from Laud to the prefent time; this feries is particularly interelting, as, among other things, they thew the gradual change of the clerical drefs. Archbilhop Tillotfon was the firit to wear a wig; which however refembled the natural hair, and was worn without powder. A noble library occupies four galleries, over a finall quadrangular cloilter. The firlt collection of books was bequeathed by archbilhop Bancroft; but thefe were feized in the civil wars, and though much injured, and fome lott, yet the chief itock was reltored by archbíhop Juxton, after the reftoration. Archbilhops Sheldon, Tenifon, and Secker augmented the library; and the number of books is now fuppofed to be, at leaft, 25,000 volumes. In the windows is fome fine painted glais. (See Brayley and Herbert's Illultrations of Lambeth Palace, 4 to. 1805, for various views of this palace, and portraits, \&c. from the painted glafs). The MS. library contzins a large and valuable collection of records and MSS. At the weit end of the chapel is a lofty building, cailed Lollards' tower, built by archbifhop 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 archbifhop Morton about the year 5490. The gardens and park, which contain nearly thirteen acres, are laid out with great talte; they were much improved by the late archbifhop, who made a convenient accefs to the houfe, for carriages, through the park. It has been faid, but erroneoufly, that Stephen Langton is the firlt archbifhop upon record avho 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 parifh church, which was rebuilt between the years 1374 and 1377. The tower, which is of fres-Itone, ftill remains; the other parts of the prefent ftructure 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, thofe molt worthy notice are for the archbifhops Tenifon, Hutton, and Cornwallis, and a marble - Nab to the memory of the celebrated antiquary Elias Afhmole.

In this parifh are fituated the Afylum, inflituted in 1758 , for the reception of female orphans; and the Weftminiter Lying-in-Hofpital, built in 1765.

About the end of the feventeenth century, a manufacture of plate glafs was eftablifhed at Vauxhall, in this parifh, under the patronage of the duke of Buckingham; the principal artilt was Roffetti. It was carried on with great fuccefs, and the glafs was thought to excel that made at Venice. (See Glass and Lookrng-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 parifh, where are feveral Wharf3 for that trade, fupplied with fores which are almolt incredible. At Vauxhall are fome very large diftilleries, and feveral potteries; the manufacture of fone earthenware pots is faid to have been firlt introduced here from Vol. XX.

Holland. On the feite of Cuper's gardens (formerly a plac of public entertainment, are Meifrs. Beaufy's extc:fis vinegar works. Mr. I'ennant, who went over the premife, mentions a veffel full of fweet wine, containing 58,109 gan lons, and another full of vinegar, containing 56.799 gallun; belides thefe cnormous vetfels there are feveral others whin contain from 32,500 to $16,207+$ yallons each. In the yer ${ }^{1766}$, Mrs. Coade eftablifhed in this parifh, uar Wetminte bridge, a manufacture of artilicial iteme, which is catk a moulds and burnt. It is intended to anfuer the purpole i flone, for every fpecice of ornamental architecturc, at : much cheaper rate than carving, Where it has been place in expofed fituations it has been found to end re the from Meffirs. Watts have lately eltablihed a manufucture of patent thot in this parih : the principle of making this fho: is, to let it fall from a great height into the water, that it may cool and harden in its paffage throuth the air, and thereby better retain its fpherical Thape. The heish: of the tower at this manufactory is about 140 fect: the fot fallo 123 feet fix inches. About the fame time Mrems. Bulton, Morgan, and Co. eftablihed a manufacture bere under the tithe of the woollen yarn company ; every branch of the clothing manufacture, from forting the wool to making the cloth, was carried on eatirely by machinery; but the undertaking was fcon given up. About a century ago, there was a place of eutertainment called Lambetii Wells, fituated in what is now calied Lambeth Walk. A riding-fehool, for the exhibition of feats of horenamhip, was opened in this parifia about the year 1768 , by Mr. Philip Aftley. At firit it was an open area; in 1780 it was converted into a covere: amphitheatre, and divided into boxec, pit, and gallery $\mathrm{S}_{\mathrm{r}}$ ring 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 muff performed, in fine weather, in the open air ; the price admiffion, till I 796 , was one fhilling; it is now three fhillin, and open three times each week during the fummer mont Lyfons's Environs of London, rol. i. \&to.

LAMBIN, Dexvis, in Biography, an eminent cri was born at Mostreuil-fur-Mer in the year 1516. He, appointed profeffor of the belles lettres at Amiens; this he refded long in Italy with cardinal de Tournon, on his return to Paris obtained the Greek profefforhit the royal college. He acquired a great reputation ar the learned by his commentaries on Lucretius, Cicero, tus, and Horace. He tranflated from Greek into the language, the Ethics and Politics of Ariflotle, and f orations of Demofthenes and 雄fchines. He died in the occafion of his death was the great faock which ceived from the news of the murder of his friend Rar the maffacre of St. Bartholomew. He was a man dt found erudition and great induftry. Mureri.

Lambourne, or Lameorx, in Gegraphy, $1-$ cient market town of Berkibire, Enghand, is about ps N.E. of Hungerford, and 65 W. of London. A ct was ellablifhed here at a very remote period; an a charter of 1227 , it is called Choping-Lambuorn, ${ }^{2}$ fair was gianted to the family of Fitzwarren. In tlign of Henry VI. the charter was renewed, and twdditional fairs granted in farour of the dean and chapte St. Paui's, London. The market is much declined; here are 率ll held three fairs annually. In the market $p$ is as ftone crofs of a tail, plain fhaft, on fteps. 'The rifh is co-extenlive with the hundred to whish it gives ne. In the year 1800 , the population of the town, with dependant lamlets, was 2045. The parifa church is pacious

Ee
ond handrome building, in the form of a crofs; on its duthern lide are two chanting-chapels, one of which was punded by John Eltbury, who died in 1372, and the other y his defcendant of the fame name, who died in 1485. Lear the church is an alms-houfe, or hofpital, founded by Lhan Eltbury, for ten poor men. In the north tranfept of pe church is a monument for fir Thomas Effex, who dicd 1558, with effigies of himfelf and his lady, in alaballer. Lyfons's Magna Britannia, vol. i.
LAMBRA, a town of European Turkey, in Livadia; ${ }^{2}+$ miles S.S.E. of Athens.
LAMBSDORFF, a town of Silefia, in the principality of Neiffe; 9 miles N.E. of Neiffe.
LAMCAL, a town of Pegu, on an ifland in the Ava; 56 miles N.E. of Perfaim.

LAME, in the AIanege, is ufed in feveral phrafes of that art; as lame of an ear, called in French boiteux de loreille, 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 horfes do not keep time in that manner. See Halting.

Lame of the bridle, is ufed 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 defcent from him, and the father of Jabel, Jubal, Tubalcain, and Naamah. He married two wives, Adah and Zillah, and is fuppofed 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 fhall be avenged feven-fold, furely Lamech feventy and feven-fold." (Gen. iv. $24,25^{\circ}$ ) 'Thefe words have perplexed Biblical critics. Some interprctations have been given of this paffage which mult be confidered as founded on mere fables, and they are not worthy of recital. Onkelos, who wrote the firft Chaldee paraplirafe on the Pentateuch, reads the words with an interrogation: "Have I flain 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 fhould bear the fin of it; nor have I deftroyed a young man, that my offspring should be cut off for it." Dr. Shuckford has improved this interpretation, by fuppofing that Lamech was endeavouring to reafon his wives and family out of their fear of having the death of Abel revenged upon them, who were of the polterity If Cain. As if he had faid, "what have we done, that re fhould 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 s brother, but threatened to take feven-fold vengeance on y that fhould kill him ; doubtlefs they mull expect much sater punithment, who lhould 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."
Amicuif was alfo the fon of Methufelah, and father Voah ; at whofe birth he was 182 years of age; and he after it 595 years, fo that his whole life was 777 years, $\hat{r}^{5}$ born A.M. 874 , and dying 1651 . See A MTEDILU-
IMEGAL, in Geography, a town of Portugal, in the price of Prira; 9 miles N.W. of Pinhel.
-IEGO, city of Portugal, in the province of Bai. the fie of a bithon, fuffragan of Braga; fituated on a plair ear the J) uero, and furrounded with mountains. It contis two catherlal churches, an horpital, four convents, and aut 4500 indabitants. The adjacent country pro-
duces excellent wines; $3^{6}$ miles E. of Porto. N. lat. $48^{\circ}$ $7^{\prime}$. W. long. $7^{\circ} 27^{\prime}$.

LAMELAN, anifland in the Baltic, near the S.E. coaft of the ifland of Aland; eight miles long and four wide. N. lat. $60^{\circ} 5^{\prime}$ E. long. $37^{\circ} 45^{\prime}$.

LAMELLE, derived of lumina, and fignifying as much as little lamina, little, thin plates, or laminx, whereof the fcales and fleells of fimes, \&c. are compofed.

Lamelles, in Botmy, the gills, or thin vertical plates which compofe the bymcnium, or fructifying membrane of that great genus of fungi called $A_{y}$ aricus, to which the common eatable mufhroum belongs. (See Hymenium and Agaric.) Schæffer and Hedwig lave found the feeds to be lodged copioufly in the fubflance of thefe plates.

Lameness, Claudicatio, in Surgery. Lamenefs arifes from a variety of caufes. 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 oifa innominata; from the weaknefs of the hips; from external accidents; and from difeafes. See Leg and Luxation.

LAMENTATIONE, Ital. applied to a mufical movement, requires that it fhould 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 Chriftians of all denominations. Among Calvinifts, it exhaled itfelf in pfalmody, 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 lamentationio But in England even the lute was to weep, and be forrowful: for Dowland, the famous lutenift, publifhed Lachrimæ, or " feven tears, figured in feven paffionate Pavins." The poetry of thefe whimperings feems much inferior to that of Sternhold and Hopkins. However, the beft Englifh compofers of the times thought them worthy of the beft mufic which they could fet 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 Jhonfon, Forde, Hooper, Kinderfley, Nat. Gyles, Coperario, Pilkington, Luffo, Peirfon, Jones, Alfonfo Ferrabofco, Ward, Wecikes, Wilbye, and Milton, the father of the great poet.

LAMENTATIONS, a canonical book of the Old Teftament, written by the prophet Jeremiah, according to archbifhop UTher and fome other learned men who follow the opinion of Jofephus and St. Jerom, on occation of Jofiah's death. But this opinion does not feem to agree with the fubject of the book, the lamentation compofed by Jeremiah on that occafion being probably lolt. Some have fuppofed 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 bifhop Lowth, in his admirable book entitled "Prælectiones de Sacra Poefi Hebræorum,"' has treated at large of this elegiac poem; illultrating its general nature and form, its metre or verfilication, and its fubject, fentiments, and imagery. The Lamentations, he fays, confift of a number of plaintive effufions, compofed 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 courfe of feparate ftanzas. Thefe were afterwards put together, and formed into a collection, or correfpondent whole. In the character

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character of a mourner he celebrates, in plaintive frains, the obfequies of his ruined country ; whatever pretented itfelf to his mind in the midit of defolation and mifery, whatever ftruck him as particularly wretched and calamitons, whatever the inftant fentiment of forrow dietated, he pours forth in a kind of fpontaneous effufion. He frequently paufes, and, as it were, ruminates upon the fame object; frequently varies and illuftrates the fame thought with dufEerent imagery, and a different choice of language; fo that the whole bears rather the appearance of an accumulation of correfponding fentiments, than an accurate and connected feries of different ideas, arranged in the furm of a regular treatife. The nature and defign of the poem neither required nor admitted of a methodical arrangement. The whole poem, however, may be divided, according to cur author, into five paris ; in the firft, fecond, and fourth, the prophet addreffes the people in his own perfon, or elfe perfonifies Jerufalem, and introduces that city as a character: the third part is fuppofed to be uttered by the chorus of Jews, reprefented 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 lait, as well as the other, is divided into twenty-two periods, according to the number of the letters of the alphabet with this difierence, that in the four other parts the initial letters of each period exactly correfpond with the alphabetical order. The form of compofition employed in this poem is a fpecimen of the acroltic or alphabetical poetry of the Hebrew: and the manner and order of this kind of verfe are as follow: Each of the five parts, or grand divifions, is fubdivided into 22 periods, or flanzas; thefe periods in the three firlt 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 firft 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 fame period begins with the fame letter, fo as neceflarily to afcertain the length of every verfe or line in that poem: and though the lines are not thus dittinctly marked in the other parts, their limits may be afcertained by refolving the fentences into their contituent members. By this method of computation it appears, that in the fourth part all the periods confift of diftichs, as alfo in the fifth, which is not acroftic ; but in this laft the lines are extremely fhort, whereas in all the reft they are long. In this poem there are lines and verfes which are longer by almoft one-half than thofe which occur ufually, and on other occafions. 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 diffufe, more copious, more tender, in all refpects better adapted to melancholy fubjects.

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 thefe events are defcribed as actually accomplifhed, and not in the ftyle of prediction merely, muft be obvious, as our author conceives, to every reader. The prophet has fo copioully, fo tenderly, and poetically bewailed the misfortunes of his country, that he feems 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 difplays fuch a happy and fplendid felection of imagery in fo concentrated a ftate. What can be more elegant and poetical than the defription of that once flourihing city, lately chief among the nations, fitting in the character of a female, folitary, afflicted, in a ftate of widowhood, deferted by her friends, betrayed by her deareft
connections, imploring relief, and feeking confolation in vain? What a beautiful perfonification is that of "the ways of Sion mourning becaufe none are come to her folemn fealts?" 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 tranferibe the entire poem. Gregory's 'Tranf. foct. 22. voll ii.

Indeed the fubject of this book is of the molt moving kind; and the tyle throurhout lively, pathetic, and affeeting. In this kind of writing the prophet Jeremiah was a great mafter, according to the character which Grutius gives him: "Mirus in aftectibus concitandis." See Jenkм1.aI.

LAMENTIN, $I_{A}$, in Geograply, a town of the ifland of Martinico, on the W. coath. N. lat. $14^{\circ} 36^{\circ}$. W. long. $60^{\circ} 57^{\prime}$.

LAMENTUNG, a town of Thibet; 25 miles E. of Jhanfi Jcung.

LAMETOUNAH, a town of Africa, in Sahara, about feven days' journcy S. of 'Tripoli.
LAMETUK, a town of the flate of New Jerfey ; 15 miles N.W. of New Brunfwick.

LAMGI, a petty kingdom of Afia, that lies to the weft of Nipal or Napaut; which fee.
LAMIA, in Biography, the molt celebrated female fluteplayer in antiquity. Her beauty, wit, and abilities in her profeffion made her regarded as a prodigy. The honours the received, which are recorded by feveral authors, particularly by Plutarch and Athenæus, are fufficient teftimonies of her great power over the pafions of her hearers. Her claim to admiration from her perfonal allurements, does not entirely depend, at prefent, upon the fidelity of hiftorians; fince an exquifite engraving of her head, upon an amethyit, with the veil and bandage of her profeffion, is preferved in the late king of France's collection, which, in fome meafure, authenticates the account of her beauty.

As the was a great traveller, her reputation foon became very extenfive. Her firft journey from Athens, the place of her birth, was into Egypt, whither fhe was drawn by the fame of the flute-players of that country. Her perfon and performance were not long unnoticed at the court of Alexandria; however, in the conflict between Ptolemy Soter, and Demetrius, for the ifland of Cyprus, about 312 years B. C. Ptolemy being defeated in a fea-engagement, his wives, domeftics, and military flores fell 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 firft, on account of her talents, for the was a wonderful performer on the flute; but, afterwards, her fortune became more fplendid, by the charms of her perfon, which procured her many admirers of great rank.". The prince whofe captive fhe became, and who, though a fuccefsful warrior, was faid to have vanquifhed as many hearts as cities, conceived fo violent a paffion for Lamia, that, from a forereign and a conqueror, he was inftantly transformed into a flave; though her beauty was now on the decline, and Demetrius, the handfomeit prince of his time, was much younger than herfelf.

At her inftigation, he conferred fuch extraordinary benefits upon the Athenians, that they rendered him divine honours; and as an acknowledgment of the influence, which fhe had esercifed in their favour, they dedicated a temple to her, under the name of "Venus Lamia."

A thenxus has recorded the names of a great number of celebrated Tibicinx, whofe talents and beauty had capti-
vated the hearts of many of the moft illuftions perfomaces of antiquity.

Horace fpeals of bands of ferale flute-players, which he calls Ambubaiiarum collegia (Ambubaiza is faid, by the commentators, to be a Syrian word, which, in that language, implies at flute, or, the found of a flute), and of whom there were Atill colleges in his time. But the followers of this profefion 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 Jutinian, the fifter of the emprefs Theodora, who was a Tibicina, appeared on the ttage without any other drefs than a flight fearf thrown loofely over her. And thefe performers were become fo common in all private entertaimments, as well as at public fealts, obtruding their company, and placing themfelves at the table, frequently unafked, that, at the latter end of this reign, their profeffion was regarded as infamous, and utterly abolifhed.

Lania, in Ancient Geography, a town of Grecce, in Theffaly, famous for the war which the Greeks waged againft the Macedonians, after the death of Alexander the Great.
Lamia, in Icbtbyology. See Squalus Carcharias.
LAMIE, Azprit, among the Ancients, a kind of dæmons, or evil fpirits, who, under the form of beautiful women, are faid to have devoured children.

Horace makes mention of them in his Art of Poetry. Some authors call them I.anix, à laniando. Philofratus fays, they are alfo called Larve, or Lemures, as if they were all the fame. Bochart will have the word to be Phoenician, and derives it from TiTh, to devour ; alleging, that the fable of the Lamix came from Lybia. Sce Limicm.
LAMINA, in Anatomy, a term applied in anatomical defcriptions to parts which take the form of thin plates. In this fenfe we fpeak of laminze of cellular fubitance, of membrane, of bone, sc.

Lamins, in Botany, the expanded part of each petal of a polvpetalous corolla, fupported by the unguis or claw, and analogous to the limb of a monopetalous one. (See LimsBus.). It generally fpreads, fo as to form a confiderable angle with the claw, in order that its upper furface may be prefented to the ftrongeft light, as in the pink, and wall-flower, or ftock. The term lamina is alfo ufed by Forfäll, and adopted by fome others, for the expanded part of a leaf, that is, for the leaf itfelf; fuch application of the word is therefore altogether fuperfluous. See Leaf.

LAMINA, in Phyrology, thin plates, or tables, whereof any thing confifts.

LAMIODONTES, is the name given by Dr. Hill to the gloffopetre.

LAMIOLA, in Icbthyology, is the name given by the modern Italians to a fifh called in Cornwall the tope. See Squalus Galeus.

LAMIRAS, in Brography, a famous poet and mufician 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 firft mufician who united the voice to the found of the cithara.

LAMISA, in Geograpby, a town of the principality of Gcorgia, in the province of Carduel ; 60 miles W. of Tefis.

LAMIUM, in Botany, a Latin word of difputed meaning and derivation, ufed by Pliny to defignate the Dead Nettle, for which it has ever fince ferved as the botanical generic name. Some derive it from the fuppofed place of growth of the plant or plants in queftion, ad lamas, that is, about ditches or puddles by the way fide; but this is by no tio
means appropriate. Linncus in his Pbilofophia Bolunicar p. 167, explains the word by Lamia larvata, a maaked forcerefs, as if the flape of the flower, refembling a naak, or rather a gaping mouth befet with fharp teeth, had fuggefted that idea. Ambrolinus, howevery indicates the molt direct etymology, from $\lambda a \operatorname{sos}$, the throat, alluding to the fhape of the flower, from which word alfo that of lamia itfelf, as the appellation of a certain voracious beaft or fifh, or of a forcerefs fuppofed to devour children, evidently ori-ginated-Linn. Gen. 202. Schreb. 2S8. Willd. Sp. Pl. v. 3. 86. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 392. Sm. Fl. Brit. 626. Juff. II3. Tourn. to 85. Lamarck Illultr. t. 506.-Clafs and order, Didynamia Gymno/permia. Nat. Ord. Verticillate, 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, comprefled, gibbous, its margin furnihhed, at each fide, with one or more little reHexed teeth; upper lip vaulted, roundifl, obtufe, undivided or two-lobed; lower lip fhorter, inverfely heart-flaped, emarginate, more or lefs reflexed. Stam. Filaments four, awl-haped, concealed by the upper lip, two of them longer than the others; anthers incumbent, oblong, hairy. $P i / \rho_{2}$ Germen in the bottom of the calyx, four-cleft; Atyle threadfhaped, of the fame length and fituation as the ftamens; ftigma cloven, acute. Perric. 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, brifle-pointed teeth. Upper lip of the corolla vaulted; lower two-lobed; throat inflated, its margin toothed at each fide.

A very natural genus, well diltinguifhed by its effential character, of the mouth of the flower being furnifhed with one or more teeth at each fide. Thefe are fometimes flender, and almoft capillary ; fometimes dilated and oblique. Linnæus thought the upper lip was neceffarily undivided, or at moft only toothed; but in fome recently difcovered fpecies. it has a two-lobed termination, above the vaulted part. The fpecies of Lamium are as yet but imperfectly afcertained, notwithftanding what has been done in Willdenow and the new edition of the Hortus Kerwenfis. The 14th edition of Syf. Veg. enumerates but eight; Willdenow has thirteen. To thefe we have fome to add, even from the gardens; and many miftakes to correct, refpecting fpecies already eftablifhed. A review of the whole is neceffiary, though fome may be lefs particularly mentioned than others. Our whole lift amounts to twenty.

1. L. Orvala. Great Dead Nettle, or Balm-leaved Archangel.-Linn. Sp. Pl. 808. Curt. Mag. t. 172. (L. pannonicum ; Scop. Carn. ed. 2. v. 1. 406. t. 27. L. melitiæfolium; Mill. Ic. to 158. Galeopfis maxima pannonica; Cluf. Hilt. v. 2. 35.)-Leaves heart-fhaped, unequally and fharply ferrated. Throat of the corolla inflated; upper lip fharply toothed. Calyx coloured. Stem nearly cylindrical, fmooth.-Native of Hungary, Carniola, and Italy. We have gathered it, of a very large fize, near Caftello Nuovo, 19 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 roundnefs and polifhed finoothnefs. The leaves are three or four inches long, and nearly as broad, rugofe, dark, fcarcely at all hairy. Orvala is às old name for Clary, ufed by Dodourus; we know not why it was applied to this
planta:

## LAMIUM.

plant: If Lamium montanum, faxatile, forme , glabrum, fore amplo, purfurco, cum labio fuperiori crenato; 'Till. PiC 92. t. 34. f. ${ }^{1}$; quoted with doubt by Limeus, be this prefent fpecies, the figure is very bad, yct we know no other to which it is more appropriate.

The Orval\& garganica, Linn. Sp. PI. 807. (Papia garganica, foliis urticre, altiùs et eleganter incifis, flore purpureo ; Mich. Gen. 20. 2. 17.) is now acknowledged to be a varicty of $L$. Orvala, differing only in an accidental deeper divifion of the corolla, as well as of the leaves. Curtis in his fpecific character of the fpecies in queltion, copied from $S_{y / f} \mathrm{~V}_{\mathrm{g}}$. ed. 14 , retains an crror of the tranfcriber or printer, caulitus culoratis for calyce colorato.
2. L. levigatum. Smooth Dead Nettle, -Linn. Sp. P1. 808. Krock. Silef. n. 926, by the defeription. Sabbat. Hort. Rom. v. 3. t. 34 . IVillden. (L. purpureum fretidum, folio parvo acuminato, fl re majore; Pluk. Phyt. t. 198. f. I. L. folio oblongo, flore rubro; Segu. Veron. v. 3. 131. Galeopfis five urtica iners, flore purpurafcente majore, folio non maculato; Bauh. Hitt. v. 3. 321.)-
 fmooth as well as the ftem. Upper lip of the corolla abrupt, entire. Calyx nearly fmooth, with taper teeth much longer than its tube, and almoft equal to the corolla.-Native of Italy. Pallas mentions finding it in Siberia, Krocker in Silefia. The Linnæan fecimen was fent by Seguier, with his own fynonym and that of J. Bauhin, the latter being rerified by the place of growth, near Vicenza. The root is perennial, in fotne degree creeping. Stem a fuot high or more, fquare, purplifh, leafy, finuoth, or nightly befprinkled with foft hairs curved downward. Leazes broac-heart-fhaped, ftrongly and unequally ferrated, with an elongated entire point, fcarcely rugofe, very little downy, rarely if ever fpotted; the lower ones on loug ftalks, upper on fhort ones." Flowers eight or ten in a whorl. Tube of the calyx.curved, but little dilated, pale, veiny, fmooth or nlightly downy, about a quarter of an inch long; teeth almoft twice that length, very taper, fomewhat hairy, extending besond the fuil-grown unopened ccrolla, widely fpreading. Corolla about the fize of the common L. albsm; upper lip blunt, entire, gibbous, flightly downy, and bright purple externally, pale and fmooth within; throat wide, often fpotted, with one fhort narrow wooth, and the radiment of another, at each fide; lower lip finall, of two rounded ferrated fpreading lobes.-Such is the plant of the Linnæan herbarium, but the long defcription in the Spec. Plant. feems to agree better with the mofchatum hereafter defcribed, which therefore fome have taken for the lavigatum. Plukenet's figure is totally erroneous as to the calyx. Willdenow retains Boccone's fynonym, mifapplied to this plant by Linneus, and repeats it under rugofum, to which it properly belongs! Haller miltook his own $\mathrm{N}^{\circ} 27 \mathrm{O}$, which is $L$. maculatum, for lavigatum, and tranfcribes from Linnæus saule brevi inttead of lavi.
3. L. rugofum. Wrinkled Dead Nettle.-Ait. Hort. Kew. ed. I. v. 2. 296. Willd. n. 3. (L. hirfutum; Lamarck Dict. v. 3. 410. L. amplo, ferrato, nigricante, fubrotundo, rugofo folio; flore rubro; Bocc. Muf. 35 t. 23. L. montanum hirfutum, folio oblongo, flore purpureo; Till. Pif. 93. t. 35. f. 1.)-Leaves heart-flhaped, acute, roundly ferrated, rugofe, hairy as well as the ftem. Upper lip of the corolla abrupt, notched; lateral tecth folitary, brittle-fhaped. Calyx flightly hairy, with teeth fhorter than its tube.-Native of Italy, Sicily, and France; cultivated in our more curious gardens for at lealt 45 years palt. It is perennial, flowering in July and Auguft. The whole plant is much more hairy than the laft. Lateves rather
crenate than ferrated, all on longifin falks, dark, rugcfe, and hairy. Flowers purplifh red; tube of the corolla finooth, curved, longer than the calyx-tecth; throat and upper lip hairy; teeth at cach fide of the mouth folitary, very long and narrow; lower lip fmall. There can furcly be no doubt of Tilli's fymonym, though hitherto ncglected.
4. L. garganicum. Woolly Dead Nettle--Linn. Sp. Pl Bes. "T'rew. Ehret. t. 75. Sm. Exet. Bot. v 1. 13. t. 48. (L. garganicum fubincanum, fore purpurafente, cn:a labio fuperiori crenato; 'Till lif. 93. t. 34. f. 2.)Leaves heart-fhaped, bluntly ferrated, purnfe, downy as well as the flem. Corolla inflated; with a fraight tube, much longer than the calyx ; orifice with two teeth at each fide.-Native of Italy. It has beea cultivated in Chelfea garden ever fince 1729, and flowers in May. Its fuft downy greyih afpect, and finely rugofe leaves, at once diftinguifh this fpecies. The flom is thick and clumfy, two feet high. Flowers large, copious, and handfome, with a pale tube ftreaked with red, and light purple lips, the upper oue cloven at the fummit; the throat is nearly as much inHated as that of L. Orrala. Trew's figure was overlooked, or there would not have been another of this plant given in Evotic Botany, the latter work being intended for feccies not properiy reprefented already. It is much to be wifted that other periodical publications would fo far pay regard to the fame principle, as to give fuch plants a preference.
5. L. maculatum. Spotied Dead Nettle.-Linn. Sp. Pl. Sog. (L. Plinii campoclarenfe et montanum ; Column. Ecphr. 190. t. 192. f. I. L. n. 270 ; Hall. Hirt. v. 1. 118.)-Leaves heart-fhaped, Atrongly ferrated, acute, hairyTube 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 Bayfwater, having probably efcaped formerly from the neighbouring garden of fir John Hill, Its natural fituation is in walte ground, or about banks and hedges, where the radical leaves, diftinguifhed by a broad irregular central Itripe, make an elegant appearance through the Italian winter ; but this mark conmonly difappears from the upper leaves. The root is perennial, fomewhat creeping. Stems a foot high, rather hairy. Leazes heart-hhaped, rather acute but not pointed, ftrongly but bluntly ferrated. Flowers purplifh red, downy. Caljx thimid, nea:ly fmooth, with fringed teeth about its own iength, and much fhorter than the tube of the corolla. The lower lip of the flower is concave and finely crenate.

Haller properly, perhaps, quotes the Galeopfis of Rivinus for this fpecies; but the Galeopfis of Camerarius, Epit. t. $86_{5}$, though faid to have a red hower, is mainfelly a reprefentation of Galcobdolon luteum, Sm. Fl. Brit. 63 r. Both thefe are cited by Linnzus under Lamium album; Rivinus having confounded album and maculotum. Pallas, as appears by his herbarium in the hands of A. B. Lambert, efq. mittook maculatum for purpureum.
6. L. album. White Dead Nettle,-Lien. Sp. Pl. ScgCurt. Lond. fafc. 2. t. 45. Engl. Bot. t. 76 6 . -Leaves heart-fhaped, pointed, ftrongly ferrated, hairy. Flowers about twenty in a whorl. Tube of the calyx fhorter than its teeth. Upper lip of the corolla notched ; lateral teeth folitary, lanceolate. - Native of watte ground, almott throughout Europe, flowering in fpring, fummer, and autumn. The leaves are more pointed than in the latt, and unfpotted; the flowers white and more numerous, rarely afluming a blufh of pale purple. There is commonly a confiderable diftance, or naked part of the ftem $\mathrm{I}_{1}$ between the flalked lower leaves,
and the more feffile upper ones where the flowers are fituated. The fummit is overtopped by one or two pair of leaves without flowers. The tube of the corolla is longer than the calyx ; its lower lip flattifh, wavy, fcarcely crenate.
7. L. cabitatum. Mufin Dead Nettle,-Leaves heartfhaped, bluntifh, crenate, hairy, on longifh ftalks. Flowers overtopping the item. Thube of the calyx equal to its teeth. Upper lip of the coroll: notched; lateral teeth folitary, very, llender.-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 lalt; fometimes fold for $L$ moll hereafter mentioned; yet nofpecies can be more diftinct. It is peremial, flowering in July; when the copious and delicate femitranfparent white flowers, which rife in two whorls above the top of each them, look as if a thin mufin veil had been thrown over the plant, efpecially while the dew is upon them. The lateral teeth are peculiarly flender; the anthers pale, with fcarlet pollen. The liaves are fmall, roundih, light green, fpeckied with paler or whitifh fpots. Stens rather decumbent. We can find no fynonym for this plant.
8. L. firiatum. Pencilled Dead Nettle.-Sin. Prodr. F1. Græc. Sibth. 405. Fl. Græc. ined. t. 557.-Leaves heartfhaped, bluatifh, ferrated, on longifh ftalks. Upper lip of the corolla cloven; its fegments fpreading and toothed; lateral teeth double. Found by Dr. J. Sibthorp, (who fufpected it to be the Ba $\lambda \lambda$ umply of Diofcorides), very plentifully in all the wafte ground of Greece and the Archipelago; yet no other modern botanilt appears to have noticed this elegant and ftriking plant. Its habit is not unlike L. album, but the leaves are rounder, with longer ftalks, and the fem is more uninterruptedly leafy. The flowers are fingularly large and handfome, white ftriped with crimfon, compoling feveral whorls, the upper ones rifing above the top of the ftem, as in the laft. Their upper lip ends in two oblong toothed divaricated lobes; the lower is convex and crenate; the lateral teeth are in pairs, acute and fpreading.
9. L. bifflum. Cloven White Dead Nettle.-Cyrill. Rar. fafc. I. 22. t. 7. Willden. (L. parvum, flore albo, cum labio fuperiori bifido; Till. Pif. 93. L. æquicolorum ; Column. Ecphr. 191. t. 192. f. 2.)-Leaves triangular-heart-fhaped, deeply cut and crenate; the upper ones crowded. Calyx tumid, with fhortifh triangular teeth. Upper lip of the corolla cloven; its fegments fpreading, emarginate, lateral teeth folitary.-Found in wafte 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 feen, whofe middle part is almolt naked, are of a triangular heart-fhape, deeply cut and lobed as well as crenate, hairy, and marked with a narrow central white Itripe, juft as Columna reprefents them, concerning whofe fynonym we prefune there can be little doubt, though he appears not to lave feen the corolla. Spirits of wine extract an orange colour from thefe flowers, which we do not perceive in any nther Lamium.
10. L. mofchatum. Mufky White Dead Nettlc.-Mill. Dict. ed. S. n. 4. Ait. Hort. Kew. ed 2. v. 3. 394. (L. orientale, nunc mofchatum nunc foxtidum, magno flore; Tourn. Cor. y. ; according to Miller, but the Hort. Kew. rejects this fynonym, without affinging a reafon.) - Stem very fmooth. Leaves heart-fhaped, obtufe, crenate; the foral ones nearly feffile. Calyx-teeth nearly equal to the corolla. Upper lip of the corolla entire; lateral teeth folitary, dilated.-Native of the Levant. Miller cultivated it
in 1739, but it found no place in the firft edition of Hort. Kew. This we believe arofe from its having been taken for, or confounded with, the lavigatum. Into this crror we ourfelves have formerly fallen, mifled by the long defeription in Limn. Sp. Pl. 808, which fo precifely accords with the mofchatum, rather than with levigatum, that we have no doubt from which of the two it was made. This is an annual fpecics, cultivated, or rather fpontancoufly fowing itfelf, from time immenorial 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 ftens, from to to 20 inches high, are remarkably fmooth, with blunt edges, and purplifh. Leaves of the flem heart-lhaped, approaching to triangular, rather elongated but obtufe, veiny, of a light glaucous green, fmooth or finely downy, the margin crenate rather than ferrated; the floral ones nearly feffile. W borls feveral, not reaching to the top of the Item, each of about ten white flowers, whole 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, flattifh, flightly crenate lobes; lateral teeth folitary, broad, pointing forward. We have not noticed the mulky fcent.
II. L. glechomoides. Ground-ivy-leaved Dead Nettle.(Moldavica orientalis, hederæ terreftris folio; Tourn. Cor. 11.)-Leaves heart-fhaped, ftrongly crenate, on long ftalks. Calyx-teeth fhort, triangular. Corolla longer than the leaves; upper lip notched; lateral teeth in pairs.Gathered in the Levant by Tournefort, one of whofe fpecimens is before us. No recent author feems to have known this โpecies, which is perhaps more akin to our friatum, $\mathrm{N}^{\circ} 8$, than any other. The leaves are fmall, not an inch long, correctly heart-fhaped, ftrongly crenate, or ferrated, flightly hairy, on foottalks moltly twice their own length, except thofe of the floral ones, which fcarcely exceed the calyx. The teeth of the calyx are fhort, triangular, awnlefs, roughin. Corolla purple, downy; tube full twice the length of the calyx ; throat inflated; lateral teeth fmall, double; upper lip abrupt and deeply notched; lower of two rounded wavy lobes. Anthers very hairy.
12. L. tomentofun. Downy Dead Nettle.-WWilld. n. II. (L. orientale incanum, flore albo, vel purpurafcente, cum labio fuperiori crenato ; Tourn. Cor. II .)-Leaves roundifh-heart-fhaped, ftrongly crenate, downy on both fides, ftalked. 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, efpecially 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 moft pointed, all denfely villous, on ftalks of various proportions. Teeth of the calyx as long as its tube, lanceolate, narrow, acute, denfely villous. Corolla about the fize of L. album, purplifh 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. I. v. 2. 297. ed. 2. v. 3. 394. (L. parietariz facie; Moris. Hort. Blæs. 278. L. album, parietarix foiio, virginianum; Pluk. Almag. 203. Phyt. t. 4 I. f. r.)-Leaves pointed; ftalked, nearly entire; the lower ones heart-haped, the upper ovate. Calyx-teeth briftlefhaped. Upper lip of the corolla crenate, hairy ; lateral
teeth folitary, awl-flaped.-Native of Virg:nia, 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 fpecies, hereafter defcribed by the name of ocymifolium, is generally miftaken for it, and is referred to as molle in F\%. Brit. under L. purpureum. The true molle is, however, now well known to us, by dried fpecimens from the French gardens. Its habit and fize approach to the albun, but the leaves are remarkable for being cither quite entire, or very flightly toothed about the middle part only; they are an inch and a half loug, broad at the bafe, and often heart-flaped, the extremity pointed and acute; both fides fomewhat downy, veiny, even, not rugofe. The falks of the foral leaves are very fhort ; thofe of the relt longer. Flowers the fize of L. album, white; their tube as long as the calyx-teeth, which are brifte-fhaped, narrow and hairy. Seeds very fmooth.
14. L. ocymifolium. Bafilleaved Red Dead Nettle.-(L. pufillum rubrum, parietarix facie, americanum ; Pluk. Almag. 204. Phyt. t. 41. f. 2.)-Leaves ovate, obtufe, entire, ftalked ; the upper ones crowided. Stem naked in the middle. Calyx-tecth lanceolate. - This has long been in Chelfea garden, where it is almolt a weed. From Plukenet's fynonym it appears to have come from America. No fucceeding author has noticed the plant. The root is fmall and annual. Stem a foot high, or fomething lefs, fimple, except a fmall branch or two near the bafe, erect, fquare, fmooth, leafy at the bottom and top only, being for the greater part of its length entirely naked, like the ftem of L. purpureum, but ftill more remarkably fo. The lower leaves are few, roundifh-ovaie, flightly crenate, on longifh ftalks, and rearly fmooth ; floral ones about fix or eight pairs, croffing each other, crowded together at the top of the ftem, compoling a fort of pyramid, each leaf about three quarters of an inch long, ftalked, ovate, obtufe, tapering at the bafe, entire, except here and there a cafual notch in fome of them, all flightly hairy, paler underneath. Whorls crowded, of numerous imall purple flowers, much like thofe of L. purpureum. Caly.x nearly fmooth, its teeth as long as the body, fpreading, broad at their bafe, with taper rigid points. Seeds curiounly befprinkled with pale, prominent, minute, tubercles, as is more or lefs the cafe 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. to. 523.-Leaves heart-fhaped, obtufe, unequally crenate, ttalked ; the upper ones crowded. Stem naked in the middle. Calyx-teeth lanceolate. Tube of the corolla clofed with hairs near the bottom.-Very common, in wafte as well as cultivated ground, thoughout molt 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-flaped, bluntifh, rugofe, unequally crena:e, downy, on ftalks of various lengths. Flowers in whorls among the upper leaves, reddifhpurple, variegated with white, and fpotted with dark purple, their lateral teeth fmall, in pairs, very near the under lip. The infide of their tube was found by Mr. J. D. Sowerby to be clofed near its bafe with a denfe circle of hairs; fee Engl. Bot. to. 1933. The calyax is like the laft fpecies.-A curious variety was found near Sudbury, by Mr. Jofeph Andrews, who communicated it to the late profeffor Martyn, fen., and whofe original fpecimen is in our hands. In this the margin of all the leaves is perfectly entire. The flowers are rather fmaller than ordinary, and were faid to produce no feed. This variety is in Engl.

Bop p. 760 , at tise end, minaken for our comifotium lat duferbed.

16 I. incifum. Cutleaved Kect 1) ad Netele-Willd. n. 9. Engl. Bot. 1. r933. (L.. diPcécum; With. 527. I.: purpureum $\beta$; Sm Fl Brit. 627. L. rubrum minus, fohis profunde incitis; Raii Syn. 240. Pluk. Phyt. t. 4 1. f. 3.) -Leaves heart-fhaved, dilated, ottufe, !talked, mrergular:y cut ; the upper ones crowded. Stem naked in the middic. Calyx-tceth lanceolatc. 'lube of the comolla perviou:Found in cultivated ground in France and England. We have it from Norfoll and Suffoll. This is fo like the latt, except the leaves being mure deeply cut, that we flould have Alill conlidered it as a variety, but for the want of hairs in the tube of the flower. 'The whole fhape of the corolin, indeed, is more flender, approaching to that of L. ocymio folium, or of the following amplericaule.
17. L. amplexicaule. Conmon Henbit Dead Nettle, - Linn. Sp. Pl. Sog. Curt. Lond. fafc. 2. t. 46. Engl. ! ot.t. $777^{\circ}$ FI. Dan. t. 752. (Galeopfis folio caulem ambiente, major et minor; Rivin. Monop. Irr. t. 63.-Floral leaves feffile, kidney-fhaped, obtufe, frongly crenate, or fumewhat lobed, embracing the ftem. Teeth of the calyx linear-awl-fhaped, as long as its tube-Native of fandy fields of Europe, flowering in the fpring. Eafly diftinguihhed by the rounded, feffile, Atrongly crenate, and often in fome degree lobed, leaves of the ttem, in which it effentially differs from the two laft. The calyx, moreover, differs in being extremely hairy, with more upright teeth, as long as the body, and of a very narrow awl-fhaped, almof linear, figure, by which latter character it is alfo diltinguifhed from two hereafter defcribed. The little red flowers are fingularly pretty, the bright crimfon of their downy upper lip, while the reft of the corolla is fmooth and paler, gliftens, like minute rubies, when moilt with dew, and attracts the eye at a confiderable diftance. A fmall undivided tooth ftands at each fide of the mouth, though Willdenow once thought otherwife, and on account of that fuppofed deficiency, founded a new genus on this plant and Galeobdolon luteam, by the name of Pollicbia; a meafure now happily abanconed, as thofe tuo plants have fcarcely any charater in common. Some of the earlier flowers of L. amplesicaule never expand, but the internal organs are perfect, and produce good feed. Linnæus fays all its flowers are generally thus cloied in Sweden, owing, probably, to the coldnefs of the feafon when it bloffoms.

1S. L. palmatum. Palmate Henbit Dead Nettle.-(Li. multifidum; Pallas. It. v. 1. 168.)-Floral leaves fefinie, embracing the ftem, 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, firlt took it for amplexicaule, which it molt nearly refembles, and afterwards for multififum, under which name it is mentioned in his travels, quoted by Willdenow. From the latter it differs totally in fize and afpect, as well as in the character of its leaves and caly.x. From the former it is fatisfactorily diftinguihed, however like at firft fight, by the deeply palmate floral-leaves, whofe lobes are fubdivided into three or five broad fpreading fegments; and ftill more decidedly by the broad bafe of the culyix-teeth, which contract fuddenly into a fharp point. The corolla varies in fize, or degree of expanfion, as in the preceding. The root, like that, appears to be annual, throwing up feveral fems about a fpan high. The lower leaves are ftalked, but otherwife refemble the upper ones, except, indeed, thofe near the root, which are fmaller and lefs cut.
19. L. multifidum。 Finely-cut Oriental Dead Nettle.-

Linn.

## L 1 M

## I. A M

Linn. Sp. Pl. 809. (L. orientale, foliis elegantèr laciniatis; Tourn. Cor. 11 . Commel. Rar. 26 t 26.)-Florak leaves feffile, divided to the bafe, into many lobed or pinnatifid fegments. Tecth 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 correet, Chelfea phyficegarden. On his authority this feecies has fomd a phace in the new edition of Hort. Kew, though long fince a itranger amonglt us. Indeed the plant is very litile known to botanits. We have an indubitable fpecimen, but whether wild or cultivated we know not. It is in all its parts thrice the fize of the two tate. The rort frems to be annula, throwing up feveral fyuarc, leafy, Fiwely downy, often branched ficms. The floral buge sate an inch or finch and half long, Seflite, nearly fmooth, divided almott, or quite, to the bottom into five fegment:, the motlle one being the largelt, all narrow at the bafe, dilated outwards, deeply lobed or pinnatifid, the lobes rounded or blentifl. Flowers many in each whorl, as large as thofe of L. albun, or larger, of a fine red, with fo very hairy an upper lip as to refemble fome kind of Phlomis. The bateral 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 relt.
20. L ? bipidshum. Rough-falked American Dead Net-tle-Michaus Boreal-Amer. v. 2. 4.-Stem rather brittly. Leaves on long talks, broad-heart-fhaped, nightly downy. Flowers axillary, folitary.-Found in fhady woods about the river Timnaffe, by Micha:x, who mentions that the corolia is moderately large and white. The flowers being folitary in the bofom of each floral leaf, excttes a great doubt of its genus, but havins no other information refpecting this fpecies, we here fubjoin it to the reft, till further information can be procured. S.
LAMJUNGH, in Geograpby, a country of Afia, dependent on Thibet, N. of Gurkah.
Lamlash, or Holy Island, an ifland fituated before the bay of Lamlath, about tivo miles long and half a mile wide; the whole being a mountain covered with heath, but having fufficient palture and arable land to feed a few cows, fheep, and goats, and to raife a fmall quattity of corn, and few potatocs. N. lat. $5534^{\prime}$ ' W. long. $4^{2} 5^{8}$.

Lamlasir, a town or village of Scotland, on the E. coalt of the iflard of Arran, fituated on a bay to which it gives name, and which, according to Pennant, forms the fafett harbou in the globe, with depth of water for the largelt fhips. N. lat. $5535^{-1}$ W. long. $5^{\circ}, 59^{\circ}$.

LAMMASED iY, the firtt of Augut ; fo called, as fonce will have it, becaufe lambs then grow out of feafon, as being too bif. Others derive it frum a Saxon word, fignifying leifforafs, becaufe on that day our forefathers made an offering of bread prepared with now wheat.

On this day the tenaits who furmerly held lands of the cathedral church in York, were bound by their tenure to bring a l.mb alue into the church at high mafs.

It is celubated hy the Rominh church in menory of St. Peter's imer.omment.

L i MMERMUIR, in Geography, a mountainous diftrict of Scoiland, forming the N. part of the county of Berwick, about if miles long and fix broad.

LAMNE, h. Ichblyology, a name given by Appian, and fome other of the od Greek authors, to the common fhark, or, as we ufually call it, the white fbark, the lamia and canis carcharias of authors. Sce Squalus Carcharias.

LAMNICKIF, in Gengraphy, a town of the duchy of Stiria; 10 miles N. of Cilley.
L. MiO , a fea-port of Africa, on a fmall ifland formed by a river on the coaft of Zanguebar, dependent on the Portuguefe. S. lat. $1^{\circ} 55^{\prime}$. E. long. $41^{\circ} 27^{\prime}$.

LAMOIGNON, William de, in Biography, marquis of Baiville, defcended from an honourable lamily, was born at Nivernois in 1617. He was admitted a counfellor of Paris in 1635, made matter of requetts in 1644, and in 1658, on account of his great probity and honour, he was raifed to the office of firft prefident of the parliament. Upon his nomination to the prefidentihip, 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 refuling a large fum of money, oflered by another perfon for the fituation, at the fame time obferving, "Whatever occation his majefty may have for money, it would be better to expend it for a good prefident, than reccive it." Lamoignon did not difappoint the expectations formed of him: he fulfilled all the duties of the fituation with equal zeal and prudence, fupporting 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 whofe trial lie was to prefide as judge, by Colbert the miniter, 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 firft publifhed in 1702, and again reprinted in 1781. In his manners he was limple, in his conduct rather auftere, but to the widow, the orphan, and the friendlefs, he was the mildeft of all human creatures. He relaxed from the toils of his office, in the pleafures of literature, and literary men. Boileau, Racine, Bourdalouè, \&c. were his particular friends. Moreri.

Lamoignon, Christian Francis de, eldeft fon of the preceding, was born at Paris in $16+4$ : of his education the molt exact care was taken by his father, and at a proper rige he was placed in the Jefuits) college, under the particular tuition of the celebrated father Rapin, whofe favourite difciple he was. Having finifhed his ftudies, 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 fpace of 25 years, with the higheft and moft unblemifhed reputation, diftinguifhed as much for his cloquence, as by his zeal for juftice and the public good. In 1690 the king nominated him to a polt of more eafe, 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 repofe. He then indulged in the love of letters, and, in 1,04 , was admitted a member of the Academy of Iufcriptions, of which he was foon appointed the prefident. In this flation he difplayed as much talent and readinefs in difcuffing a literary queftion, as he had formerly done a, point of jurifprudence. He died in 1709. Many of his fpeeches were publifhed, but the only work which he fent to the prefs was "A Letter on the Death of Father Burdalouè." Moreri.

LAMOILLE, in Geography, a river, which runs into lake Champlain, 28 miles N. of Newhaven, N. lat. $4437^{\prime}$. W. long. $73^{1} 4^{\prime}$.

LAMORRAN Creex, a creek in the Englifh channel,

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on the coaft of Cornwall, at the mouth of a fmail river, which joins the Fale; 3 miles S. of Truro.

LAMOTIS, in Ancient Geograply, a fmall country of Alia, in Cilicia, which took its name from the town of Lamus. Ptolemy.

LA MOTTE, in Biograpby, an admirable violinif, born in Flanders: when very young, he was regarded as the firlt folo player at Vienna. In 1777 he cane to Evgland. He had his firft regular inftructions from Giardini, and it is related of him, that when he quitted Giardini, he travelled through Italy, thll in fearch of another matter; and being arrived at Leghorn, where Nardini then lived, he would have become his fcholar; but after hearing that celcbrated performer execute one of his own folos, of the molt difficult kind, and being, in his turn, akeed to play, he detired leave to perform the fame folo which he had juft 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 fcholar one who was aiready fo able a nuaflor of his inflrument.

The concestos which he played at the Pantheon concerts were full of new difficulties of execution, expreffion, and double ftops, which he performed with fuch grace and feeming facility, that none but fiddle-players, who know the finger-board of the violin, and the dificulty of bowing certain paffages, would imagine that he had any difficulties to encounter. His tone was not very powerful, but perfectly fiweet and even, from the loweft note on the violin, to the end of the finger-board. His high notes were of the fiute kind, nearly as fweet as the fons barmoniques.

This performer, whofe conftitution was very delicate, feemed confumptive, when he left Enghand in $17 / 9$, at which time he returned to the continent, where he died.

Lamotte, Wilifam, an eminent French furgcon and accoucheur, was of Valogne, in Normandy. He ftudied his profeltion at Paris, where he attended the practice of the celebrated hofpital, l'Hotel-Dieu, during five years: He was diltinguifhed particularly by his fkill and fuccefs 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 phyficians, and the third fucceeded him in his own department.

His fritt publication, entitled "Traité des acconchemens naturels, niwn naturels, et contre nature," was firit publifhed in 1715 . It went through many editions, and was tranflated into feveral languages; and was generally deemed the beit treatife of the time, after that of Mauriceau, which Lamotte cenfured. It contained an account of four hundred cafes, with judicious practical reflections, the refult of thirty years' practice. His next publication was a "Differtation fur la Generation, et fur la Superfétation;" containing alfo an anfwer to a book, entitled "De l'In. decence aux Hommes d'accoucher Ies Femmes, et fur l'Obligations aux Mères de nourrir leurs Enfans," Paris, 1718. He denied the occurrence of fuperfretation, and combated the opinions of the ovarits, and the doctrine of animalcules: and in his reply to Hecquet, he relates a number of untoward accidents, occafioned by the ignorance of midwives. In $1 ; 22$, he publifhcd, "Traité complet de Chirurgie, contenaut des Obfervations fur toutes les Maladies chirurgicales, et fur la Manière de les traiter," which has been feveral times reprinted. The laft edition was publifhed in 1771, with notes by profeffior Sabatier. This was a valuable practical work, but disfigured by the egotifm of the author, and his contempt for his profeffonal brethren; whence Haller obferves, "laudes fuas non nedgligit, non
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perine fome enllogarum fudiofus." Haller Bibl. Che Eloy. Dict. Hill. de Med.
L. AMP, an inftument ufed for the combultion of liguis inflammable bodies, for the purpofe of producing artimicta: light.

The molt fimple lamp confifts of a veftil of altont any flape, containing oil or alleohol, with a tube projecting : little above the furface of the liquid, and worm an an fibrous fubltance cap:ble of railing the havid to the inp if the tube, by capillary attraction. 'I'he ont, thus raifad and diffufed through the fibrons fub?ance, is to detached from the main body of the liquid, as to admit of being heateri io a temperature fufficient to volatilize the oil, the vapour of which, in a fate of combuftion, conltituscs the thame of the lamp.

In the management of the lamp of the noft firmpie kins, fo far as relates to the fupply of oil, three thines ate ner... fary to be ohferved. I. The wick muit be of fuch a fu: thance as beft to promote capillary attraction. 2. It the that not be twilted too much, in whish cafe its capacity for tho oil is too little; nor frould it be fo loofe as to dininifh materially its capillary attractive power. This is frequentithe cafe, when the wick has been ton long immerfed in ti. . oil. 3. With regard to the diftance of the Alame from the furface of the oil.- If the flame be too near the furiace, a leffer quantity of oil will acquire the intente heat nece (Tary to raife it into vapour, fince the heat communicates with the fluid. On the contrary, when the flame is too high abowe the oil, the capillary attraction, which decreefes in fome ratio of the diftance, is infuficient to fupply the neceffary quantity of oil.
Experience has long ago eflablifhed, that cotton is the beft medium for the tranfmiffion of the oil, which is prepared in a particular way for the purpofe.

During the flow combution of oil, as obferved in the common lamp, as well as that of tallow in candles, the fatty matter is decompofed, producing a quantity of rapour, which infames in contact with oxygen; and a cloudy exhalation in the form of fmoke, confilting of numerous fmall particles of carbonaceous matter, which, if collected, conflitute the article, called lamp-black. Befides the oftenfive fmell and appearance of this fublfance, there is an evident walte of combutible matter, capable of producing both light and heat.
The ceil arifing from the fmoke and finell of lamps was formerly fo great, as to prevent their introduction into domeftic ufe, notwithftanding the flrong inducement of con. venienice and economy.

The public have long been in peffefion of a complete remedy for this, and feveral other difadrabtages in lamps, by the invention of the Argand lamp. This invention embraces fo many improvements upon the common lamp, and has hecame fo general throughout Europe, that it may be jufly ranked among the greateft difesveries of the age. As a fubitute for the candle, it has the advantage of great economy and convenience, with much greater brilliance; and for the purpofe of producing heat, it is an important inltrument 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 fupplying it with oxygen; while the Argand lamp may be compared to a fire in a furnace, in which a rapid fupply of oxygen is furnifhed by the velocity of the afcending current. This, however, is not the only advar. tage of this valuable invention. It is obvious that if the combufitle vapour occupies a confiderable area, the or-
gen of the atmofphere cannot combine with the vapour in the middle part of the afcending column. The outfide, therefore, is the only part which enters into combultion; the middle conllituting fmoke. This evil is obviated in the Argand lamp, by directing a current of atmofpheric air through the flame, which, inflead of being raifod from a folid wick, is produced from a circular one, which furrounds the tube through which the air aifends. Betore we enter more fully into the merits of the Argand lamp, we fhall give a defcription of it, with reference to drawings of its different parts. Thefe drawings are taken from the lamps of modern conflruction, which have recently been much improved. The wick is now raifed by a fcrew, initead of the rack and pinion; which is fo great an improvement upon the latter, both in fimplicity and convenience, that it is becoming general.

Fig. I. (Plate Lamps) is a view of the lamp complete, to a fcale of one-third the real fize. A is a refervoir, which is on the principle of the bird-fountain, keeping the oil always at the fame height in the burner B , through the communication C.

The burner B is compofed of three tubes, $a, b$, and $a$. The two firlt are feen in lection only; while the whele of one fide of $c$ is fees.

Fig. 2. The tube $c$ is foldered-into the bottom of the tube $a$, and open throughout, communicating with the receptacle D , which fcrews on the outfide 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 afcend 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 mult, of courfe, rife to the height of the aperture $t$, in the refervoir A , as feen in fig. 3. The part $d e$, 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, $d f$. It is made to work freely upon the tube $c$. The latter has a fpiral 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 longitedinal fit 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 outfide of, the tube $a$. The part $k l x z y$ fits upon the tube $a$. The part $k l$ is provided with fhallow fides to receive the glafs E, and is connected with a ring $y$, by wires $x, z, f i g$. I. The whole of this part turns with the glafs E , and at the fame time carries round the tube $b$, by means of the wire $s$, which is connected to $k l$ and $y$, for the purpofe of raifing 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 purhing down the fliding focket $v$, which ought to fit the interior cylinder pretty accurately. The globe mult now be filled at the hole $t$ : the focket $v$ is next pulled over the hole. The ball may now be held in an erect pofition, and replaced in the lamp; after which the focket $v$ may be puhed below the hole $t$, by means of the handle $w$. The oil will now rife to a height in $F$, and in $B$, till it reaches the higher part of the aperture $t, f_{\text {fg. }} 3$, and will maintain the fame height till the oil in the globe gets to the fame level. The reafon of this hydroftatical 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 fame quantity of oil defcending to give it place.

[^0]gular fupply of oil, is attended with one difagreeable property. The air in the upper part of the globe being much more expanfible by heat than liquid bodies in a warm room, its fpring becomes greater than the preflure of the exterior air ; in confequence of which, the oil is apt to flow over the tube $a$, and liable fometimes to overflow the veffel D. Another difadvantage is alfo attendant on this bulky refervoir. When the lamp is ufed on a table, the fhadow renders one fide of it ufelefs. The above inconveniences in the Argand-lamp have been, in fome meafure, obviated by the invention of Mr. Peter Kier of Kentifh Town. He raifed 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 thefe lamps; the fection only requires to be explained. From the flender figure of the vafe, 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 fpace A A above F is open to the atmofphere; but the fpace BB , beneath C , is clofe. A tube F G proceeds from the fipace A A to the fpace B B, fo as to reach nearly to the bottom at G, and another tube, C D, proceeds from B B upwards through A A, without communicating with this laft fpace, 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 firlt poured in, by meafure, at E , flows down the tube into $\mathrm{B} B$, and fills that fpace. A like meafure of oil is next poured, which alfo defcends into B B, and forces the denfe faline liquor upwards through G F into the fpace A A. The fecific gravity of this laft is adjuted by dilution; fo that when the fpace A A is properly filled, the oil fhali ftand in equilibrio at the requifite height near $E$, viz the furfaces in $A$ and at $E$ are elevated above the lower orifice at $G$, in the inverfe proportion of the fpecific gravitics.
This proportion is ufually about three to four ; fo that if any of the oil be taken away from E by combultion, or otherwife, there will be a fublidence of the heavy fluid in A A to preferve the equilibrium; and during the whole fublidence in A A, there will be a correfpondent depreffion of the upper furface of oil, near E, which will be meafured by four-third parts of the firt clevation of the denfe fluid above the partition FD. Now, the fall in A A may be rendered very fmall, by enlarging the diameter of the veffel at that part, and at $B B$; and the elevation of $E$ above A, and, confequently, the infulation of the radiant flame, may be governed at pleafure by prolonging the interval DC .

It is poffible, in the maniptiation of this lamp, that fome oil, or pieces of fnuff, may fall into the fpace A A, and float upon the liquid. This effect is, to a certain extent, beneficial, becaufe the covering of oil prevents evaporation; but if this fhould require to be remedied, it is eafily done, by pouring the whole contents of the lamp into a bafin, and after a few moments repofe, or ftraining, 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. 1. It is capable of any form or ap: paratus for the burners. 2. It prefents no obftacle to intercept the emitted light. And; 3. As it raifes the oil by the mere gravitation of a non-elaftic fluid, it cannot, in any cafe, like the fountain lamp, raife more than is wanted.

A great variety of other lamps are at prefent expofed for fale, having different means of fupplying the oil, but none fo fufficiently ftriking as to merit minute defaription.

The grand and moft effential properties of the lamp are confined to the means of fupplying the flame with oxygen, fo as to produce the moft perfect combultion, and for which we are almoft entirely indebted to Argand. We fhall therefore conclude this article with fume remarks upon the merits of this valuable invention, and fhew in what inftances it has been improved in its molt effential points.

In the original lamp of Argand, a perpendicular column of air was perpetually afcending through the glafs chimney of the lamp; one part of it pafling through the central tube $c$, figs. I and 2 ; and the reft through the holes $q$ and $n$, round the circular plate \& \& . This part was formerly a cylinder extending 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 purpofe, became a defideratum, on account of the high price of the fermaceti oil. This great object was not accomplifhed by purifying the oil, but an improvement was made in the lamp itfelf, which effectually anfwered the defired purpore. For this difcovery we are indebted to an ingenious and fcientific manufacturer of Derby. It is curious to obferve, however, that no advantage was taken of this invention for twenty years, during which time it had been ufed in the cotton mills of this difcoverer, and now the fame end is accomplifhed by a fimpler contrivance. The above improvement conlifted 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 fhort of the apex of the flame. By this means the afcending column of air was turned out of its perpendicular courfe, 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 fhape of the lamp glafs 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 glafs chimney, and to the rarefaction of air in the fame, ftrikes upon the fhoulders N and O , by which it is propelled into the upper part of the flame. This happy form in the glafs appears to have been the refult of accident. Had the manufacturer been aware of its importance, it would have either been the fubject of a patent, or at lealt ftrongly recommended to the public in the way of puffing. We fee at the prefent time different fhaped glaffes, fome of which are rather worfe than the original plar., inflead 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 iome ufeful hints, relative to the conftruction of lamps, by perufing the fame.

The hydro-pneumatic lamp is conftructed upon fimilar principles to the celebrated water engine erected by father Hell, at Chremnitz, in Hungary ; the defcent of one-balf of the fluid to a certain depth below the fource, raifes the other half an equal height above the fource. This principle has been, with great fuccefs, applied to the lamp, we believe at firft by the French, but has lately been brought to perfection by Mr. R. W. King, of Holborn, who manufactures thefe articles. Figs. 1, 2, and 3, of Plate II. explain the conftruction of this ingenious contrivance. Figs. I and 3 are fections to which our defcription 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 contain the oil which is for the immediate fupply of the
flame: the next, $C$, is for the portion of oil which defcends into the inferior chamber E, through the pipe $a$, and forecs the contained air tp through the pipe $b$, into the upper chamber 1 , and prefling upon the furface of the oil contained therein, caufes it to afcend the pipe $d$, to the lamp $F$, which is on Argand's principle, and of the fame conflruction as before explained : $e$ is a pipe to conduct the external air down into the chamber $\mathbf{C}$; and $f$ is a pipe to convey the walte oil, which may drip down from the lamp, into the middie chamber D , which is merely a refervoir for fuch wate oil. G is a tube paffirg down to the fecond chamber C , to fill it with oil ; it is clofed at pleafure by an air-tight plug $h$, fitting into the end of it ; the lower orifice of the pipe $a$ is clofed by a piece of hat $i$, acting as a valve, which is fhut by a fpiral ipring beneath it, but opened by a wire paffing down the tube $a$, and alfo through the filling tube G, the plug of which, when in its place, preffes down the wire, and opens the valve: fuppofe the plug removed, the fpring will cofe 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 alfo flows into, and fills, the upper chamber B. The plug $b$ is now inferted into its place; this thuts off the communication of the open air, both with the chambers B and C, but depreffing the wire, as before explained, opens the valve $i$, and the oil in the middle chamber C defcends, by its gravity; through $a$, as Shewn by the arrow, and enters the lower chamber $\mathbf{E}$, 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 preffing on the furface of the oil, forces it up the pipe $d$, to the lamp in which it flands at the level of the dotted line $k$, at which level it will evidently cortinue, till the upper chamber is exhaufted, and the contents of C defcended into E . The lamp is now replenifhed by the following means; the whole apparatus is inverted, as fhewn in ffg. 3 ; the oil now runs down the pipe $b$, and filling its hood, flows over into the upper chamber B, which it fills, the atmofpheric 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 efcaping at the pipe $d$. The lamp is held inverted for about a minute, and is then fet upright. Frefh oil is now poured in at the plug $h$, 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 hydroftatics, the lamp $F$ is conftantly fupplied with oil at precifely the fame level, which does not vary by any diminution of the quantity of oil, or by the expanfion of the air by heat, as in the fountain lamp, the included air being only applied as the medium to tranfmit the preflure of one column of oil, from $C$ to $E$ to act upon, and raife a fimilar column from B to the dotted line $k_{\text {. }}$. The lamp is furnifhed with a glafs chim. ney H , fimilar to that before defcribed, and for fome purpofes this is furrounded by a glafs globe K , ground withinfide to take off the glare of the light. The cylindric veffel A $A$ is included in an elegant columnar pedeftal, fown in for. 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 glafs chimney is removed. The principal objection to this lamp, as originally confructed, was, that after inverting it, the oil would, in certain pofitions of the lamp, return down the pipe, and fill the lower chamber again, in which ftate it would not burn. Mr. King has completely remedied this, by bringing all the tubes, except the air and filling tubes as near as poffible into the centre of the lamp. Lamps of this

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kiad have been made fo contain a fufficiency of oil to laft two months, the veftel having the appearance of an ciegant pedeltal to ornament a hall or flaircafe.

A patent lamp, invented by John Barton, efqo is delineated in fig. 5 . of our plate; it is contrived fo as to always have a fupply of oil maintanced at a level, very near the point of combultion, by floating the oil upon a fluid of greater foecific gravity. The oil is contained in a cylindrical veffel A, fog. 5 , having a pipe, $B$, extending upwards from it to the hirners at $a, a, a$, where the wicks are placed. The bottom of the veftel takes off with a ferew joint. fimilar to a fnuff-box, that the infide of the veffol may be cleared; and in the centre of the botom is an aperture of about half an inch in diancter always open. This oil-vefiel is immerfed in a heavier Huid, contained within the external veffel DEFG. A float is attached to the oll-veffel at H , and another, in addition to it. is fixed to the twhe B at I. In this fituation of things, the column of heave fluid, (which may be falt water,) from its furface at $c$ to $d$, where the oil prefles upon it, 'through the hole in the bottom of the oil-vefiel,) will fupport a column of cil, of a greater height, in proportion to the diference of their fpecilic gravties, from $d$ up to $e$ for inftance, within an irch of the burners $a, a$, which is a fufficiently fmall diftance for the capillary attraction to draw up a fupply of oil to the wick. As the oil dimininhes by burnins, the water cnters the hole in the bottom of the cill-vefich, and ftill continues to fupport the column of cil, as at firlt, the oil-wefel foating 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, becaufe the burners defcend as the oil is comfumed; and therefore, though the oil is not mantained at the fame identical level, yet, with refpect to the burners, it is always at the fame diltance belory their wicks. The external reffel unfcrews at $\mathbf{F}$, to get in the oil-vefel A. The enlarged part or vafe D, at the top, should contain very nearly, buc not quite, as much as the oilveffiel. In preparing the lamp, the external veffel is firt filted with the water (poured in at the top of the vafe D) as high as E : the oilveffel is now full of water, and retts upon the bottom, becaufe the upper foat I is not fupported. The oil, being poured in at the top of the tube B, expels the water from the velfel, and fills it at the fame time, raifing theswater in the vafe D , and floating the oilveffel. In this ftate the lamp will continue, with the oil flanding at $\ell$, 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, laving fomething ingenious in the manner of fupplying it with oil. We have given three figures of it at ffss. $6,7,8$, of the laft plate; it confilts of a tin box, $a b c d$, with a burner conifting of wo wicks of cotton at $a$. The box is fufpended upon pirots at $e$, entering eyes in the wire $f_{s}$ which is fimilar to the fufpenfion part of a fcale-beam. When this lamp is full of oil, which is poured in at $d$, it affumes the horizontal pofition fig. 6 , becaufe the mafs 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 diminifhes by burning, the weight belind the cencre is leffered, whilit that of the wick continues without alteration. This occafions the lamp to librate, as in figs. 7 and 8 , fo that the oil is always kept very sear the wick, by which means it will burn oil which 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 correfponding with the weight of the tubes at $d$. This the makers bave by experience determined to the greatelt accuracy.

The Automaton lamp is in very general ufe in the north of Eugland in cotton-mills, and other manufactorics where the gas-lights are not introduced, which is undoubtedly the beft method.

Lasp, Cardan's, is a contrivance of an author of that name, which furnifhes itfelf with its own oil.

It confilts of a little column of brals, tin, or the like, well clofed every where, excepting a fmall aperture at bottom, in the middle of a little gullet or canal, where the wick is placed.

Here the oil cannot get out, Bus in proportion as it waftes, and fo opens the paflage of that little aperture.

This kind of lanp was nutuch in wife fome years ago ; but it has feveral inconveniences: fuch as that the air gets into it by farts 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 extinguifh the lame.

Dr. Hook, and Mr. Bogle, have invented other lamps that have all the converiences of Cardan's without the inconvenimences.

The flame in a lamp never confurnes the wick, till the wick be expofed 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 laft a long time. Many waye have been devifed to arrive at this, but it feems only pofible 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 botton almoft 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. Thens let the oil be poured in, fo as to fill the veffel alnoft brimful, which mutt have a cover, pierced with as many holes as there are wicks defigned. When the veffol is thus filled, and the wicks are lighted, if water falls in by drops at the pipes, it will aluays leep the oil at the fame height, or very near; the weight of the water being to that of the oil as 20 , to 19, which in two or three inches makes no great difference. If the water runs fafter than the oil waites, it will only rum over at the top of the pipe, and what does not run over will come under the cil, and keep it at the fame height. Phi'. Tranf. No. 245, p. $3^{98}$.

The accefs of air is of the greatelt inportance in every procefs of combuftion. 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 combultion is lefs perfect, and the flame is brown : a fill larger wick not only exlibits a brown flame, but the lower internal part appears dark, and is occupied by a pertion of volatilized matter, which does not become ignited until it has afcended towards the point. When the wick is either very large or very long, part of this matter efcapes combultion, and fhews itfelf in the form of coal or fmoke. The different intenfity of the ignition of flame, according to a greater or lefs fupply of air, is remarkably feen by placing a lamp with a: fmall wick beneath a flade of glafs, not perfectly clofed: below, and more or lefs covered above. While the currentof air through the glafs fhade is perfectly free, the flame is white; but in proportion as the aperture above is diminifhed, the flames become brown, long, wavering, and fmoky; it inflantly recovers its original whitenefs when the opening is again enlarged. The inconvenience of a thick wick has been long fince obferved, and attempts have beens made to remove it; in fome inflances by fubltituting a number of fmall wicks intead of a larger; and in others, by

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making the wick flat inflead of cylindrical, The moft fcientific improvement of this kind is the lamp of Argand, defcribed in the preceding part of this article. In this the wick forms a hoilow cylinder or tube, which flides over annother tube of metal, fo as to afford an adjuftement with regard to its length: when this wick is lighted, the flame ittelf has the figure of a thin tube, to the inner as well as the outcr furface of which the air has accefs from below. And a cylindrical thade of glafs feries to keep the flame Ateady, and in a certain degree to aecrlerate the current of air. 'I'he inconvenience of a long wick, which fupplice more oil than the volume of farme is capable of burning, and which confequently emits froke, is feen at once by railing the wick ; and on the other hand, the effect of a Thort wick, which affords a diminutive flame merely for want of a fufficient fupply of conbullib?e matter, is obfervable by the contrary procefs. The molt obvious inconvenience of lamp; in general, arifes from the fluidity of the combultible material, which requires a veffel adapted to contain it, and even in the beit conltruited lamps is more or lefs liable to be fpilled. When the wick of a lamp is once adjuited as to its length, the flame continnes nearly in the fame thate for a very confiderable time. Nicholfon's Journal, vol. i. $4^{\text {to }}$.

By 17 Geo. II. cap. 29. a convenient number of ghafs lamps fall be put in fuch places of the city of London, as the mayor, aldermen, and commonalty fhall think fit; to be kept lighted and burning from fun fet to fun-riling throughout the year ; and rates flall be made not exceed. ing $6 d$. in the pound, nor above 50 . a year on any one perfon, for defraying the charges of them. Every alderman, with confent of his deputy and common council, may contrast yearly for the fetting up lamps, and their lighting, triaming, \&c. and perfons malicioufly breaking down or extinguifhing the lamp, fhall forfeit fos. for the firlt offence; 5 os. for the fecond ; and $3 I^{\prime}$ for the third, lewable by juffices, or to be fent to the looufe of corrccion. By itat. ${ }_{11} 1$ Geo. III. c. 29. for paring and lighting London, the wilfully breaking or extinguifhing of any lamp incurs the penalty of 20s. for each lamp or light deflroyed or extinguifhed. None but Britilh oil is to be ufed for lamps in private houfes, under penalty of tos. 8 Ann. cap. 9 .
The ufe of lighted lamps in churches, and places of dcvotion, is very ancient. In the city of Fez is a mofque, wherein are 900 brazen lamps burning every night. In Turkey, all the illuminations are made only with lamps. Polydore Virgil aferibes the firt invention of lamps to the Egyptians; and Herodotus defcribes a feaft of lamps held annually- in Egypt.

Kircher fhews the mainer of preparing lamps, which ftall diffufe a light fo difpofed, as to make the faces of thofe prefent appear black, blue, red, ow of any other colour.
There has beeas a great difpute among the learned about the fepulchral lamps of the ancients: fome maintain, they had the fecret of making lamps that were inextinguiflable, alleging feveral that have been found burning, at the opening of tombs fifteen or fixteen hundred years old. But others treat thefe relations as fables; and others think, that the lamps, which were before extinguifhed, took light afrefh upon the admiffion of freth air.

Dr. Plott, however, is of opinion, fach perpetual lamps are things practicable, and has himfelf made fome propofals of this kind. The linum afbeftinum, he thinks, may do pretty well for the wick, and that the naphtha, or liquid bitumen, conftantly fpringing into fome of the coal-mines, would anfiver for the oil.

If the abellos will not make a perpetual wick, he thinks
there is no matter in the world that will; ancid argues, that the tradition of fuch lanps mult be fabulous, or clfe that they made thens without wicks.
Such a lamp he thinks it poffible to make of the bitumen fpringing into the coal-mines at Pitchford, in Shropfliare ; which, he fays, like other liquid bitumen, will burn without a wick.

Thofe lamps that kindle on the immiffion of frefla air, the fame author thinks, might be imitated by inclofing fome of tho licuid phofyhorus in the recipient of an air-pump; which, under thofe circumitances, will not fhine at all ; but on letting the air into the recipient, there will poffibly, fays he, appaar as grod a perpertual lamp as fome that have been found in the fopulchres of the ancients.

Lasri, Rolling, in AIcchanics, is a $\operatorname{lamp} \wedge 1$ (Plate I. Lamps. fir. 7.) that has within it the two moreable cireles D E and $\mathrm{I}^{\mathrm{E}} \mathrm{Q}$, whofe common centre of motion is at K , where their axes of motion crofs one another, in which point alfo is their common centre of gravity. If to the inward circle you join withinfide the lamp K C, made pretty heavy, and moveable atout its axis HI , whofe centre of gravity is at C , the common centre of gravity of the whsle machine will fall betwen K and C , and by reafom of the pivots $\mathrm{A}, \mathrm{B}, \mathrm{D}, \mathrm{E}, \mathrm{H}, \mathrm{I}$, 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 uppermott, and the oil cannot be fpilt. In this manner the compafs is hung at fea; and thus fhould 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.

Lasprblack. Of this kind there are two forts; one of which is the light foot, obtained from burning pine and other refinous wood $j$, and another, which is the heavy black, obtained by calcining bones in clofe veffels. See Black. See alfo Bone and Charcoal.

Lavp-blowers are perfons who form various articles of glafs for toys, and for more important philofophical
 fee.

The apparatus of thefe artifts confits of a folid table, to the bottom of which is fixed a doubie bellows with a foot-board, from which proceeds a pipe that conducts the blaft to the lamp. This lamp is a large bundle of cotton threads, placed in a tin veffel in the mape of a horfe-fhoe, and fupplied by lumps of tallow depofited by it, and pufhed into the flame as the continued combultion requires. The fmoke is convered away by a fimall chimney fufpended over the lamp. The bla!t-pipe in front of the table, at which the artiit is feated, drives the jet of flame away from him, fo that be fufers no inconvenience from it.

The other articles of his apparatus are glafs tubes of various dimenfions, and two or three very fimple iron tools, fuch as a fmall forceps, files, \&c. The ilame in fuli vigour is about four inches in length, which near its extremity is of a clear light blue, when it is the hotteft, and beyond of a pale yellow. The tubes, befure the operation commences, are well dried, fo as to be quite free from moifure. They are then gradually heated by being firlt held in the flame of the lamp without blowing, and then at-the calge of the cuter yellow part of the jet of Hame, and flowly brought to a llate of fufion. The flame is fufficiently ftrong to bring to a very white-red heat a folid mafs of glafs, about the fize 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 lanp-blowing. The bulbs for thermometers and other phi-
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lofophical purpores are much lefs. (Aikin's Dict. vol. i. art. Glafs.) For an account of the operation of hermetical fealing, performed by the lamp-blowers, fee Hermetical Scaling. For bending and joining glafs-tubes, forming bulbs to tubes, and finning out glafs-threads, fee T'ube, Tuermometer, and Thieads.

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 occafion for an ahh-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, fur circulation of air, to keep up the flame of the lamp, and to give vent to the fmoke. For the delcription of an improved furnace of this kind, fee Lewis's Com. Phil. Techno p. 29. See Furnace.

LAMPA, in Geograpby, a town of Chili, fituated on a lake; 20 miles N. of Valparaifo.-Alfo, a town of Peru, and capital of a jurifdiction of the fame name, in the bi-
 fertile and partly unproductive: the vicinity abounds with filver mines. S. lat. $14^{\circ} 55^{\prime}$. W. long. $81^{\circ} 44^{\prime}$.

LAMPACAN, a fmall ifland in the Eaft Indian fea, a little S. of Junk Feilon.

LAMPADARIUS, Emanuel, in Biograply, an author who has written on the mufic of the Greek church. "De Pfallendi arte, et ipfius et aliorum Poemata Eccléfiattica, ad notas Muficas accommodata." The Abbate Martini of Venice, to whom we have affigned 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:
 Abbate Martini, which is in our poffeffion, is too long for infertion here, nor would it be of much ufe could we allow it room, as no equivalents to the Greek characters are given in modern notation; but with refpect 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 $15^{\text {th }}$ century, No. $353^{\circ}$ b. i. 24 . in which Lampadarius is often mentioned as author of the mufic to the hymns and prayers it contains. Fabricius, likewife, Bibl. Grac. vol. ii. P. 269. 564. and 586, fpeaks 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 ufed by the modern Greeks, and mufical compofitions by feveral authors, particularly Lampadarius.

LAMPADARY, Lampadabius, an officer in the aneient church of Conflantinople, whofe bufinefs. was to fee the church well lighted, and to bear a taper before the emperor, the emprefs, and the patriarch, when they went to church, or in proceffion. The taper borne by the lampadary before the emperor was encompaffed with divers circles of gold, in manner of crowns; thofe held before the emprefs and patriarch had but one. It feems they were of emblematical ufe, and were intended to keep thofe great perfons in mind, that their light was to illumine thofe in inferior ftations,

There were alfo lampadaries in the emperor's palaces; and others in the houfes of the grandees. At firlt, the privilege of having a lampadary, or torch-bearer, was only granted to the principal officers of the crown, and the chief magithrates ; but afterwards the emperor allowed it to other inferior officers, as queftors, treafurers, \&c. They alfo bore before the magittrates the emperor's image, \&c. And it was probably on account of this image, that they were firft permitted to have a lampadary,

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LAMPADIAS is ufed by fome authors for a kind of bearded comet, which, as they pretend, refembles a burning lamp, being of feveral fhapes; its flame or blaze tapering upward fometimes like unto a fiword, and being at other times double or triple pointed.

LAMPADIUS, in Biography, a chantor of the church at Luneberg, publifhed a fmall work in Latin, intitled "Compendium Muficx," 12 mo . 1537. This fhort traEt, which is in dalogue, and a kind of mufical catechifm defigned for incipients, has, at the end, a few fhort rules for compofition, with examples.

LAMPAS, or Lampers, a kind of fwelling in the palate of a horfe; fo called, becaufe it is cured by burning with a lamp, or a hot iron; and arifing from abundance of blood reforting to the firit furrow of the mouth, near the fore-teeth, which caufes that furrow to fwell 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 Geograpby, a town of Pruffia, in Natangen; 20 miles S.S.E. of Konigfberg.

LAMPE, Fnedericus Adolphus, in Biography, paftor of St. Stephen's church in Bremen, became an antiquary at 15 years of age; and in 1703 publifhed, in 12 mo ., a work of great learning and refearch, intitled "De Cymbalis veterum, Libri tres, in quibus quecunque ad eorum Nomina, Differentiam, Originem, Hiftoriam, Miniftros, Ritus pertinent, elucidantur, cum Figuris æreis Trajecti ad Rhenum," 1703.

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 fubject of the cymbal, which is hardly a mufical inftrument, but rather a cbronometer to meafure and mark the time, in its military ufe. In its religious employment, indeed, hefore large bells were caft, it ferved both Pagans and Chrittians as a fignal and call to terhple worfhip. Its clafhing tone in the field may regulate the fteps of the foldiery in their march; but even this purpofe feems better performed in China by the gong and pierre fonore, or mufical fone, ufed in proceffions, as well as in the army : for thefe have real mufical tones, to which there is no difficulty in tuning other inftruments. Our author, by his clafical knowledge and diligence, has nearly found as many names in ancient authors for the different kinds of cymbals, as the Perfian language furnithes for a horfe or lion. As nothing on the fubject has efcaped the notice of the author, this little book will be found to contain much precious information for a claffical antiquary in mufic. 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 firlt to be noticed as a compofer about the year 1732. On the 25th of February of that year, the following paragraph was inferted in the "Daily Poft:" "We hear that there is a fubfcription for a new Englifh opera, called "Amelia," which will fhortly be performed at the new theatre in the Haymarket, by a fet of performers who never yet appeared in public."' This opera, written by Harry Carey, and fet to mufic by Lampe, was firft performed March 15th, 1732; in the principal character of which, Mifs Arne, afterwards fo celebrated as a tragic actrefs, by the name of Mrs. Cibber, firft appeared on the ftage as a linger. The mufic, which, according to the advertifement, was fet in the Italian manner, having been much applauded, was foon avowed by Lampe; and Mifs Arne's performance interefted every hearer. The

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year 1737 was rendered menorable at Covent-Garden theatre by the fuccefs of the burlefque opera of the "Dragon of Wantley," written by Carey, and fet by Lampe, "after the Italian mauner." This excellent piece of humour had run twenty-two nights, when it was Itopped, with all other public amufements, by the death of her majeity queen Caroline, November 2oth; 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 montter, recitative, fplendid habits, and ftyle of mufic, all confpired to remind the audience of what they had feen and heard at the lyric theatre, more effectually than the molt vulgar ftreet tunes could do; and much more innocently than the tricks and tranfactions of the moft abandoned thieves and proftitutes. Lampe's mufic to this farcical drama was not only excellent fifty years ago, but is ftll modern and in good talte.

In 1745, his wife, (the fecond daughter of Charles Young, filter to Mrs. Arne, ) with Mifs Young, Sullivan, the two Meflings, and Jemmy Worddale, went to Prefton Gild, and afterwards to Chelter, where they performed the "Dragon of Wantley," " Margery," the "Sequel to the Dragon of Wantley," \&c. all compofed by Lampe. He fet "Nancy, or the parting Lover," "Pyramus and Thife," which had great fuccefs; and publifhed, in an octavo volume, a tract, intitled "The Art of Mufic," in 1740. But in 1737 he had publifhed a treatife, under the title of "A plain and compendious Method of teaching Thorough-Bafe," \&c. 4 to. ; a work of great merit, and the firlt in our language, by which a ftudent can profit much without a mafter, as the chords, engraved on copper-plates, are all placed over the figured bafe, and the examples tranfpofed into different keys.

Lampe was a truly ingenious man, well verfed in the theory of the art, with a molt happy turn for humour, without buffoonery, in his comic operas; and, moreover, a man of probity, with great fimplicity of manners, and poffeffed 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 mufic in that city, and of himfelf; but in July ${ }^{1751}$, he was feized with a fever, which put an end to his exiltence at the age of $\operatorname{fifty}$-nine.

Lampe, in Geography, a town of Sweden, in the government of Wafa; 28 miles E. of Gamla Karleby.

LAMPEDOSA, an uninhabited but pleafant and fertile inland in the Mediterranean. The Catholics and Mahometans vifit a building upon it, which is divided into a church and a mofque. Near it is a magazine, containing the depofits of the vifitants, which are taken up by fome Sicilian monks, and applied to the hofpital at Trapani. The ifland is abour 12 miles in circumference, has a good port, is well fupplied with frefh water, and has, on the coalt, an excellent fifhery; 63 miles W. of Malta. N. lat. $35^{\circ} 40^{\circ}$. E. long. $12^{\circ} 24^{\prime}$.

LAMPERN, in Icbthyology, a river fifh, being the petromyzon branchialis of Linnzus, found in many parts of England, particularly in Oxfordhire, and the neighbouring counties, and there called the pride of the I/sis. The Latin authors call it the lampetra minima and muftela fluviatilis. See Petromizon Branchialis.

The word lampern is ufed by the common people in Eng-
land for one fpecies of the lampctra, and is not to be confounded with the other called the lamprey, or the lampreyeel. Sec Petromyzon.

No lamperns are to be taken in the river Thames and Medway, except from Auguft 24 to March 30. 30 Geo. II. cap. 21 .

LAMPETEER, in Geography, a townhip of America, in Lancafter county, Penufylvania, containing 2028 in. habitants.

Lampeter. See Llanbeder.
LAMPETIA, in Ancient Geography, a town of Italy, in Magna Gracia, in the country of the Brutii.

Lampetians, Lampetiani, in Ecclefiafical Hiftory, a fect of ancient herecics, in the feventh century, who fell in with fome 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 inconfiftent with the liberty of the fons of God.

LAMPETRA, Lamprey, ì lambendo petras, becaufe this fpecies is fuppofed to lick the rocks, in Ichthyology, belongs, in the Artedian and Linnæan fy flems, to the genus of petromyzon. See Petromyzon Marinus.

This is a fifh that equally lives in falt and fref water. In the month of March it commonly runs up into the rivers, and is then moit valuable for the table, as being fat and full of eggs ; fo that the beft feafon for lampreys is in the months of March, A rill, and May, becaule they are moft firm when they firft leave the falt water, and become wafted and flabby at the approach of hot weather ; they are found in fereral of our rivers, but the Severn is the moft 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 cuftom for the city of Gloucefter, annually; to prefent his majefty with a lamprey pye, covered with a large raifed cruft ; and as the gift is made at Chriftmas, the corporation procure fref lampreys at that time with great difficulty. They are reckoned a great delicacy, either potted or ftewed; but are a furfeiting food, as one of our monarchs fatally experienced, Henry the Firtt's death being occafioned by a too full meal of this fifh. They are fometimes 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. Thefe are found in the Thames, Severn, and Dee, and are potted with the large fpecies, and are reckoned of a milder tafte. They are fold to the Dutch as bait for their cod-fifhery. Above 450,000 have been fold in a feafon at 40 s. per thoufand. Of late, above 100,000 have been fent to Harwich for the fame purpofe. It is faid the Dutch have the fecret of preferving them till the turbot fifhery. A nother fpecies is the lampern, which fee.
Lampetra Indicu, the name of an Eaft Indian fifh of the lamprey kind, caught in ftanding waters, and called by the Dutch there bont ael, and ncegen oog, or mine ejes.

LAMPI, in Gcography, a diftrict or country of Guinea, governed by a king, fubject to Aquambo.

LAMPICHELEON, a town of Hindooftan, in the circar of Adoni ; 10 miles $E$. of Candanore.

LAMPIS, a town of Sweden, in T'avafland; 25 miles E. of Tavalthus.

LAMPO, a town on the weft coaft of Celebes. S. lat. $3^{\circ} 55^{\circ}$. E. long. $120^{\circ} 4^{\prime}$.

LAMPOCARYA, in Botany, fo denomisated by Mr. Robert Brown, from $\lambda a \mu \pi w$, to Joine, and raguv, a nut, or any fruit zuith a bard faell, alluding to the hard and polifhed feeds.-Brown. Prodr. Nov. Holl. v. 1.238 .-Clafs and order,
arder, Teiram,rian Monozynia. Nat. Ord. Calumaria, Lim? Cyproidee, Julî.

Efi. Ch. Spikelets imbricated on all fides, fingle-fowered, the outer fcales being empty. Stamens four, fometimas three or fix, with permanent elongated filaments. Style awl-haped, thrececleft. Stigmas undivided. Nut bony, fhining, pointed with the permanent bafe of the ftylc, its thell thickened upwards; the kernel fincoth.

Obf. This genus is intermediate between Cladium of Brorne's Jamaica, and Gaknia of Forther, differing from the former in having the filaments elongated after flowering, and a farp-pointed nut; from the latter in having a fmooth or even kernel. Gabmia folbanoides of Forlter appears, by a foecimen in the Banklian herbarium, to be a Lampocarya.

1. L, afpera. Stamens four. Spike compound, leafy; the partial unes fearecly divided. Spikelets cluftered. Inner icales obtufe, fmooth. - Gathered by Mr. Brawn near Port Jackfon, as well as in the tropical part of New Holland. The four ftamens are a very unufual number in this family.
2. L. bexandra. (Gahnia trifida; La Billard. Nov. Holt. v. 1. 8g. t. 116.)-Stamens fix. Panicle clofe: branconcs fightly divided. Spikelets collected into round heads. Scales atl tharp-pointed. Gathered by La Billardiere in Van Diemen's land. 'The ferms are two feet high, round, leafy, finooth. Lecves fheathing, awl-fhajed, long, and flender. Panicle flender, erect, con'pofed of feveral falked heads of flowers, with two or three lanceolate bracteas at the bafe of each. Mr. Brown doubts whether this fecond fpecies be properly referred to the genus in queftion. Wie fhould be much inclived to reduce both of them to Galnia.

LAMPOL, in Geography, a town of Poland, in the palatinate of Braclaw, near the Dnielter; 56 milcs S.S.W. of Braclar.

LAMPON, in Bigraphy, a performer on the cithara, who taught Socrates mulic in his old age, and who fung at a fertival which Xenophon gave to the philofophers. Socrates tells us, that he only began to compofe verfes, after the was imprifoned, on account of the many dreams, in which he was advifed to attach himfelf to mufic ; believing that it was impoffible to arrive at one without the other.

He compofed hymus in praife of Apollo, and fet them to muffic; but he was put to death fonse days after. Others E=il us, that Damon was the mufic-malter of Socrates. See Damos.

Lampos, or Lampoon, in Gengrafty, a country of Sumatra, which is a portion of the fouthern extremity of the inand, beginning, on the weft coatt, at the river of Padanggoúchie, dividing it from Paffummah, and extending acrofs as far as Palembung, on the nurth-eaff fide, at which latt place the fettlers are mottly Javans. On the fouth and eatt lides it is wafhed by the fea, having feveral ports in the Itraits of Sunda, particularly Keyfen and Lampoon bays; and the great riser Toolang-bouang runs through the heart of it, rifing from a confiderable lake between the ranges of mountains. That divifion of Lampoon, which is included by Padang-gocchie and a place called Naffall, is dittinguifhed by the name of Briuran; and from thence fouthward to Flat-point, by that of Laont-cazvour, although Cazoour, properly fo called, lies in the northern divition. 'The country of Lampoon is belt inhabited in the central and mountainous parts, where the people live independent, and in fome meafure fecure from the inroads of their eattern meighbours, the Javans, who, from about Palembung and the traits, frequently attempt to moleft them. If you afk the Lampoun people of thete parts, whence they originally
came? they anfwer, from the hills, and point out an inland place near the great lake, whence, they fay, their forefathers emigrated. Thefe, of all the Sumatrans, have the Atrongelt refemblance to the Chinefe, particularly in the roundnefs of face, and conftruction of the eyes. They are alfo the faireft people of the ifland; and the women are the talteft, and efteemed the moolt handfome. Their languare differs confiderably from that of the Rejangs, and they ufe characters peculiar to themfelves. The titles of povernment are Pangeran (from the Javans), Carceoo, and Kildimang or Nubcelie? the latter anfivering nearly to Dupaty among the Rejangs. The diltrict of Ciooe, near mount Poogeng, is governed by five magiftrates, called Panyosu-lecmo, and a fixth, fuperior, called by way of eminence Pangrov; but their authority is faid to be ufurped, and often difputed. The word, in common, fignifies a gladiator, or prize. fighter. The Pacraran of Socko in the hills is computed to have four or five thoufand dependants ; and fometimes, on going 2 journey, he levies a fallie, or eighth part of a dollar, on each family; which flews that his government is more arbitrary, and more ltrictly feudal, than among the Rejangs, where the government is rather patriarchal. The Javancefe banditti often advance into the country, and make depredations upon the inhabitants, who are not, in general, a match for them. They do not ufe fire-arms, though in the northera part of the illand they are manufactured. Befide the common weapon of the country, they fight with a long lance, carried by three mien; the foremof guiding the point, and covering himfelf and his companions with a large thield. Inland of Samankz, in the ftraits of Sunda, there is a diftrict, as the Lampoons fay, inhabited by a ferccious people, who are a terror to the neighbouring country. Their mode of atoning for offences againft their cwn community is by bringing to their doofoen the heads of ftrangers. Thefe reports, however, depend on the credibility of a people who are fond of the marvellous, and addicted to exaggeration. The marners of the Lampoons are more free, or rather licentious, than thofe of any other native Sumatrans. An extraordinary liberty of intercourfe is allowed between the young people of different fexes, and the lofs of female chartity is not a very uncommon confequence. Both men and women anoint themfelses before company, when they frepare to dance; the women their necks and arms, and the men their brealts. They allo paint each others' faces, making fantaltic fpots with the finger 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 maller of the ceremonies, regulating every circumftance that pertains to the dances and the affembly. The Lampoons eat almolt all kinds of ficth indifcriminately; and their goolies (curries or made difhes) are faid by comoiffeurs to have no flavour They entertain ftrangers with sereater profufion than any that is met with in the relt of the inland. One man lias been known to entertain a perfon of rank and his fuite for fixteen days, during which time there were not lefs than 100 difhes of rice fpread each d:y. Their difles of chiva or earthen ware are very coltly, being valued at to dollars a-piece. The terms of the jogjoor, or equivalent for wives, is here the fame nearly as with the Rejangs The father of the girl never admits of the postoos tallic kooloo, or whole fum being paid; and thus withholds from the huband, in every cafe, the right of felling his wife, who, in the event of a divorce, returns to her relations. . Where the pootoos talice is allowed, he has a property in her littie differing from that of a dave. The value of the maiden's golden trinkets is nicely eltimated, and her jonjoor regulated accorcing to that, and the rank of
her parents. The fines and compenfation for murder are, in every refpect, the fame as in other countries of the ifland. The Mahometan religion has made confiderable progrefs among the Lampoons, and moft of their villages have mofques; neverthelefs, an attachment to the original fuperftition of the country induces them to regard with particular veneration the crammats, or burying-places of their fathers, which they pioully adorn, and cover in from the weather. The Dutch have a refident here. S. lat. $5^{\prime}$ qo'. E. long. $^{\prime}$ $105^{\circ} 5^{\prime}$. Marden's Sumatra.

Lampon Bay, a bay on the eaft coaft of the ifland of Luçon. N. lat. $14^{\circ} 4^{6}$. E. long. $122^{\circ}$ I4'.

LAmprey, Blind. See Einblinder and Petromyzon brancbinlis.

LAMPRIDIO, Benedrct, in Biography, a diftinguifhed Latin poet, who flourihed at the commencement of the fifteenth century, was born at Cremona. He went to Rume in his youth, and was firf domeflicated with Paul Coteff. He then became a teacher in the Greek college, inflituted by John Lafcaris, in the pontificate of Leo X. After this he went to Padua, and was eniployed many years as private teacher of the learned languages, and much efteemed 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, confilting 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 thofe of J. Bapt. Amaltheus, was printed at Venice in 1550.
L.AMPRIDIUS 閸ius, was a Roman hitorian in the fourth century under Dioclefian and Conltantine. He is fuppofed 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 hithorians of the fuperior clafs, but he is valuable for his facts. His lives make a part of the "Hiftorix Augultæ Scriptores." Moreri.

LAMPRILLON, or Lamprelon, a name by which fome authors have called the particular fpecies of lamprey, which "e, by way of diftinction, call lampern.

LAMPROPHORUS, an appellation anciently given to the neophytes, during the feven days that fucceeded their baptifm.

In the ceremony of baptifm, the hew Chriftian was clothed with a white robe, which he wore for the week following ; and was thence called lamprophorus, which fignifies a perfon wevaring a ßinining garnent; from $\lambda \alpha \mu \pi F_{0} ;$, ßining, and eppu, I bear.

The Greeks allo gave this name to the day of the refurrection, becaufe their houfes were adorned and illuminated on that day with a great number of torches, as a fymbol of the light which that myftery diffufed in the world.

LAMPSACUS, in Ancient Geography, a town of Afia, on the banks of the Hellefpont, more anciently called Pityoufa, which was founded by the Phocreans. The object of worfhip in this place was Priapus, the god of the gardens. This town rofe from the ruins of Pæfos, whofe inhabitants eltablifhed themfelves here. Its territory was fertile; and it was alfigned by Artaxerxes to Themiftocles, in order to furnith his table with wine.

LAMPSAKI, in Geography, a town of Natolia, celebrased for its wine, anciently Lampfacus; 40 milez W. of Artaki. N. lat. $40^{\circ} 20^{\prime}$ E. long. $26^{\prime} 44^{\prime}$.

LAMPSAMANDUS, in Ancient Geograpby, a fmall Vol. XX.
ifland of A fia, on the coaft of Caria, in the Ceramic gulf. Pliny.

## LAMPSANA, in Botany. See Lapsana.

LAMPUGA, in Ichllyology, a name given by fome authors to the fin more ufually known by the name of Aromatcus.

LampuGNANI, Jonn Baptist, in Biggraphy, of Milan, an opera compofer of great fancy and firit. He was not a deep contrapuntitt, but there was a certain gaiety and fpirit in his ftyle, which amufed his hearers and.engaged attention. He came into England in 1742, during the regency of lord Midulefex, and while Montrelli was the chicf inger, for whom he compofed fome very captivating airs. The Englifh, long accultomed to a more folid, grave, and learred fyyle, thought him inaccurate, wild, and frivolous, and his ftyle was only tafted by fuch of our nobility and gentry as had been in Italy, and had been initiated into the new opera thyle. The charatter of this compofer is drawn with fo much judgment, tafte, and difcrimination in M. Laborde's "Effai fur la Mufique," and fo exempt from the national prejudices with which that work abounds, that we fhall venture to tranflate it, and guefs at the name of the author.
"Lampugnani was a profeffor much efteemed among the moderns. He excelled much in his melodies, and owed more to nature than to fludy. He applied with great perfeverance to produce new effects from iniltruments. Confequently to him has been afcribed the new manner of ufing the opera orcheftra. Inftrumental mufic, and its performers, have doubtlefs greatly increafed their importance by this innovation. But, how has it been abuted! It fometimes happens, that the noife of the orcheftra 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 inftrumental phalanx, to convince us that a voice has any concern in the bufinefs. There are certain compofers, who have no refource but in noife. 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 fhorter. But in Italy, an opera mult be compofed in a fortnight, fo that the compoler loads his inftruments 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 orcheftra, and upon her all the inttruments wait, as on a fuperior. He is autthor of a great number of works, that have had complete fuccefs in Italy; but it is in vain to name them, as mulic 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 compoier, he was laid on the fhelf. He taught ladies to fing, and had gained great credit from fome of his fcholars. He refided conItantly in that city, where he played the firlt harpfichord at the opera, in the abfence of the compofer, and arranged the pafticcios. He was a pleafant old man, with the fpirits and good nature of a young one.

LAMPUGO, in Ictithyology, a name given by many to the bippurus, a fea fifh, caught on the coatt of Spain. See Coryphena.

LAMPYRIS, in Entomology, a genus of the coleoptera order. The mott familiar fpecies of this kind, and which may be confidered as an inftructive 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 deftitute of wings, the body elon-

Gg
gated,
gated, and the pofterior part beneath emitting, during the night time, a brilliant ohofphoric light. The fpecies of this genus are rather numerous; the greater part are natives of A.frica and America; a few only imhabit Europe, and of thefe but three kinds are found in Britain, two of which are rare.

The females of the fpecies moft commonly known are deftitute of wings; all the lampyrides of the latter fex fhine during the obfcurity of the evening, or at night, and fome of the males poffefs the fame ability, while others are in this refpect deficient. The males throughout all the fpecies are furnifhed with wings; the females, on the contrary, are always apterous. The luminour property in the lampyris tribe re*ides in the two or three polterior rings of the abdomen, and is only vifible on the under furface. In the day time the laminous fpace appears paler, and more inclining to yellow than the relt of the infect : the light, when emitted, partakes of various hucs, being either a clear brilliant white, or white tinged with greenifh or blueifh, and this it can vary or heighten in brilliancy at pleafure, as it does not depend on any external caufe: it is an inherent ability, governed only by the will or caprice of its poffeffor, and, according to the general perfuafion of naturalitits, is an ordinance of nature, by means of which the males, in their excurfions through the air, can readily difcover 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 fpeculative men. Forfter firft announced that this extraordinary property was fo ftrong and retentive, that he could diftinctly read by the light emitted from glow-worms plunged into oxygen gas. The fame experiment was verified by Beckerhiem, who proved befides that they live a long time in other kinds of gas, and continued to fhed their light vigoroully, 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 thofe, 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 circumitances, that this luminous property is inherent. Theféinfects were oblerved to poffefs the power of moving various portions of the vifcera, 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. Thefe experiments were made chiefly on the L. italica, the luminous properties of which are more confpicuoufly brilliant even than that of our common glow-worm.
The lampyrides are found molt commonly about the months of June and July, appearing among the bufhes, the grafs and herbage on the firts of lanes leading through meadows, and woody fituations. The males of fome kinds, as before intimated, are luminous; and thefe, when on the wing durng the night time, exhibit a moft lively and fplendid afpect, like fo many fparks of fire darting through the air. Tho females nearly refemble the larve, being of a lengthened form, divided into a number of diltinct fegments, the head fcaly, and the anterior part of the body furnifhed with fix fcaly feet. The larva feed on leaves. The eggs, which are numerons, are ufually depolited near the roots of grafs.

Among the ancients, the names lampyris, noctiluca, cicindela, \&c. were beftowed, without difcrimination, on almoft erery creature of the infect tribe, poffeffing the luminous property of the glow-worm. Geoffroy endeavoured to unite the lampyrides together, but with thefe he confounded fome other genera. Linnæus alfo blended them with the
lycus and pyrochroa; and Schæffer followed Geoffroy. Fabricius has adopted the lampyris genus, with fome material devistions from either, and his authority is, in this refpect, rather generally approved. Linnæus, fo lately as the roth edition of Syit. Nat. confounds the lampyrides under the genus cantharis; it is in a fubfequent edition they appcar 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; fcgments of the abdomen terminating in folded papilix ; females in general deftitute of wings. This is the claracter admitted by Gmclin, who, befides the true lampyrides, by this means includes the genera omalyffus of Geoifroy, coffyphus of Olivier, pyrochroa of Geoffroy and Fabricius, and the lycus of Olivier and moft other modern authors. The Fabrician character of the lampyris genus conlifts in having four fub-clavated feelers; jaw bifid ; lip horny and entire ; antennx fliform.

## Species.

Noctiluca. Oblong, brown, fhield cinereous. Linno Cantharis nociluca, Fn. Suec. Gloweworm, Donov. Br. Inf. \&c.

Frequent in meadows, and near woods in Europe: the female is rather larger than the male.

Splendidula. Oblong, brown; fhield hyaline at the tip above the eyes. Marh. Ent. Brit. Lampyris Jplendidulu, Linn. Donov. Br. Inf. Cantharis nodiluca, Scop. Le ver luifant à femelle fans ailes, Geoffr.
"An European fpecies, very rarely found in Britain ; the fpecimens recorded (in Brit. Inf.) were received by Mr. Drury from Yorkfhire, and are preferved in his cabinet now in our poffeffion. It refembles the common glow-worm in fize and appearance, but is diftinguihed from that infect principally by the hyaline fpot at the anterior apex of the thield above the eyes." This kind is obferved by Fabricius to be moft refplendent in fhowery weather.
Cornusca. Dull black; fhield with a rofy crefent each fide. Linn.

Inhabits North America. Fabricius fpeaks of a variety twice the ordinary fize.
Obscura. Black; fhield with a rufous fpot each fide. Fabr.

Defcribed from a fpecimen in the Bankfian cabinet, a native of Terra del Fuego. The fhield is entire, and depreffec at the fides; wing-cafes brown and without fpots; abdemen and legs black.
Laticornis. Ovate, black; fhield with rufous margin antennæ comprefled. Fabr., Olivier, \&c.

A fpecies of moderate fize; the flield rounded; wingcafes fomewhat friated; abdomen with two or three white pellucid dots on the left fegment.
Pyralis. Shield rufous; in the middle black; wingcafes black, the edges with the abdomen white. Linn.

Native of South A merica.
Cneta. 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 Bankfian cabinet.
Marginata. Oblong, black; margin round the thorax, wing-cafes, fcutel, and pofterior part of the abdomen yellow. Linn.

Native of America; the antenne fufcous, with the bafe yellow ; the legs variegated.

Pectinata. Black; outer bafe of the kides of the
thield, and apex of the abdomen and wheg-cafes, white; antennæ pectinated. Fabr.

An American fipecies. The anternx nearly as long as the body.
Flabellicornis. `Black; fhield before the margin, with marginal line at the bafe of the wing-cafes and tip of the abdomen, white. Olivier.

Native of the Brazils; the antennæ very large, and fanshaped; wing-cafes flightly friated.

Hespera. Ovate ; wing-cales brown, with a triangular marginal yellow fpot. Olivier.

Inhabits America.
Ignita. Ovate; wing-cafes broun, with an ovate mar. ginal yellow fpot. Linn.

Native of South America.
Lucida. Oblong; wing-cafes brown, the outer margin pale yellow; abdomen yellow. Linn.

Inhabits South America, and refembles the common glowaworm.

Nitidula. Oblong, fufcous; thorax yellowifh, with a black fpot in the middle; apex of the abdomen with two yellow fpots.

An African fecies.
Piosphorea. Oblong, fub-teftaceous; abdomen black, behind fine yellow: Degeer, \&c.

Native of America.
Japonica. Yellow; lait fegment but two of the abdo. men black. Thunb. Nov. Sp.

This fpecies inhabits Japan, and, according to Thunberg, flies about in the evening during the months of May and June, and emits a vivid phofphoric vapour from two veficles at the end of the tail. The antennx, eyes, wings, and lait fegments of the tail, except the two at the apex, black.

Atra. Deev black; margin of the thurax rufous. Fabr. Lampyris atra, Olivier.

A North American fpecies. The antennre ferrated.
Capensis. Livid; thorax yellowifh; pofterior part of the abdomen fine yellow. Olivier.

Antenna fufcous; fcutel yellowih.
Australis. Yellowifh; head and wing-cafes brown; tip of the abdomen clear white. Fabr.

Refembles the following fpecies; the thorax and fcutel ferruginous; ends of the legs black, the reft yellow. Inhabits New Holland.

Italica. Black; thorax tranfverfe, and with the legs sufous; 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-cales livid; body yellow. Lim.
Native of Africa.
Hemiptera. Black; wing-cafes very fhort. Geoffr.
A fmall fpecies found in France; the antennæ are com--preffed; fhield rounded, entire, black, and without fpots; wing-cafes ov3te, very fhort, and black ; abdomen flat, and with the legs black.

Pusilla. Deep black; tip of the antennre, with the wing-cafes, fanguineous. Marfh. Ent. Brit. Lampyris ni-gro-rubra. De Geer.

This appertains to the lycus genus of Fabricius, in which it occurs under the fpecific name minutus; it is alfo pyrochroa minuta of that author's Mantiffa. The feecies is two lines and a half in length.

LAMSPRINGE, in Geography, a town of Weftphalia, -is the bifhopric of Hildelheim, at the fource of a fmall riven
called Lame, which foon after runs into the Inner-fec ; is miles S. of Hildefheim.

LAMUS, in Ancient Geography, a fmall river of Greece. in Beotia, which had its fource on the fummit of mount Helicon. Paufanias.-Alfo, a town and river of Afia, in Cilicia. Ptolemy places the mouth of the river betwect Sebafte 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 Iau. ria, under the metropolis of Seleucia.

LAMUZO, in Geography, a town of Afiatic Turkey. in Aladulia, on a river of the fame name; 24 miles W . of Tarfus.
LAMY, Bernard, in Biograply, who flourihed in the feventeenth and eighteenth centuries, was of noble defecut, and born at Mans in the year 1640; having been carefully initiated in the elementary parts of learning, he entered amon: the religious of the congregation of the oratory at Paris; from thence he went to Saumur to ftudy philofophy. From 1661 to 1667, he was employed in giving inftructions in the claffics and the belles lettres, and in the latter of thefe yeare he was ordained prieft. He now taught philofophy at Saumur and at Angers, till the year 1676, and while inltructing others, he applied himfelf with the utmolt intenfenefs to the ftudy of every branch of literature and icience, and made 2. very confiderable proficiency. He was now directed by his fuperiors to go to Grenoble, where cardinal le Canus had eltablifhed a feminary, for the edacation of ecclefiaftics, in which Lamy was appointed profeflor of divinity: In every duty in which this excellent prieft engaged, he was indefatigable; and as an author he published a great many valuable works; of thefe the moft valuable, and which engaged his attention for thirty years, was entitled "De Tra bernaculo Foderis de Sancta Civitate Jerufalem, et de Templo ejus, Lib. Ceptem," illuftrated with many plates. This work, which was replete with valuable information and'very curious difcuffion, wa3 not publifhed till the year 1720, five years after the author's deceafe. The death of father Lamywas occafioned by the burting of a blood-veffel, though he had been in a declining ftate fome years previouly to that accident. He was much efteemed for the modefty 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 Treatife on Magnitude in general, comprehending Arithmetic, Algebra, and Analyfis;" "D Dialogues on the Sciences and the belt Manner of ftudying them ;" "Elements of Geometry;" and "A Treatife on Perfpective."
Lamy, Francis, a French Benediaine monk, born at Montyreau, in the diocefe of Chartres, in the year 1636, was intended for the military profeffion, which, at the age of twenty-three, he exchanged for the ecclefiaftical. He made a rapid progrefs in the feveral departments of literature, and his writings thew that he was deeply filled in the knowledge of the human heart. He died in the year 1711, at the age of feventy-ive. His biographers have highly praifed him for the benevolence which he manifefted on all occafions, and likewife for his candour, amiablenefs, and extraordinary piety. One of his mott popular pieces was, "A. Treatife on Self-knowledge," in fix volumes, which pafted through feveral editions. Many of his other works were bighty efteemed as good defences of natural and reyealed religion; fuch were his treatife "On the evident Truth of the Chrifo tian Religion ;" "The New Atheifm overthrown," in ano fwer to Spinoza; "The Unbeliever conducted to Keligion by Reafon." Lamy wrote on natural as well as theological
fubjects:

## LAN

fuhjects; fuch is his work entitled " Phyfical Conjectures on the Effects of Thunder, and on other Subjects in Natural Philofophy." His ityle, though not wholly free from faults, is faid to be more correct and polifhed than that of any writer in the French language of that clafs to which he belonged.

LAN, in Geography, a town of Perfia, in Oberland; $I 4$ miles N.N.E. of Joldau.-Alfo, a city of China, of the fecond rank, in the province of Petcheli, on the river Lan; 113 miles E. of Peking. N. lat. $39^{\circ} 4^{\circ}$. E. long. $118^{\circ} 24^{\circ}$-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 poris on the weftern coaft, and it is therefore claffed among the moft important cities of the empire, and has been made the capital of the weftern part of the province, and the feat of government. The trade of this city confits only in flins, which are brought from Tartary, and different kinds of woollen ftuffs. A coarfe kind of tuff is made here of cow's hair, which is ufed by the inhabitants for making great coats to defend themfelves from the frow. N. lat. $36^{\circ} 6^{\prime}$. E. long. $103^{\circ}$ 29.- Alfo, a river of China, in Pe-tcheli, which runs into the gulf of Leao-tong, N. lat. $39^{\circ} 15^{\prime}$ E. long. $118^{\circ} 36^{\prime}$.
I.ANe Petra. Sce Petra.

LANAGLA, in Geography, a town of the ifland of Fortaventura, fituated on the E. coaft.

LANARIA, in Botany, fo called from lana, wool, on account of the woollinefs of the flower.- Ait. Hort. Kew. ed. I. v. I. 462. v. 3. ${ }^{2} 10$. ed. 2. v. 2.289. Schreb. 794. Willd. Sp. Pl. v. 2. 181. (Argolalia; Juff. 60. Lamarck. Illuftr. t. 34.) -Clafs and order, Herandria Monogynia. Nat. Ord, Erjiate, Limn. Iridilus aifine, Juff.

Gen. Ch. Cal. none. Cor. fuperior, of one petal, fomewhat bell-fhaped, clothed externally with feathery wool; tube fhort; limb in fix deep, linear-lanceolate, flightly fpreading, equal fegments, coloured within. Stam. Filaments fix, thread-flaped, fhorter than the corolla, inferted into the bafe of its fegments; anthers ovate, fomewhat incumbent. Pija. Germen inferior, turbinate, externally woolly; ftyle thread-fhaped, erect, the length of the ftamens; itisma three-cleft. Peric. Capiule ovate, of three cells. Sceds two or three in each cell.

Eff. Ch. Corolla fuperior, externally woolly, longer than the filaments; its limb in fix deep fpreading fegments. Capfule of three cells.

1. L. plumnfa. Woolly Cape Hyacinth.- (Hyacinthus lanatus; Limn. Sp. Pl. 455.)-Native of the Cape of Gcod Hope, from whence it was fent to Kew in $11_{7} 8$, by the late Mr. Miaffor, and is kept there in the green-houfc, but has not yet flowered. Its habit is that of a Dilatris; fee that article. Root fibrous, peremnial. Stent erect, angular, hairy, molt leafy in the lower part, terminating in a denfe corymbofe tuft of numerous fowers. The leaves are iinear, keeled and chamelled, fmooth. The whole inflorefence is denfely clothed with white feathery hairs.

Lanaria has formerly been applied as a name to feveral plants, cither on account of their woollinefs, as the larger sinds of Verbafoum; or of their ufe in dycing, or dreffing, wool, or woollen cloths. Of the former defcription is the Dyer'sweed, Refida Luteola; of the latter the Teafel, Dipfacus fullonum. Perhaps Saponaria offrinulis, Soapwort, was called lanaria radi, from its fcouring quaiity.

LANARIUS, in Ancient Geography, a river of Sicily, placed by Antonine in his Itinerary on the route between Agrigentum and Lilybra, between Ad aquas and Mazara.

Lanarius, in Ornithology. See Falco.
LANARK, in Gegraphy, a royal borough, and the county-town of Lanarishire, in Scotiand, 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 provolt, two bailiffs, a dean of guild, thirteen merchant-counfellors, and feven deacons of trades. The town confits of one principal ftreet, which defcends towards the Clyde, and five inferior ones branching off from it, befides lanes and clofes. Many new buildings have been added within thefe few years. The ftreers are in general well paved with whinltone, and exhibit, efpecially near the centre of the town, a confiderable degree of neatnefs. In early times Lanark appears to have been a place of fome note. The eminence called Cafle-hill, which lies between the town and the river, was the fcite of a caftle, which, according to tradition, was built by king David I. and was for feveral centuries the refidence of the Scottih monarchs. The charter of the town of Ayr, granted by William the Lyon, is dated from this place, and many fpots in the neighbourhood are diftinguifhed by names of royal origin. The firft affembly or parliament mentioned in the hillory of Scotland was convened in this town by Kenneth II. in the year 978. It is allo rendered remarkable as the ficene of the firft 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 Hefliope, the Englifh fheriff of Lanarkfhire. It is faid that this town was formerly fortified, but no traces of fuch works can now be difcovered. The riling ground, named Caftlehill, 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 Faufina was found on it feveral years ago. The old parif church lies in ruins about a quarter of a mile to the fouth-eatt of the town, and retains confiderable marks of former elegance. The hofpital of St. Leonard's, which thood to the eaftward 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 ftomes and other curiofities, were difcovered under them. The fame monarch was alfo the founder of a monaltery of Francifcan, or Grey friars, fituated to the weit of the prefent church, where a general chapter of all the Grey friars in the kingdon was held on the 1 yth July, 1400. This town unites with Linlithgow, Selkirk, and Peebles in fending one member to parliament. The population of the town and parifh, as afcertained in the parliamentary cenfus of 18 Sco , was 4692 perfons, who occupied $6+3$ houres. Sinclair's Statiftical Account of Scotland.
Lavark, New, is deferibed in the courfe of the following articlc.

LANARISHIRE, an inland county in the fouth of Scotland, is frequently denominated Clydefdale, from the river Clyde, which flows through it longitudinally in a winding courfe of more than fixty miles. The fituation of this county is between $55^{\circ} \cdot 22^{\prime}$ and $55^{\circ} 5^{\prime}$ north latitude, and between $3^{\circ} 15^{\prime}$ and $4^{\prime} 19^{\prime}$ weft longitude. It is bounded by Dumfries-fhire on the fouth, by the flires of Ayr and Renfrew on the wef, by the counties of Dumbarton and Stirling on the north, and by thofe of Linlithgow, Edinburgh, and Peebles on the eaff. Its leng th from north to fouth is about fort y-feven miles, and its breadth nearly thirty-two. The parifhes 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 fquare milcs, or 593,280 flatute acres. Lanarkfhire anciently formed a great pertion of one of the principalities into which Scotland was divided at the time of the Roman invafion. The name given to this kingdom was Strathclyde, which comprehended, befides the counity of Lanark, thofe
of Stirling, Dumbarton, and Renfrew. This fhire is divided into three diftricts, or wards, formerly known by the appellations of Clydefdale, Douglardale, and Avondale, but thefe are now more frequently termed the upper, middle, and lower wards. Each of thefe diftricts is fubject to the particular juriddiction of a fubititute appointed by the meriff.depute of the county.

With refpect to the foil and appcarance of this county, the upper parts of it, except in the vicinity of the Clyde, are fo hilly and moorifh, as fcarcely to be fufceptible 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. Notwithltanding this, they exhibit but little grandeur, the perception of their fize and altitude being much modified by the clofenefs with which they are crowded together. The chief part of the arable lands in the upper diftrict, lies in the parifhes adjoining to the hill of Tintne, round which the Clyde flows with a flow and gentle current, wafhing, in its courfe to Lanark, twelve miles of the finett 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 lefs productive than in the vicinity of Tintoe. Carlicke parifh is of a clayey foil, but excellent in quality. This parifh, and indeed all the parifhes fituated along the river, are particularly diltinguifhed for the richnefs and variety of their fcenery. Within this diftrict are the falls of the Cliyde, celcbrated 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 indultrious inhabitants.

The middle ward, or diftrict of this county, is not nearly fo elevated as that above mentioned. When viewed from any conliderable height, indced, it has the appearance of a level country, though in fatt it is much divertified with hill and dale, the former being much lefs 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 lels 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 defcriptian. It is fuppofed that there are not lefs than 40,000 acres of mofs-land within this diftrict, and fuch fpots as are free from that covering, difplay a foft clayey foil, formed from a fort of hard clay, lamellated in a horizontal direction, which is called by the farmers sill, and is known to mineralugits by the name of fehiftus.
The lower ward is extremely limited in extent, but may rank as the molt important of the three, on account of its containing the city of Glafgow, which is juftly denominated the Manchefter of Scotland, and is perhaps fcarcely. inferior to Liverpool in point of commercial importance. The lands in this diftrict are naturally barren and unproductive, but in the neighbourhood of Glafgow, the overflowings of a very profperous commerce have added greatly both to its fcenery and fertility. See Glascow.
'The chief towns in Lanark תhire are Glafgow, Lanark, Rutherglen, Hamilton, Douglas, Biggar, and Carnwarth. Of thefe the three firft are royal boroughs, and will be found defcribed under their refpective names. Many confiderable villages are likewife fcattered throughout the county. The moft worthy of notice among thefe are thofe of Leadhills and

Wilfon-town, which are indebted for their profperity to the mineral productions of the county. Nerv Leenark, which owes its origin to, the cottun works effablifned there by David Dale, efq. of Glafgow, is alfo a thriving and populous place. Thefe works were firtt erected in the year 1785 , and are perhaps the molt extenfive of their kind in Scotland. "They afford employment to upwards of 1500 perions, 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 uearly furrounded by high grounds of very Iteep afcent. They were built on this fipot chiefly on account of the great command of water that could be obtained. For this purpofe a fubterraneous aqueduct has been cut through the foid rocks, for the fpace of feveral hundred yards. Woth the works and the feenery around are objects of peculiar interelt and curiofity. One of the mills contains no lefs than 6080 fpindles.
Befides the Clyde, already fo often mentioned, there is a number of other flreams in this county, all of which, however, difcharge themfelves into that river. The chief of thofe on the northern fide 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 fhaded with wood, and adorned with a number of neat villas. The itreams 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 cailed Cartlane-Craigs. Thefe 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 fous 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 clofely confined as fcarcely to al. low room for the lonely traveller to traverfe the den.. At all the windings of this river the fcenery varies, and whenever a rock is furnd to project on one bank, a correfponding, recefs may be feen on the other. One of thefe carerns is flill called " Wallace's Cave," from a tradition of its having been for fome time the place of that hero's concealment. Io-gan-water, which rifes in the mountain feparating the parifh of Lefmahago, from that of Muirkirk in Ayrfh re, is a beautiful paftoral river. The Avon, which likewife takes its rife on the confines of Ayrfhire, after being joined by feveral minor Atreams, empties itfelf into the Clyde near the town of Hamilton. In its courfe it paffes through the inclofures of the duke of Hamilton, where its bold and lofty banks, covered wi:h a variety of flurubs and trees, afford many extremely fine and picturefque views.
No county in Great Britain is more interefting to the geologitt, or abounds with a greater variety of mineral troducticns, than Lanarkfhire. The furface of the upper divifion of'the county generally refts upon whinftone, itanding in perpendicular columns. The middle and lower diftricts, for the molt part, exhibit fome kind of freeflone for their bafe, but are interfected, at different points, by ridges of whinttone running off from the rocky mountains, downwards, througho out the whole extent of the county.. Under the flrata of freeftone immenfe ftrata, or beds of coal, are difcovered, extending over all the plain country, and branching out, more or lefs, along the courfe of the principal waters. The feams of this ufeful mineral are not entirely of one kind. Where the whole ftrata remain untouched, a variety of thin and lefs valuable feams, or ftrata, prefent themfelves in dig. ging down to what is commonly called the upper coal, becaufe it is the firt that is found to be worth mining for to any extent. This ftratum is compofed of the rough coally

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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 efteemed for the black [mith's forge. At from ten to feventeen feet beneawh this ftratum, the fean called the main coal is found. It is fo named becaufe it poffeffes all the good qualities of the other ftrata, and is preferred, by confumers in general, to every other fpecies of this mineral. Below the main coal are four more feams. The higheft of thefe is compofed of the bumph coal, the fecond of the bard coal, the third of the foft coal, and the fourth and latt feam of the lean or four-milk coal. Beneath all are found feveral ftrata of excellent limeftone, probably as extenfive and inexhauftible as the valuable mineral which covers it. Independently of thefe frata of coal in the plain, there are others in the higher grounds, but of a diffimilar nature and arrangement. The hills in the parifh of Shotts, like the tracts of the fame elevation in the upper ward, are found to confift of an enormous bed of whinttone, but in defcending along their fides, the freeftone rock fhows itfelf lying in a horizontal pofition beneath the whinitone. Below the free-coal, ironftone and limeftone are difcovered in fuch vaft profufion, as feemingly to defy the utmoft efforts of human induftry to exhauft thern. Near the Douglas river alfo, extenfive collieries, fimilar in quality to thofe of Shotts, are wrought, which fupply the higher diftricts of this county and Tweedale, where no coal has yet been difcovered. To the vaft fupplies of this valuable mineral, and its confequent cheapnefs, the manufacturing profperity of the weft of Scotland is to be principally attributed, as, without abuncance of fuel, fcarcely any manufacture can be carried on.
Lead and Iron.-A Another great fource of induftry and opulence beftowed on this county by nature, is derived from its mines of lead and iron. The former of thefe metals is chiefly' wrought at Lead-bills, a range of mountains in the uppermoft part of the county, immediately adjoining to Nithfdale. Thefe mines belong to the earl of Hopetoun, and are carried on by two feparate companies. The number of miners employed in them is very great. They work only fix 'hours out of the twenty-four, fo 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 eftablifhed many years ago by an overfeer named $M$-Sterling, who prevailed on the workmen to fubfcribe for that purpofe. Since that event the miners have been remarkable for induttry and fobriety of manners, the ufual concomitants of a tafte 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 fame tract with the ftrata of coal. In many places it is imbedded between the different feams of that mineral, and is ufually wrought at the fame time with it. Iron ore, that is, the metal in its richeft ftate, has not yet been difcovered here in any great quantity, but ironftone exifts 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 thapes, fize, and qualities. Among thefe balls is the curious foffil called ludus Helnontii, Jeptuarium, or wazen veins. It is of a fpherical flape, more or lefs oblate or depreffed. Above and below then are alternate ftrata of ironftone and fchiftus. They lie on their depreffed fides, in a regular direction, making a fort of interrupted ftratum, one tone being feveral inches and fome even a foot or two diflant from the other. The ironftone of which they are compefed is of excellent quality, yielding fometimes fifty per cent. of iron.

The Antiguities in this county are not fo numerous, in pro-
portion to its extent, as in fome other counties of Scolland. The Roman road, which formerly croffed the parihes of Lamington and Biggar, and defcended along the fouth bank of the Clyde, is now only vifible in a few detached fpots. Different parts of the upper wards, in particular, abound with excavations in the earth, or vaults which were ufed as ftrong holds by the aboriginal inhabitants, when the haughty chiettains of Clydefdale and Annandale were engaged in mutual hoftilities and depredations. At Cold-chapel are the remains of a Roman flation, and in the fame neighbourhood is a fpot called Wallace's Camp. It is faid that a chair, which formerly belonged to that hero, is itill preferved at Borrington.

Near Biggar are feveral artificial mounds. The church of that town is one of the moll venerable relics of monaftic architecture in Scotland. Here is preferved an ancient vafe or urn, fuppofed to be Roman, which was ufually appropriated to facred purpofes by the Popih priefts. Boghall caitle, about a mile from this church, was formerly furrounded by a marfh, and acceffible only by a caufeway or mound of earth. The entrance is through a large and magnificent gate-way, which leads into a fpacious court in the centre. This caftle is flanked with towers. It was formerly the refidence of the Flemings, earls of Wigton, and has evidently been one of the moft extenfive and iplendid fortreffes in Scotland. This neighbourhood is reprefented in the popular hiltories of far William Wallace, as having been the fcene of a fanguinary conflict between his band of patriots and the army of Edward I.

Cuthally caftle, or, as it is vulgarly called, Cowdaily cafte, the feat of the ancient family of Somerville, is fituated in the parifh of Carnwarth, and appears to have been formerly a place of great ftrength. At the foot of Tintoe is an artificial mount, and near it a circle of large flones fet up perpendicularly. On an adjacent farm is a place called Sheriffs' flats, where it is fuppofed the fheriffs anciently held their courts. Tradition reports, that a bullock's hide, full of gold, is buried under this fpot. Here are alfo the walls of a cattle which belonged to the family of Lindfay. In Pittimair parifh are the veftiges of a large encampment, the figure of which approaches to a circular area. A fmall fort belonging to it is ftill diftinctly vifible at a little diftance from the walls. Several urns have been lately found here inclofed within four large flag ftones. At Douglas are the remains of a caftle 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 Douglafes. The parih of Carftairs, in the vicinity of the Clyde, contains the veltiges of a Roman camp, the caufeway leading to which can itill be traced for many miles. Pots and difhes of different kinds, as well as various inftruments of war and facrifice, have been dificovered here. A number of coins have alfo been dug up, bearing the infcription of Marcus Aurelius, and Marcus Antoninus. At Cleghorn is another Roman camp, fuppofed by general Roy to have been the work of Agricola. Befides thefe remains of antiquity there are a number of others; as the priory of Lefmahago, the caltles of Cudzow and A vondale, \&c. but the limits of this article will not allow us to particularife the whole. Many of them, however, will be found either defcribed or noticed in our acounts of the refpective places. Rothwell catlle, in this diltrict, is one of the moft magnificent ruins in Scotland. The ftructure itfelf is fuperb, and all the objects around have an afpect of grandeur. The whole work is executed with fmooth flone of a red colour. It is adorned with lofty towers at both
ends, and has undoutcedy been a place of confiderable firength.

The principal feat in Lanark fhire is the palace of Hamilton, belonging to, and the occafional refidence of, the Hamilton family. It is a large maffive pile, of a dull and heavy appearance, fituated in the neighbourhood of the town, from which it derived its name, and deferves notice chicfly on account of the beauty of its feenery, and the valuable collection of paintings it contains.

Lanarkfhire has long been celebrated for its horfes, which are reckoned among the mult powerful in the world. As contaiuing the town of Glafgow, it mult be ranked among the firt manufacturing and trading counties in Great Britain. Forfyth's Beauties of Scotland, rol. iii.
LANAWEN, in Georrafby, one of the fmaller Sooloo iflands, in the Eatt Indian fea. N. lat. $6^{\circ} 15^{\prime}$. E. long. $122^{\circ} 3^{\prime}$.

LANCARIM Spring, the name of a medicated water of Glamorgankire. 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 niae feet high, with a confiderable noife. The fpring is very clear and rifes 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 fome queltion, whether the water, or its motion and coldnefs, 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 fuppofed that the lime-ftone rocks communicate a virtue to it, by which it cures intermally; but it has been often found, that the holding a limb difordered with the evil, in the ftrong current of a mill tail, has cured it; and there is the fame advantage in the fall of this water. Phil. Tranf. N ${ }^{\circ}$ 233, or Abr. vol. ii. p. $233^{\circ}$

LANCASHIRE, in Geography, a county palatine in the northern part of England, furrounded by Cumberland and Weftmoreland to the north, by Yorkßhire to the eaft, Chefhire to the fouth, and the Irifh fea to the weit. Its area comprifes about 1,130,000 acres of land, of which above 350,000 are in a ftate of tillage, 450,000 in pafturage, and about 400,000 in wood-lands, moors, \&c. According to Mr. Yates, who has publifhed an Agricultural Survey of Lancafhire, the greatelt length, from north to fouth, is 74 miles, by about 44 in breadth: the circumference is $3+2$ miles, and furface 1765 fquare miles. It is divided into the fix hundreds of Amoundernefs, Blackburn, Leyland, Lonftuale, Salford, and Welt-Derby: and contains fix boroughs, viz. Clitheroe, Lancafter, Liverpool, Newton, Prefton, and Wigan ; 21 market towns, viz. Blackburn, Bolton, Burnley, Bury, Cartmel, Chorley, Colne, Dalton, Ecclefton, Garltang, Hallingdon, Hawkfhead, Hornby, Kirkham, Manchefter, Orm@kirk, Poulton, Prefcot, Rochdale, Ulverfon, Warrington; and 62 other parifhes. The whole contains, according to the return to parliament in the year $1800,117,664$ houfes, and $672,73 \mathrm{r}$ inhabitants, of whom 269,259 were itated to be employed in various trades and manufactures, and 52,018 in agriculture.

In the ancient hittory of this county, we find that it was originally inhabited by the Setantii, or Segantii, who were fucceeded by the Brigantes, who allo had a very extended tract of country. (See Brigantes.) The Romane, under Julius Agricola, appear to have conquered this diftrict in A. D. 79 : and foon afterwards, according to Mr. Whitaker, that general eftablifhed the following fations within the
limits cf this county: "Ad.Alaunum and Bremetonace in the north; Portus-Siltuntiorum in the welt; Rerégorium and Coccium about the centre ; Colonea in the eaft ; and Veratinum and Mancunium in the fouth." The precife fcites of all thefe flations are not fatisfactorily afcertained: nor is it generally adinitted, by other antiquaries, that there were fo many permanent flations in the county. In the ltinerary of Ansoninus only three are fpecified : viz. Bremetonacea, xxviio m. p. from Galacum in Wettmoreland; Coccium, xx. m. p. from the former ; and Mancunium, xvii. m. p. from the latter. To connect thefe towns or Itations, roads or military ways were formed, and thefe were difpofed in the moft direct line from one place to another, and conftructed in the moft fcientific and filful manner. Mancunium, now Manchefter, was a fation of large extent and importance; and from it roads branched off northward to Coccium, (Ribchefter,) two north-eait ward into Yorkfhire, one fouth-welt ward to Condate, now Middlewich in Chefhire, and a fifth foutkealtward to Derventio, Derby. The whole of this county was denominated by the Romans, Maxima-Cxfarienfis, 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 conqueft of it by Egfrid." At this period, the Roman Alauna was "made the metropolis of the fhire, and lent its own appellation to the county." Soon afterwards the whole was divided into hundreds, tythings, \&c. That part called South Lancafhire was firlt divided into three ; but fubdivided into fix juft before the Norman conqueft : thefe are called Blackburn, Derby, and Salford; Newton, Warrington, and Leyland.
The ecelefiaftical hiftory of this county commences with the Anglo-Saxons: after the fee of York was eftablifhed, the kingdom of Northumbria was fpeedily fubdivided into feveral diocefes, and the whole of North Lancalhire was connected with the fee of York. But foon after the confolidation of the feven kingdoms into one, the fouth of Lancalhire was fevered from the diocefe and province of York, and annexed to the province of Canterbury and diocefe of Lichfield; and thus continued till the year 154r, when the two parts were again combined, as they bave erer fince continued, under one bifhop, and reunited to their ancient and original fee of York. At the firlt partition of the bihopric into archdeacosries, the principal towns of the latter would naturally be conltituted the capitals of them : and the Roman colony of Chefter was made the metropolis over the fouth of Lancaffire, as the archdeaconry of Richmond was over the north. The next ecclefiaftical divifion 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 Lancafter, exclufive of Furnefs, which then belonged to Weftmoreland, was partitioned into thirty-fix parifhes only. By the fame record it appears, that thefe parifhes were included in the four deaneries of Blackburn, Leyland, Manchefter, and Warrington; all in the archdeaconry of Chether. The deanery of Amoundernefs and Furnefs is in the Richmond archdeaconry.

The landed property, which the king poffeffes in this county, as duke of Lancafter, is of great extent; but the revenues arifing therefrom are but fmall. The principal part of this property confifts in what are generally ftyled the forefts of Myerfcough, Fulwood, Blearidale, Wyerfdale, and Quern, all fituated in the moft northern parts of the county. In thefe his majefty is intitled to the eftrays and the game, and the right of holding courts, \& $c_{-}$; and mult be confidered as lord of the manor of all the forefts. The townhip of Quernmose is fituated in the hundred of Lonfdale;

## LANCASHIRE.

dale, and contains above 3000 acres of inclofed and walle land. W yerfdale, which is fimilar in fituation, contains more than 20,000 ftatute acres; the greater part is mountainous land, not worth inclofing, but producing abundance of game. Bilcaridale is in the hundred of Amoundernefs, and contains nearly 4000 acres of inclofed land, and about the fame quantity not inctoled. Myerfough is fituated about eight miles from Pretton; and contits of nearly 2200 acres, all inclofed; of whath about 1600 , belonging to the king, is called Myerfeough Park, and is held under a leafe by Mr. Heatly. The ancient forelt of Fulwood comprifed a large quantity of land which is now inclofed: the uninciofed parts are about 908 acres. Pretton race-ground is a portion of the foref. Befides the duchy lands, a few large proprietors hold extenfive eftates in this county. But the prevalence of trade, manufucture, and commerce has tended greatly to tubdivide the property, in the vicinity of the large towns efpecially, and hence Lancafhire has a greater number of landowners than any other county in England, excepting Middlefex. Canden remarked, that Lancafhire was diftinguifhed for the number of aucient families whofe names were the fame as their manorial cftates. This remark fill applies, though not to the Eame extent, as many old family manfions are now deferted. Previous to, and under the Norman dynafty, this county was diftinguilied as an bonor, and was of the fuperior clafs of feigniories, on which inferior lordfhips and manors depended, by the performance of certain cuftoms and fervices to the lords who held them. Landed honors origimally belonzed to kings exclufively, but were afterwards granted in fee.to noblemen. Thefe kept their honor courts "every year at leaft, or oftener if need be ; at which court all the freeholders of all the manors that fland united to the jaid honor, thall make their appearance, which fuitors fhall not fit, but jtand bareheaded." That the honor of Lancafter exitted befnre the conqueft, is demonftrated by an agreement, fill preferved, between king Stephen and Henry duke of Normandy. From this period till the reign of Henry III. the honor was held by feveral great perfonz. That monarch conferred it on his fecond fon Edmond, when it became an carldom. The title of duke of Laricatter was created by Edward III. in favour of Henry Plantagenet, whofe daughter and heirefs, Blanche, married John of Gaunt, fourth fon of Edward III., for whom the privileges and revenues were confiderably increafed: he, being created duke of Lancalter on the death of his father-iu-law, obtained a patent for advancing this county to the dignity of the palatinate. The court belonging to this duchy has the power of deciding every caufe relating to it : the officers are, a chancellor, attor:ley-general, king's ferjeant, king's counfel, receiver-general, clerk of the council and regilter, 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 Lancanire are various; and its features in fome parte, particularly towards the north and along the eaftern border, are ftrongly marked. Here the hills are bold and lofty, and the vallies narrow and irriguous. On the fea-coalt, and nearly the whole of the fouthern fide of the county, following the courfe of the river Merfey, the land is low and flat. In the diltrict which lies between the Ribble and the Merfey, the greater part of the furface is a fandy loam, well adapted to the production' of almoot every king of vegetable, and that to a degree which renders it impoffible to eltimate the advantages which might be derised from an improved cultivation. The fubftratum is generaily the red rock, or clay marle, one of the mott defirable foils that can be found. Moor-lands which are in a flate of na-
ture, and produce heath and other wild plants, are of sarious qualitics; and are much more extenfive than might have been expected in a county fo populous, where land mult confequently be very valuable.

The mineralogical hiftory of this county has never been publicly developed; and though the internal contents are lingularly rich, the varied reculiarities and characterifties of thefe riches have not been made known. With fingular advantages of natural and artificial navigation, the coals, which conllitute its moft prolific and ufeful production, are cheaply conveyed to the various manufactories of Manchefter, Bolton, \&cc. and alfo to the coalt. Coal is found in immenfe beds, both on the fouthern part and towards the middle of the county, but cliefly in the hundreds of Weft Derby and Salford, and in part of Blackburn. It is not obtained much farther north than Chorley and Colne; but great abundance of this ufeful foffil is again procured at Whitehaven, and about Newcaltle-upon-Tyne. At Haigh, near Wigan, a feccies of coal is produced, fimilar in appearance to black marble, and of a very bituminous quality. It is called Cannel Coal, and burns with a peculiar clearnefs of flame, confumes very rapidly, and is apt to fly in pieces in the fire; but if previoufly immerfed in water, it is faid to lofe this property. It is of a dull black colour, breaks eafily in all directions; and if broken tranfverfely, prefents a fmooth conchoidal furface. Towards the north and north-eattern parts of the county, lime-ftone is very abundant. It is found at Halewood, near Liverpool, at various depths, but inconfiderable in quantity. In the vicinity of Leigh, and alfo at Ardwick, near Manchelter, is lime-Atone of fuch peculiar quality, as to refitt the power of water: it is therefore applied to the conftruction of cifterus, and to making mortar for building under water. Stone of various denominations is produced en this county. Upon the common, near Lancalter, is a large quarry of excellent free-flone, which bears a tine polifh, and of which that town, equalled by few in the kingdom for neatnefs, is wholly built. Flags and grey flates are found at Holland, near Wigan. The mountains, called Coniftone and Telberthwaite fells, near Hawk fhead, afford a large quantity of blue Ilates, of whick there is a confiderable export: they are divided into three claffes, called London, Country, and Tom flate, of which the firft is efteemed the beft. Scythe-ftones are obtained at Rainford, and are well wrought on the fpot. Iron-ore is found in abundance between Ulverftone and Dalton, in Lows Furnefs. In the north, fome copper mines have been worked; but they have not been productive. At Anglefack, near Chorley, is a lead mine belonging to fir Frank Standih, bart.: it confifts of feveral veins, which interfect the Atrata of the diftrict almoft perpendicularly, and run in various directions. The matrix of thefe veins is formed of carbonat and fulphuret of barytes. The former, which is a very rare mineral, is found in the greatelt abundance near the furface; and as it defcends, it becomes progreflively contaminated by the fulphuret, which, in the loweft flrata, feems completely to ufurp its place. The exiftence of carbonat of barytes, as a product of nature, was firf diltinctly afcertained by Dr. Withering; but he feems to have been miltaken as to the place where his fpecimens were obtained. To James Watt, jun. efq. the public are indebted for a defrription of the external character of this fubitance, and its effects on the animal body, when taken internally. See Manchefler Memoirs, vol. iii.

The principal rivers in this county are the Loyne or Lune, the Wryer, the Ribble, the Calder, the Douglas, the Irwell, and the Merfey; Befides thefe there are feveral fmaller ftreams or rivers, all which, directing their courfes
towards the weft, empty their waters into the Irin fea. The Loyne or Lune, emanating from the fells of Weftmoreland, enters this county near Kirkby Lonfdale. Soon afterwards its fream is augmented by the waters of the Greta and the Wenning from YorkThire; and the expanded river then paffes through the much admired valley of Lonidale. Purfuing a fouth-wefterly courfe, it reaches the county town, where it becomes navigable; and at the diftance of two miles from Lancafter, is calculated to bear thips of confiderable burthen. The approach to Lancafter is indefcribably friking, where the river becoming wider, and winding in feveral bolder fweeps, opens to the view of that fingular town, defcending from a lofty hill, whofe fummit is crowned by the baltions of its caftle, and the lofty tower of its church. The Wyer, which has its fource among the moors on the north-ealtern part of the county, meanders through a very romantic diltrict; and purfuing a fouthwefterly courfe towards the fea, receives the waters of feveral other mountain-Atreams before it reaches Garftang-church town. Near this place its current is greatly increafed by the waters of the rivers Calder, \&c.; and paffing near the town of Poulton, expands into a broad bafor, called W yerwater; and, again contracting its banks, joins the Irifh fea between Bernard's-Wharf and the North Scar. The Ribble, like the Loyne, unites to the fea by a very broad eftuary; and, like that alfo, has a Roman flation on its banks. "This river," Dr. Whitaker obferves, "by the general confent of moft antiquaries, has been underftood to be the Beliffima of Ptolemy." The Ribble is one of the largeft rivers in the north of England, and has its fource in the high moors of Craven in Yorkfhire. Taking firft a fontherly courfe, it paffes by the town of Clithero, and, forming the boundary of the county for a fhort fpace, 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 Prelton, its banks are bold, and adorned with hanging woods. A little to the weft of this place, the Ribble forms a fpacious eftuary, which is enlarged by the mouth of the river Douglas. The latter has its fource in the vicinity of Rivingtonpike, and, after paffing the town of Wigan, procceds northwefterly by Newburgh, and near Rutford is joined by the Elder-brook from Orm\&irk, After receiving the united ftreams of the Yarrow and Loftock rivulets, it empties itfelf into the eftuary of the Ribble, at a place called MuckStool. The Irwell originates in the moors, near the Yorkfhire and Lancafkire boundaries, whence it flows, fwelled by other ftreams, through the manor of Tottington to Bury. Hence it proceeds to Manchefter, where it unites with the Medlock and the Irk. Paffing through Barton, where the duke of Bridgewater's canal is carried over it by means of a grand aqueduct, it falls into the Merfey below Flixton. The Alt, rifing near Knowlley, and flowing in a north-wefterly direction, joins the Irifh fea near Formby Point. The Crake connects the lake called Thurdon-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 country are of almolt incalculable utility and importance, yet their origin in this kingdom is but recent ; and from the beft authority it appears that the firft complete artificial canal was planned and formed in Lancafhire. This was known by the name of the Sankey; but long previous to the mak ing of this canal, different acts of parliament had been obtained, and companies formed, for rendering the rivers Irwell and Merfey, alfo the Weaver, sce, navigable. By the affit-
ance of the tide, which nows with rapidity up the channel of the Merfey, veffels 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, acceffible for veffels as far as Manchelter, was an improvement much wanted by the manufacturers of that town and its vicinity. To effect this, an aft of parliament was obtained in 1720 , whereby certain perfons of Manchefter and Liverpood, but moftly thofe of the former town, were empowered to make the Irwell and Merfey navigable beyond thofe towas. Though the aft 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 connage was confined to the navigation between that place and Manchefter, it appears that the projectors meant only to open the upper part of the river. This has been effected by means of weirs, locks, \&cc.; and in places where the ftream formed confiderable curvatures, cuts were made acrofs the necks of the principal bends. While the narigation of the Merfey was thus an object of commercial fpeculation, that of the Douglas was equally attended to. The country round Wigan being particularly rich in coal, the proprietors of the mines in that diftrict obtained an act, in 1719, for rendering that river navigable. This being completed in 1727, enabled the fpeculators to convey their coals to the mouth of the Ribble, and thence coaftwife to the northern parts of Lancalhire, Weitmoreland, \&-c. The Douglas navigation has fince been purchafed by the proprictors of the Leeds and Liverpool canal, who have in part fubftituted 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 weft of Warrington, to near St. Helen's. This act empowered certain commiffioners to purchafe lands and other requiftes for the intended navigation. It was, at firit, defigned to extend and deepen the bed of the brook; but, after due deliberation, it was ultimately determined to clet a detached channel or canal. To effect this more completely, a new act was obtained in ${ }_{7} 61$, which empowered the undertaker to make a canal ; to extend from a place called Fiddler's Ferry, on the Merfey, to a fpot about $25^{\circ}$ yards from the loweft lock. Thus navigable canals had their rife in England; and the peculiar advantages and fuccefs of this at Sankey led to many other fimilar undertakings: in the execution of which, the genius of the engineer, and the fpeculating fpirit 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 par. liament, were carried to Liverpool 45,568 tons, and to War. rington, Northwich, and other places, 44,152 tons. Some of the firft collieries on its banks are worked out, and others have been opened. Its bufinefs has been increafed by the large copper-works belonging to the Anglefea company* erected on one of its branches; and by the plate-glafs manufactory, and other works founded near it, in the neighbourhood of the populous town of St. Helen's. Befides the Sankey, this county is interfected by nine other canals, of which four communicate with Manchefter. Of all thefe canals an account has been given under Canal, to which we fhall here add fome further particulars and local circumftances not already detailed. The Afhton-under-Line canal, which commußicates between Mancheiter and the town of Hh

Ahton.

Afhton, was made in confequence of an act of parliament pafted in 1792. The whole length of this canal is eleven miles, with a rife of 152 feet. Bridgewater's canal originated, in 1759, with the late parriotic duke of Bridgewater, who devoted an immenfe fortune to the effeeting his plan. That part of the canal more immediately connected with this county, commences at the Caftle-ficid, in the fuburbs of Manchefter, and terminates at Pennington, near the town of Leigh. At Worfley is a fhort cut to the entrance bafin of the underground tunncls. Here it buries itfelf in a hill, which it enters by an arched paffage, partly bricked, and partly formed by the folid rock, wide enough for the admiffion of long flat-battomed 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 firlt coal-works; where it divides into two channels, branching to the right and left. In the paffages, at certain diftances, are funvels cut through the rock, and iffuing perpendiculariy at the top of the linl. The arch, at the entrance, is only about fix feet wide, and five in height, above the furface of the water. In fome places within it widens, to accommodate two boats to pafs 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. Lancafter canal takes its courfe through nearly the whole county. Commencing at Kirby Kendal, in Weftmoreland, it enters Lancafhire near Burton, having paffed 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 fome places approaching almoit clofe to the fea-beach. After paffing Prefton, it afcends through a feries of locks to its higheft level, on which it proceeds acrofs the Douglas, and arrives at its termination at Weft Houghton. The principal object of this canal is to open a ready communication between the coal and limeftone 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 Prefton is deftitute of coal, and the canal is directed through a diftrict abounding with this valuable mineral from Weft Houghton to Whittle Hills. From Kendal to Lancalter, the whole country confifts of lime-ftone; and on Lancafter Moor fome good freeftone is obtained. The Leeds and Liverpool canal enters Lancafhire a little north of the town of Colne, near which it croffes the grand ridge by means of 2 fubterraneous 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 eaftern and weftern feas had been often propofed: 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 $107 \frac{3}{4}$ miles, and communicating at the latter place with the river Aire, and at the former with the river Merfey, both of which are navigable to the German ocean on the eaft, and to the Irifh fea on the weft. The fall of water in this courfe, from the high ridge of mountains which divide Lancafhire and Yorkfhire, is 527 feet weltward, and 446 eaftward. Manchefter, Bolton, and Bury canal takes a north-wefterly 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 Manchefter, to the Calder at Sowerby-bridge, near Halifax. At the commencement of this fcheme it encountered much
oppolition; and the proprietors, in obtaining their acts, were obliged to bind themfelses not to ufe any of the waters of the Irk, Calder, and Roach rivers, fo as to affect their mills, \&ec. They were, therefore, obliged to make feveral large refervoirs on the hills to fupply the watte of lockage and leakage. At Ulveritone is a fhort cut or canal of about one mile and a half, communicating from that town to the Irifh fea. Douglas River Navigation commences in the tide-way, in the eftuary of the river Ribble, near Hefketh, and terminates in the Lecis and Liverpool canal. Hallingdon canal, not yet completed, is intended to communicate, in a diflance of about thirteen miles, between Bury, where it joins the Bolton and Bury canal, to Church, where at joins the Leeds and Liverpool. The commercial and fpeculating fpirit of the inhabitants of this populous county, is Atrongly exhibited in the conftruction of thefe canals and navigable rivers; the good effects of which are cfpecially felt by the manuf.eturing towns. To that of Manchelter, in particular, the canals have proved eminently beneficial, and the thriving ports of Liverpool and Lancalter, with the central towns of the county, have all derived from the fame fource many important advantages. Whilft 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 diftributed over the kingdom, and to the fea-ports for foreign exportation.

Peculiarly characteriftic of this county are the bogs and moraffes with which it abounds, and which bear the provincial name of Moffes. The principal of thefe are called, from the chief places in their vicinity, Chat, Pilling, Trafford, Rifley, Afhton, Road, Bickerftaff, Rainford, Marton, St. Michael's, and Catforth. The component parts of thefe chiefly confilt of a fpongy foil, containing roots of decayed vegetables, intermixed with a fort of rotten mould. The origin and peculiarity of moffes have occafioned much difference of opinion with the writers on agriculture and natural hiftory, but when their precife lituations are accurately defined, it feems ealy to account for the latter, and thereby to difcover fome clew fur the former. The laws of nature are immutable; and when certain natural caufes are known to produce certain effects, and thefe are invariable, it does not appear difficult to aifertain the primary fource. Thus, mofles or bogs are always found near fpring-heads, and in fuch hollows as prevent a regular and conftant difcharge of the oozing waters. Thefe muit confequently remain ftagnant, and from the perpetual generation and decompofition of vegetable matter, muft progreffively acquire fubftance. Among the moft common vegetables in thefe fituations, are the Erica vulgaris, the Ornithogalum luteum, and the different fpecies of Eriphorum, or cotton-grafs; alfo, bilberry, cranberry, crowberry, Andromeda polifolia; Lancalhire afphodel, fun-dew, and the fragrant myrica-gale, or bog-myrtle. As thefe plants decay, and depofit their fubitances, a confiderable addition is annually made to the mofs, in cutting a fection of which, in fome places, the progreffive Atratification or lamina may be diftinctly difcovered. Thefe plants, and particularly the moffes, feem to derive their nutriment and fructification from their own ruins, and grow more luxuriant as the fubftance increafes: at length the whole takes the appearance and confiftency of a large fungus; and continuing to increafe, it at length grows greatly above the level of the adjacent lands, till the weight of the furface becoming too great to be fupported by the fpongy fubftance below, it overflows its original boundary, and covers the adjoining grounds. A remarkable inftance of this occurrence, in the year 1771, is related of Solway-mofs in Scotland; and, according to fome

## L A N

of our ancient chronicles, a great portion of Chat-mofs wais carried into the Irwell, thence into the Merfey, and on to the fea. (See Leland's Itin, vol. vii. p. +6.) It may be proper juf to mention three of the moffes in this county which have been brought into a fate 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. Rofcoe of Liverpool. They began their improvements about the ycar 1793 ; and the whole of this hitherto ufelefs tract of land is converted into excellent arable and pafture ground, worth four or five pounds per acre, per annum; but previous to that period it was wholy unproductive. The manures ufed in the improvement have been blue marle, of a ttrong calcareous quality, which is found under the mofs itfelf, and compoft brought by the canal from Manchefter. Chat-mofs, which lies on the north fide of the river, and contains fome thoufands of acres, has been brought into a ftate of progreffive improvement, with every profpect of fimila: fuccels, by Mr . Rofcoe, who cominenced the drainage in the year $\mathbf{1 8 0 5}$. Rainford-mofs, near Prefcot, has alfo been amazingly ameliorated under the judicious management of Mr. Chorley, who began his operations on this apparently fterile wafte in 1780, and has rendered it capable of bearing oats, barley, clover, potatoes, \&c.

The agricultural productions of Lancalhire are principally oats and potatoes; both which are ufed for human fuftenance; and many of the labouring claffes, in the northern and ealtern parts of the county, are chiefly fupported by this food. A confiderable quantity of barley, and fome wheat, are cultivated in Low-Furnefs, the Filde, and in the fouth-weftern parts of the county; but it is fuppofed that Lancalhire does not produce one quarter of the grain confumed by its own inhabitants. The firf potatoes faid 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 Irifh veffel being caft away on the weftern coaft, near North Meols, in Lancafhire, fome of thofe 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 clutter potatoe are chiefly grown for the catte; and the pink-eye, with various kinds of the kidney, are ufed for the table. The produce of a crop of potatoes in this county is generally from two to three hundred bufhels per acre. Many ufeful particulars relating to the beft mode of planting, growing, and preferving potatoes, are detailed in Holt's " General View of the Agriculture of Lancalhire."

This county boafts a peculiar breed of horned cattle, which forms a variety with thofe of Lincolnhire. The cows are rather fmaller than thofe of the latter county, and are known by their wide-fpreading horns and Atraight backs.

The climate of Lancalhire is proverbially zef, and this feems a natural confequence of its peculiar fituation, between the broadeft part of the Irifh fea and the high ridge of hills which form its eaftern border. All this fide of the county is more fubject to rains than the fide bordering on the coalt; for as the clouds are wafted over the Irifh fea from the Atlantic ocean, they are firft checked and broken by the mountainous ridge, which has a direction north and fouth; and hence the rains are almoft perpetually falling on the weftern fide of thefe intercepting eminences. At Town.
ley, near buratey, it has been found by experiment, that forty-two incles of rain fall annually, at a nedium; while the anual fall at Manchefler has been only thirty-thrce inches. At Liverpool the average has been confuderably lefs, whild that at London has been fill bower.

Lancalhire fends feurteen members to parliament ; two knights for the flire, and two reprefentatives for each of the boroughs of Lancalter, Liverpool, Prefton, Newton, Wigan, and Clithero: one of the menbers for the county is returned through the intereft and influence of the earl of Derby; the other by what is termed the independent in terelt. The county is included in the northern circuit, and the affizes are held at Lancaiter, as are alfo the quarterfeffions.

This county, though not abundant in antiquities, formerly poffeffed a few caftles and monaftic buildings: viz. caftesat Clithero, Gleafton, Holland, Hornby, Lancafter, I'eele, and Thurland. Religious houfes -at Buricough, Cartmel, and Coningfhead. Auguttine priory-at Cockerfand; a Premonitratentian abbey; Furnefs and Whalley, Ciftertian abbies; Holland, a Benedietine priory; Hornby, a Premonftratentian priory; Lancafter, Lathom, and Penwortham, Benedictine priories ; Manchefter, a college.

Lancafhire contains 490 public bridges; of which nine arc repaired by the county, and the others by the different hundreds.

The manufactures and commerce of this populous counts. are both of great extent and importance. Many particular refpecting 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 defcribed at Liverrool. Beauties of England, vol. ix. Aikin' Hiftory, \&c. of the Country round Manchefter, 4 to. Whitaker's Hiiftory, \&c. of Manchefter, 2 vols. 4to. Whitaker's Hiftory of Whalley, 4to. Holt's Agricultural Report relating to Lancafhire, 8 ro.
LANCASTER, County Palatine of. See Countr.
Lancaster, Duchy Court of. See Court.
Lancaster, in Geography, a fea-port, market, and the county town of Lancafhire, England, is fituated on the banks of the river Loyne, or Lune, 239 miles diftaut from London. Few of the county-towns in England have been more neglected by the biltorian, or more inaccurately defcribed by the togographer, than this of Lancatter. That it was a Roman itation is evinced by the Saxon termination calter, or caltre; and the fame is confirmed by the various remains of the domeltic economy of the Romans that are continually difcovered 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 Cirencefter'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 Hiftory of Lancafhire, \&c." defcribes and refers to various coins, pieces of pottery, burnt bones, \&c. that have been found in this town. In 1772, an altar-ltone, with an infeription, was dug up here. In the Archrologia, vol. v. is a dif. fertation, by the Rev. Mr. Leigh, on certain Roman veftigia belonging to Lancafter. This place was a fortrefs of confiderable confequence alfo under the Anglo-Sax on dynafty. Indeed it appears to have been the chief obftacle and barrier to the Piets, or Scots, in the progrefs of their conquefts in Eagland. Having being demolifhed by thefe marauders after the retreat of the Romans, it lay a confiderable time in ruins, but was at laft rebuilt by the Sasons; who, foom

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after their fettement in Britain, perceived the importance of this poft, and the facility of defence afforted by its commanding feite. That it was conflituted the chief and defignating town of the county, is a fufficient indication of its confequence. This event is Atated by Mr. Whitaker to have occurred in the feventh century, when he obferves, the "Roman Alauna received the honour which it retains at prefent, and was made the metropolis of the thire." During the Saxon heptarchy we have no records whatever of this town, but foon after the Norman conqueft it affumes tome hiltorical confequence. In Domefday-book, however, Laneafter and Cherca-Longcaltre appear fimply as two vills, or Borwit, among the twenty-two which thea compofed the manor of Halton. At this time there was no church at Loncafter, but the name Cherca-Longcaftre, affixed to one of the villages, renders it probable that it had a church during the time of the Saxons, which had probably been deftroyed during the ravages of the Danes. Lancafter, it is likely, was granted either by the Conqueror or his fucceffor, William Rufus, to Roger de Poitou, for the purpofe of erecting a cattle upon its hill. This perfon alro founded the church of St. Mary, and granted it as a cell to the abbey of Sees, in Normandy. To this monaltery 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 Middlefex, and remained attached to that inilitution till the general diffolution of monaflic eftablifhments by Henry VIII. The great tower of the cafte, which is ftill ftanding, is an excellent fpecimen of the maffive ftyle of architecture adopted in that age. The walls are of uncommon thicknefs, and the buttrefles have narrow projections, whilft the lower windows have fhort rounded arches, with fingle flaft columns on their fides. This caftle was befieged by IIubert, archbihop of Canterbury, in the year 1r99, at which time it was held by the brother of king John, in truit for that monarch when he came to the throne. In the feventh year of the reign of the fame prince, it was in poffeffion of Ranulph Blundevil, earl of Chefter, and in the early years of the reign of Henry III, was held by William de Ferrars, earl of Derby.

Lancafter, however important it may have been as a military ftation, owes its chief celebrity to Edward III., who, upon the completion of the fiftieth year of his reign, folemnly, and in full parliament, created his third fon, John of Gaunt, duke of Lancafter. By the charter granted at this period, the duchy of Lancalter was conitituted a fort of petty kingdom, and all the privileges of royalty conferred upon the duke within the county. During the civil wars between the houfes of York and Lancalter, this town fuffered fo much by its adherence to the Lancattrian line, that it was nearly depopulated, and even in the time of Camden was only the refidence of a few hufbandmen. Charles II. having confirmed its ancient charter with additional privileges, it began again to revive, and has ever fince been increafing 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 houfe, prifoners' rooms, cells, work-hops, courts of juftice, \&c. From the appearance of its prefent remains, and the commanding fituation on which it ftands, it muft, doubtlefs, have been a grand and magnificent object in former times. Much as it has fuffered from the changes it has more recently undergone, its architectural features are ftill entitled to general admiration. The encircling walls embrace an area of 380 feet from eaft to weft, by 350 from worth to fouth. Within this fpace is a large court-yard,
with feveral of finaller dinenfions, and a number of towers of various thapes. The chief entrance is towards the ealt, and communicates with the town. It is a ftrongly fortified tower gateway, confifting of two femi-octangular projections, which are periorated, near the bottom, with apertures for the difcharge of arrovs, and on the fummit are feveral bold machicolations with embrafures, \&c. Within this entrance is the large court-yard already mentioned, furrounded with towers and fortificd walls, and on the oppofite fide is a large fquare keep, the walls of which are of amazing thicknefs, and its apartments of grand dimentions. 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 impreffive. To the north of the keep are the fhire-hall and county-courts, with feveral apartments and offices connected with them. Thefe have been recently erected at the expence of the gentlemen of the county, and from the defigns of Mr . Harrifon of Chefter, an architect, who has difplayed fo much claffical tafte and fcientific knowledge in the conftruction of a county-gaol in that city. The finihing of thefe works has been from the defigns of Mr. Jofeph Gandy, of London, an artift of eminent talents. The grand jury room here, and thire-hall, are peculiarly elegant and novel: the firft being of circular form, and the fecond being femicircular ; but both finifhed with cluftered columns, panelling, tracery, \&c. partly in imitation of the elegant ecclefiaftical 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 horfeback, by Northcote. This grand and fpacious pile of buildings, whether viewed as an ancient baronial fortrefs, as a picturefque object, or as a fuite of public ftructures for the gaol and courts of the county, mult demand our admiration. An engraved ground plan of this cafte is publifhed in a fmall Hiftory of Lancatter, 8 vo. $180 \%$ On an: eminence near it is the parih-church, a fpacious building, with a lofty tower, which ferves as a land-mark for veffels coming up the river. At the eaft end of the church is a wooden fcreen mont elegantly carved. Among the monu-: ments, is one by Roubiliac, for William Stratford, L. L. D. In the church-yard is the fhaft of a ftone crofs, with carving, and an infcription in Runic letters.
The other public edifices of this town, are a town-hall, a chapel of eafe to the parifh church, a theatre, an affemblyroom, a range of fhambles, a Quakers' meeting-houfe, and chapels to the following claffes of diffenters, Prelbyterians, Quakers, Independents, and Methodifts. An ancient bridge, now in ruins, connected the oppofite fhores of the Lune, near St. George's Quay, but the increafing opulence and population of the town rendered a new and more commodious one neceflary. This was erected from the extremity of Cable ftreet to Skerton, at an expence of nearly 12,000 l. paid by the county. The length of this fuperb ftructure is 549 feet ; the arches, five in number, are equal and elliptical; the defign was by Mr. Harrifon. Among other benevolent inftitutions in this town are feveral alms-houfes for men and women, a free-fchool for the education of 60 boys, and two charity fchools 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 veffels conftrueted, particularly by Mr. Broockbank, who has fent fhips, launched at his dock-yard, to London, of 450 tons burthen. Lancafter trades to America with hard-ware and woollen manufac-'

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tures; and a confiderable quantity of candles is exported to the Weft Indies : 40 or 50 hijps trade alfo to Norway. It appears from the Cuftom-houfe entries, that in the year 1799, 52 veffels cleared out for the Welt Indies, with cargoes to the value of two millions and half pounds flerling. The Cuttom-houfe is a fmall neat building, with a portico fupported by four Ionic columas, fifteen feet in height, each a fingle tone. The ' Town hall is a large commodious edifice ; in the council room is a full-length portrait of lord Nelfon, painted by Mr. Lonfdale, an artift of talents, who is a native of this town. He prefented it to the corporation, who have allo a fimilar portrait of Mr. Pitt. The borough of Lancafter originted from a grant, made in the 4th of Richard I. and members were firt fent to parliament ${ }_{23}$ Edward I. Returns were alfo made at various periods in the two fucceeding reigns ; after which there were none till the reign of Edward VI., when the privilege was reflored. The corporation is compoled of a mayor, recorder, 12 aldermen, two bailiffs, 12 capital burgeffes, 12 common burgeffes, a town clerk, and two ferjeants. In the vicinity of the town is an excellent falt marih, adjoining the banks of the Lune : this marfh is paflured and divided into what are termed orI graftes ; that is, a privilege for the inhabitants of turning a horfe or two cows to fummer on the common. By the late inland navigation, Lancafter has communication with the rivers Merfey, Riblle, Oufe, Trent, Dervent, Severn, Humber, Thames, Avon, \&c., which narigaticns estend above 500 miles, into the counties of Lincoln, Nottingham, York, Weftmoreland, Chefter, Warwick, Leicefter, Oxford, Worcetter, \&c. About one mile north-ealt of the town is a grand aquedue-bridge, which conveys the Lancalter canal over the river Lune. This flupendous fabric was defigned and fuccefsfully executed by Mr. John Rennie, civil engineer, who has hereby difplayed much fill and fience in this and feveral other fimilar works. The bridge confilts of five circular arches, each of 70 feet $f_{p a n}$, rifing 39 feet above the furface of the river. The peculiar difficulties which the architeet had to encounter, in the bed of the river, made it neceffary to have a foundation, a flooring of timber, which alone coft 15,000 . The fuperltructure came to double that fum.
In the return to parliament in the year 1801, Lancafter is itated to contain 16 rir houres, and 9030 inhabitants. Markets are held on Wednefday and Saturday; and here are three annual fairs.
About three miles fouth of the town is Afhton Hall, the feat of the duke of Hamilton and Brandon. Two miles further is Thuraham Hall, the feat of John Dalton, efq. In the vicinity of the town are allo Wyerfide, the feat of John Fenton Caxthorne, efq.; Quernmore Park, the feat of Charles Gibfon, efq- ; Grals-jard Hall, the property of Thiomas Edmondfon, efq.; Halton Hall, the feat of W. B. Bradhaw, efq.; and Halton Park, the feat of Thomas Bateman, efq.
Five miles north of Lancalter, is a cavern, called Dunald Mill-bole, of a peculiarly grotefque and aiveful appearance, which, probably, from its obfcure fituation, has been but little noticed by topographers.。 An Hirtorical and Defcriptive Account of the Town of Lancafter; with four 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 townhips, and contains 566,240 acres of land, and 43,303 inhabitants, including 178 faves. The lands of this county are rich and well cultivated. The hills in the northern parts abound with iron ore; for the manufacture of

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which two furnaces and eirht forges have been eretted. Copper and lead, and abundance of limellonc, have been found here, -Alfo, a county of Virginia, bounded E. by Chefapeak hay, and S.W. by Rappahantock river. It is about 40 miles long, and 15 broad, and contains 2249 free inhabitants, and 3126 naves. The lands are generally poor. -Alfo, a diftrict of South Carolina, containing 50 Iz inhabitants, of whom 1076 are flaves.-Alfo, a pult-town in Gerrard county, Kentucky, 621 miles from Wafhington.Alfo, a handfome and flourifhing poftetown, the capital of Lancatter county, in Pennfylvania, and the largeft inland town of the United States. It is pleafantly Gituated upon the defcent of a hill, $1 \frac{1}{2}$ mile W. of Coneftoga creek, which falls into Sufquehanna river, nine miles $S$. by W. of the town. Its trade is already great, and muft increafe in proportion to the increafing population of the furrounding country. It contains about 900 houfes, chiefly of brickand ttone. The legillature meet here till a permarent feat of government fhail be eftablifhed. The public buildings are, a handfome court-houfe of brick, a market-houfe of the fame materials, and a ftrong ftone gaol. Here are fix places of worhip for German Lutherans, German Calvinitts, Prffyterians, Epifcopalians, Moravians, and Roman Catholics. The manufactures of this town are carried on by individ:als. There are three breweries, and two or three valuable tanneries. Franklin college is eftabliflied hicre for the Germans. Its endowments are the fame as thofe of Dickinfon college, at Carlife. The truftees confit of Lutherans, Calviniits, Prefbyterians, and Epifcopalians, of each an equal number. The principal is a Lutheran, and the vice-prefident a Calvinilt ; 58 miles W. by N. from Philadelphia. N. lat. $40^{\circ} 3^{\prime}$ W. long. $76^{2} 20^{\circ}$ - Alfo, a poft-town of South Carolina, 36 miles from Camden. - Alfo, a pleafant poft-town in Worcefter county, Maffachufetts, fettled in 1645 , and incorporated in 1653 . It is fituated on two branches cf Nafhua river, which runs into the Merrimack: over thefe branches are nine large bridges, and on thcir banks the land is excellent. Many perfons of education and fortune have been induced, by the pleafantnefs of this town, to make it the place of their relidence. It is famous for its abundant fupply of good flates and of ftones for tombs and graves, which are articles of exportation. Camberry pond in this town is obferved to rife as much as two feet before a form, and Sandy pond rifes in a dry feafon. It contains $158+$ in-habitants.-Alfo, a poft-town in Grafton county, New Hamplhire, on the E. bank of Connecticut river, about 45 miles above Hanover ; incorporated in 1763, and containiag, in 1800,410 inhabitants.-Alfo, a fine town, she capital of Fairfield county, in the ftate of Ohio, on a branch of the Hockhocking river, about 25 miles N.E. from Chillicothé. -Alro, a townfhip of Upper Canada, in Glengury county, on the river St. Lawrence, and the lowell in the province adjoining Lower Canada. Morfe.

LANCAT, a river on the N.E. coatt of Sumatra, which runs into the Ealt Indian fea, N. lat. $4^{\circ} \cdot 5^{\prime}$, E. long. $9^{8} 2^{\prime}$.
Lancavy, Lascakuy, or Pulo Lada, an inland in the Eaft Indian fea, near the coalt of Queda; about i6 miles long, and from three to eight broad. N. lat. 6. 19'. E. long. $99^{\circ} 40^{\prime}$.

LANCAYAN, a fmall illand in the Eaft Iodian fea, near the N. coaft of Borneo. N. Lat. $625^{\prime}$. E. long. $118^{\circ} 9^{\prime}$.
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 fhaft or handle, the wings, and the dart. Pliny attributes the iarention of lances.

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fances to the Rtolians. But Varro, and Aulus Gellius fay, the word lance is Spanifh; whence others conclude the ufe of this weapon was borrowed by the people of Italy from the Spaniards. Diodorus Siculus derives it from the Gaulifh, and Feftus from the Greek royxr, which fignifies the fame.

The lance, or fpear, is among the oldeft weapons recorded in hiltory, and is nearly coeval with the fivord or bow; it probably originated in a pole or ftake, fharpened at one or both ends, afterwards armed with a head of Hint, and in procefs of time, on the difcovery and ufe of metals, with copper, brafs, and iron. Fhnt heads for both fpears and arrows are frequently found in England, Scotland, and Ireland, and fo are alfo fpear, javelin, and arzow heads of a metal nearly refembling brals. The fpear, lance, javelin, darts of different kinds, and even the more modern pikes, are all comprehended under one common defcription of a long ftaff, rod, or pole, armed with a pointed head of ftone or metal at one or both ends, conflructed for the purpofe of piercing, or wounding with their points only, either by being puhted or thrown with the hand. Long fpears and lances were ufed by the Saxons and Normans, both horfe and foot, but particularly by the cavalry of the latter, who, in charg$\mathrm{i}_{\mathrm{F}}^{\mathrm{K}}$, refted the butt end of the lance againint the arçon or bow of their faddle; the mail-armour not admitting of the fixture of lance-refts, as was afterwards practifed on the cuiraf.. A lance-reft was a kind of moveable iron bracket, fixed to the right fide of the cuirafs, for the purpofe of fupporting the lance. It does not appear that there was any eftablified ftandard for the length or thicknefs of the ancient lances, or the fize or form of their heads; but it rather feems, that every military man had his lence, as well as his other arms, conftructed of the dimenfions that beft accorded with his ftrength and ftature. It is certain, however, that the heads of lances and feears were always made of the beft tempered fteel, and their ftaves of the foundeft afll, whence the writers of Latin verfe ufed the word fraxinus (Latin for afh ) to exprefs a lance or feear. Although lances and fpears were chiefly the weapons of horfemen, they were alfo ufed by the infantry and difmounted knights, to keep off the cavalry; for this purpofe they fixed the butts in the ground, their points floping towards the breafts of the enemy's horfes. In tournaments, the knights fometimes fought on foot with their lances, in which cafe it was cuftomary to fhorten them, by cutting off part of the flaff. Tilting lances differed from thofe ufed in war, both in their heads and ftaves; the heads of tilting being blunt, or occafionally fitted with a contrivance to prevent penetration, called a coronel or cronel, from its refemblance to a crown. The faves were thick at the butt end, tapering off gradually to the point, and generally fluted; near the butt end they had a eavity 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. Thefe handles were not confined to the tilting lance, but were made alfo on thofe defigned for war. Fauchet §ays, they were not in ufe before the year 1300 . Lances were ornamented with a banderole near the point, which gave them a handfome appearance; thefe were alfo called pencells. Grofe on Ancient Armour, vol. ii.

Lance, Holy, the lance which, in legendary ftory, is faid to have pierced the fide of our Redeemer. In the time of the Crufades, when Antioch was befieged, a prieft of the diocefe of Marfeilles, called Peter Bartholemy, pretended to have received from St. Andrew, during his lleep, the Following inftrution. "At Antioch," faid the apoltle, "ir 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 inftrument of eternal, and now of temporal falvation, will be manifefted to his difciples. Search, and ye fhall find; bear it aloft in battle; and that myflic weapon fhall penetrate the fouls of the mifcreants." This revelation was refpectfully received by count Raymond, whom his faithful fubject, in the name of the apoifte, bad chofen for the guardian of the holy lance. After fome previous ceremonies, the ground was opened at the appointed place; and fearch was unfuccefffully made for the lance. After the count and his companions had withdrawn, the artful prief defcended into the pit; and, availing himelf of darknefs and folitude, contrived to fecrete and depofit the head of a Saracen lance; and the firft gleam of the fted was faluted with a devout rapture. Thic holy lance was drawn from its recefs, and expofed to the veneration of the crufaders, and we may well imagine that the defponding troops would again be inflamed with the enthufiafm of valour. Preparation was made for a conflict, and it may be fuppofed 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 unanimoufly afferted; but as foon as the temporary fervice was accomplifhed, the perfonal dignity and liberal alms which the count of Tholoufe derived from the cuftody of the holy lance, provoked the envy, and awakened the reafon of his rivals. Incredulity, with regard to the truth of the legend, fucceeded fufpicion 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 midat 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 prieft of Marfeilles traverfed the fire with dexterity and fpeed; but his thighs and belly were fcorched by the intenfe heat ; he expired the next day, protelting his truth and innocence. Such were the origin, influence, and termination of the legend of the holy lance. Gibbon's Hift. rol. xi.

Lance la Grace, in Geograpby, a town of Louifiana; 75 miles S.S.W. of New Madrid. N. lat. $35^{2} 25^{\prime}$. W. long $90^{\circ} 27^{\prime}$.

Lance's Bay, a bay on the N.W. coaft of Jamaica. N. lat. IS $27^{\prime}$.' W. long. $78^{\circ} 14^{\prime}$.

LANCEA Christi, in Botany, a name given by fome authors to the ophioglof $\sqrt{k}, m$, or adder's tongue, a fmall herb found in moift places, with a fingle ftem of feeds.

LANCEARII, in Middle Age Writers, Soldiers whofe chief weapon was the lance. They were in great efteem formerls.

LANCEBEARERS, I/and of, or Ifle des Lanciers, in Geography, a fmall ifland in the S. Pacific ocean, fo named by M. Bougainville, in 1768. S. lat. $18^{\circ} 28^{\circ}$. W. long. $1^{3} 8^{\prime} 0^{\prime}$.
LanCellotti, Gianpano, in Biograpby, an eminent jurift, was born at Perugia about the year 1510. He was firft noticed as a teacher of the law at his native place, and was engaged by pope Paul IV. to draw up an intitute of canon law, in imitation of Juftinian's Inftitutes of civil law. This was publifhed in 1563 , and went very quickly through feveral editions. It was annexed to the body of canon law, and ftill retains its place in the modern editions of that compilation. He was author of other treatifes on legal fubjects, and of a life of Bartolus. He died at Perugia in 159 x . Moreri.
lancelot, Claude, was born at Paris in 1615 ; at a fit age he was perfuaded to join the devout folitaries of
the Port-Royal, by whom he was employed in teaching mathematics, and the languages in their fchools, till government thought proper to fupprefs 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 fame afcetic courfe which he had been ufed to in the feminary. He died in 1695. He was author of many excellent works, among which may be noticed "Nouvelic Methode pour apprendre la Langue Latine;"," Nonvelle Methode pour apprendre la Langue Grecque." Thefe have been frequently reprinted, and abridgments have been made of both. His "Grammaire generale et raifonnèe," is faid to be a very excellent work, and has been tranflated into feveral languages.

LANCEOLA, in Botany, a name given by fome authors to that fpecies of plantain called rib-zwort, or plantugo quinquenervia, by moit authors.

Lanceolated Leaf. Sce Leaf.
LANCEROTTA, in Geography, one of the Canary inlands, about 30 miles in length, and eight in its greatelt breadth, containing 800 inhabitants. It is divided by a ridge of mountains, which afford nothing but pafture for cattle, though the vallies are fruitful, but fandy and thin in foil. A principal article of trade is goat's flefh, which the inhabitants fell to the neighbouring iflands, under the name of Tufinetta. In 1730, a volcano broke out in this inland. Cayas, called alfo Rubicon, and Lancerotta, the principal town, contains about 200 houfes. The ifland has feveral havens or roads; and at the N.E. extremity is one, where thips may come in from the northward, and lie land-locked from all winds in 10,15 , and 20 fathoms. The E. point of the ifland is in N. lat. $29^{\circ} 8^{\prime}$. W. long. $13^{\prime \prime} 26^{\circ}$.

LANCET, a well known furgical inflrument, the common form of which is reprefented in the plates of this work. See the Surgical Plates.

Lancet Arch, in Architecuure, the fame as the pointed arch.

Lancet Windowes, thofe with lancet arches; but the term is more generally applied to windows which are long and narrow, than to thofe which are wide and low.

LANCETI, a name given by the ancient laws of England to a kind of valfals, who were obliged to work for the lord one day in a week, from Michaelmas to autumn, either with fork, fpade, or flail, at the option of the lord.

LANCH is a fort of long boat belonging to flips; it is not built upon failing principles, it being flat-bottomed and broader, and is more ufeful for weighing fmall anchors than the long boat, and watering and carrying the fhipftores.

Lanch of a Sbip. See Launcir.
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 Iee of an archbifhop; $\$_{4}$ miles N. of Naples. N. lat. $42^{\circ} 12^{\prime}$. E. long. $14^{\circ} 20^{\prime}$.

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 cherifhed the difpolition for learning which he early difplayed; and having finifhed his claffical ftudies, he went through the courfe of philofophy in the Roman college, and then commenced the ftudy of divinity. He had always evinced a great tafte for natural hiftory, which was fo Itrongly awakened during his theolo-
gical refearches, that it induced him to abandon the fludy, and apply himfelf entirely to that of medicine. He purfued the fundamental branches, anatomy, chemiftry, and botany with great ardour, as well is the more important object, the obfervation of difeafes; and was created doctor in philofophy and medicine in $16 \%$. In 1675 , he was appointed phyfician to the hofpital of the Holy Ghoft, in Saffia, where he purfued his clinical enquiries with great accuracy and acutenefs : but he quitted this fituation in 1678 , when he was received a member of the college of St. Saviour, in Lauro, where he read with zeal all the beft authors from Hippocrates downwards. His talents and acquirements were now known and ackowledged, and he was appointed profefo for 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. chofe Lancifi for his phyfician and private chamberlain ; and forne time afterwards gave him a canon's ftall in the church of St. Lawrence: but on the death of the pope, in 1689 , he refigned it. He was now in high public eftimation, and when Innocent XII. fell fick in 1699 , Lancifi was called apon, and was never abfent from him during his whole illnefs. He was elected phyfician to the conclave, and was immediately appointed firlt phyfician and private chancellor to the perfon of the fucceeding pope Clement XI. He was indefatigable in the difcharge of all his duties, as well as in the purfuit of his ftudies, readirg and writing at every interval of Leifure, and in his attendance on the learned focietres of the time. He died in January, 1730, at the age of 65 . He was a man of fmall ftature, with a lively countenance, and cheerful difpofition; his manners were extremely engaging; and he was poffeffed of much knowledge of mankind. His ardour for the advancement of his art was extreme and uncealing. He collected a library of more than twenty thoufand yolumes, which he prefented in his life-time to the hofpital of the Holy Ghoit, for the ufe of the public, particularly the young phyficians and furgeons who attended the patients in that hofpital. This noble benefaction was opened in 1716 , in the prefence of the pope, and a great number of cardi。 nals.

Lancifi left a confiderable number of works, many of which have been printed, but feveral in MS., which he bequeathed to the hofpital, and which are depofited in its library. Among his leffer productions, were a fynopfis of anatomy ; an epitle to Fantoni on the fame fubject; an epiftle to Bianchi on the fecretion of the bile; an effay on the atmofphere and climate of Rome; on phyfiognomy and the feat of the foul; on the proper method of fludying in medicine; on the origin and ftructure of fungi, in a letter to count Marfigli; and fome others, in the Latin language; and alfo an addrefs to the acaderny of Sienna, "Del modo di filofofar nell' Arte Medica." His more important works are his treatife "De fubitaneis mortibus, Libri duo," Romæ 1707. -" Tabulx Anatomicx Clariff, viri Bartholomxi Euftachii, quas à tenebris tandem vindicatas, et fanctiff. Dom. Clementis XI. Pontif. Max. munificentiâ dono acceptas, prefatione notifque illuftravit," ibid. 1714 , folio.-"Differtatio Hiftorica de Bovillâ Pefte ex Campinix finibus, anno 1713, Latio importatâ. Accedit Conflium de Equorum Epidemiâ,", ibid. 1715 .-"De noxiis Paludum Effluviis, Libri duo," ibid. 1717.-He likewife edited, in the fame year, under the patronage of the pope, a pofthumous work of Michael Mercati, entitled Metallotheca, with plates; and afterwards publifhed, " Appendix ad Metallothecam Vaticanam Michaélis Mercati," 1719. After his death, a treatife, " De motu cordis et aneuryfmatibus," was printed in folio at Rome, 1728 :-and a collection of cafes from his MSS.

## L $A-N$

MSS. in the library of the hofpital, entitled "Confilia XLIX pollhuma," Venice, 1747 . All his works, with the exception of the two laft, were collected in his life-time, and printed at Geneva, with the title of "Joannis Maria Lancifi Opera qux hâtenus prodierunt omnia, Differtationibus nonnullis adhucdum iueditis locupletata," 1718 ; which, as well as moft of the feparate treatifes, have palfed through feveral editions. Eloy DiA. Hitt.

LANCISIA, in Botany, fo named by Pontedera, in honour of John Maria Lancifi, phyfician to pope Clement XI. Ponted. Diff. 203. Lamarck. Illuftr. t , ;or. See Limbeckia.

LANCKAW, in Geography, a town of Pruflia, 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. $32^{\circ} 36^{\prime}$. E. long. $84^{\circ} 32^{\prime}-$ Alfo, a mountain of Thibet. N. lat. $32^{\circ} 55^{t}$. E. long. S+ $34^{\prime}$.

LANCTAN, a mountain of Thibet. N. lat. $31^{\circ} 5^{2}$ '。 E. long. $85^{\prime} 54^{\prime}$.

LAND, in a general fenfe. See Eabth, Soil, \&c.
Dr. Davenant, from a fcheme of Mr. King, ftates 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 $7 \frac{x}{s}$ acres per head. Davenant's Works, vol. vio § 3. See Acre, and Expectation of $I$ ife.
Land, in a legal fenfe, 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 metai and other foffils, his woods, his waters, and his houfes, as well as his fields and meadows.

Land, in Agriculture, the earth or foil in which plants fix themfelves and grow, or which produces crops of different kinds.

It is ftated 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 vifible fource of its productions. And that it may generally be confidered as being compofed of three diftinct parts; the foil, the fub-foil, and the bafe, or fubfructure, on which they relt." It is added, that "the foil, or plant-feeding flratum, 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 inttances, 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. The influence of the atmofphere, the fibres of vegetables living and decayed, the operations of animalculw, and larger animals, that inhabit foils, and, above all, the powerful effects of manures, tend to furnifl the furface mould with qualities which the fubftrata have not the means of acquiring. The medium depth of cultivated foils, in England, may, it is imagined, be fet down, with fufficient accuracy for this purpofe, 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 refpeets." See Solt.

And it is further ftated, that " the fubfcill, or intervening flratum of land, is till lefs definite with regard to depth. In fome initances, as where the cultivated foil refts upon rock, it may be faid to be wanting ; though, in moft cafes of this kind, a Atratum of a gravelly nature, compofed 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 fubltructure. While in others, an uniform mafs of earthy materials reaches to a great depth. If, therefore, a definite thicknefs, or depth, may be affigned to the fubfoil, it mult be, in a degree, arbitrary," or without any degree of accuracy or correctnefs.

It feems evident, that "the foil affords nourithment and flability to agricultural plants, and that the fubfoil affigns them temperature, with refpect to moilture and internal warmth. If the fubfoil is of fuch a nature, or is fo fituated as to receive and retain more moifture than is requifite for the naturaj growth of plants, their health is injured. If it not only holds water in its own pores, but freely communicates it to thofe 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 ftratum of fuffio cient depth intervenes between the cultivated foil and the bafe, to permit the fuperfluous moillure which filters through the foil, or which is communicated fubterraneoully, to pafs off, the flants in cultivation will be relieved from collected moifture, in the immediate region of their feeding fibres; though the fubftructure may be charged to the fill with water. Hence, where nature has sot furnihed land with this valuable interttratum, it is the bufnefs 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 effectis on the foil, and thereby fupplying the required Itratum." It is however well obferved, that " in doing this, the artift mult be led by the given properties of the bafe, and can feldom lower it to any determinate or arbitrary depth. Neverthelefs, 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 fpecific quality of the fubfoil. Sand will hold up water that is lodged at its bafe to 2 much greater height than gravel. A flratum of gravel of one foot in depth forms a drier fubfoil, than a bed of fand of twice or three times that thicknefs. But clean fand or gravel is rarely found in land; fand and gravelly loams being the more ordinary materials of abforbent fubfoils: and thefe are capable of railing and holding up water to a confiderable height. "Let us, therefore, admit that effective fubfoils may vary from one to two feet, and fix the medium depth at eighteen inches." And " by thus fixing the mean depth of foils at nine inches, and that of fubfoils at eighteen inches, place the bafe or fubitructure of the land at twenty-feven 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 fone drains of this depth may be rendered effectual, yet free from injury by the operations of tillage. In the practice of Riilful workmen, the depth of ordinary fubfoildrains waries from eighteen inches to three feet, according to the circumitances of the given cafe, 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 bafe, may be enumerated and confidered. In the execution of which it may be proper to divide lands into claffes, and mark the varieties of each.
Firf Clafs. - This comprehends, according to the above writer, fuch lands as are liable to furface water only with their abforbent ftrata (if any) open, fo as freely to difcharge the fuperfluous water they receive upon them: the varieties

## LAND.

of which are firft, where "the foil, the fubfoil, and the bafe are repellent, or in a flate of moiftnefs, impenetrable by water, as clay and firong deep clayey loam." The fecond, where "the foil is repellent, the fubfoil abforbent, the bafe repellent." The third, where "the foil is repellent, the fubfoil and bafe abforbent, or in a flate of moiltnefs, conducting water; as fand, gravel, open rock, and the lighter more open loams." The fourth, where "the foil, the fubfoil, and the bafe are ablorbent." The fifth, where " the foil and the fubloil are abforbent, but the bafe repellent." And the fixth, where "the foil is abforbent, the fubfoil repellent, and the bafe abferbent or repellent."
ad Clafs. -This includes fuch lands as are liable to furfaceawater only, with their abforbent ftrata clofed, or permitting an imperfect difcharge, either for want of fufficient defcent, or by reafon of impervious ftrata, or beds of impenetrable materials. The varieties of which are, firft, where "the foil is repellent, the fub-foil abforbent, and the bafe repellent or abforbent." The fecond, where "the foil and the fub-foil are abforbent, but the bafe repellent, or abforbent." The thir\&, where "the abforbent and repellent ftrata, or maffes, are thrown together irregularly ; or not difpofed in regular ftrata, which correfpond with the furface," or upper part.
${ }_{3}$ d Clafs. - This comprifes fuch lands as are liable, not only to furface-waters, but to thofe which are fubterrene, and which either defcend from higher grounds in their refpective neighbourhoods, or rife beneath them from fubjacent refervoirs; the abforbent ftrata of this clafs being clofed, and thereby rendered retentive, as in the fecond clafs, or kind of land. The varieties of which are, firtt, where "the foil is abforbent or repellent; the fub-ftrata abforbent and clofed, and uniformly charged with defcend,ing waters, by an even ttratum of gravel, free-fand," or fome other fimilar material. The fecond, where "t the fame foil and fub-ftrata are partially charged with defcending waters, through veins of fand or gravel, or fiffures of rock, \&c." The third, where "the foil is repellent or abforbent, the fub-foil abforbent and clofed, and uniformly charged with defcending waters; the bafe repellent, with a fub-bafe freely abforbent and open." The fourth, where "the foil is abforbent or repellent, the fubftrata uniformly abforbent and clofed, and charged with rifing waters." And the fifth, where "the foil is repellent or abforbent, the fub-ftrata complex and clofed, and charged with rifing and defcending waters.'

It may be obferved, that the nature of thefe different kinds, or claffes of lands and their varieties, with that of their different conftructions, the effects to which they are each particularly expofed from a fuperabundance of water, the methods of removing fuch wetnefs, both with the view of ameliorating the lands for the purpofes of cultivation, and that of providing fupplies of water for economical ufes, as the working of light machinery, the confumption of palturingfock, and in particular cafes, where a fufficient quantity can be procured, for the watering of land, will be fully confidered in their proper places; and many ufeful obfervations may be found in the work here alluded to, efpecially in what relates to draining. The two objects of applying water to the ufe of live-flock, and that of irrigation, fhould conltantly be kept in the mind of the improver of the foil. See Soin, Watering of Laid, and Draining of Land.

It is fufficiently evident, from various circumftances in the management of lands, that fome forts are much better calculated for the production of grain crops than thofe of the grafs kind; while, on the contrary, others are much more fuitable and better adapted to the raifing of grafs than thofe of the corn kiad; and that there are ftill others that may Vol. XX.
be cultivated under a convertible fytem of corn and grafe, with more fuccefs than cither of the methods feparately.
It may be remarked, that all thofe lands which pulferfs a fufficient degree of drynels, whether they have much depth of mould or not, and which, in their natural itate, have but Iittle tendency to produce good herbage, fuch as thofe covered with different forts of coarle plants and vegctable productions, whether in an open or inclofed ftate, ate proper for tillage. And it las been well obferved by Mr. Davis. that grouds of this nature are of confiderably more value when in a fate of tillage than in patture; 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 fuod for animal itock, when in a tillage thate, than they did when kept entirely in that of pafture or fward. The fame writer likewife ftates, that there are various other defcriptions of light lands that may be kept in a ftate of tillage with more advantage than in that of grafs, as they are peculiarly fuited to thote improved modes of cultivation that are neceffary for raifing large fupplies of green-food for the fupport of live-ftock of different kinds. That the poorer forts of fandlands, where marle, clay, chalk, or other fimilar fubitances, can be readily procured, are much more proper for the phirpofes of tillage than thofe of grafs, is fufficiently fhewn by the improvements that have been made in many of the more fouthern diftricts of the kingdom. And that lands of the chalky kind, whether of the more fuperficial or deep defcriptions, are, in molt cafes, better fuited for tillage thati grals, is proved from their wetnefs in the winter fealon, and their opennefs and friability in the fummer, rendering it almoft impoffible to eftablifh good herbage upon them. Befide thefe, there is another fort of land that is better for the parpofes of tillage than thofe of grafs, which is that which, in the ftate of grafs, is conitantly fo difpofed to the production of mofs, as to afford but a very fcanty fhare of good herbage in any circumftances.
It has been ftated by the author of "Practical Agriculture," that "moft of the clayey and more heavy defcriptions of land, efpecially when fituated in vallies, or other low confined expofures, though they may be capable of affording good crops of particular kinds when under the plough, as thofe of the wheat and bean kind, are, on account of their retention of moilture, the increafed expences of labour, and the uncertainty of feafon for tilling them, as well as their inaptitude for moft other forts of crops, and their fitnefs for the production of good herbage, much more beneficial in the itate of grafs than irr that of tillage. When there is an opportunity of procuring fea-fand, and of applying it at an ealy expence, they may, however, it is oblerved, be converted to the purpofes of tillage in a profitable manner. Moft of thofe ftrong cold grafs-lands which, in a ftate of tillage, would be improper for the growth of turnips, and other applications of improved cultivation, fhould alfo conftantly remain in a ftate of grafs. And likewife thofe lands that are fituated near large towns, where manure is plentiful, and, of courfe, capable of being procured at a reafonable rate; and where the produce of fuch lands is olways in great demand, and therefore capable of being difpofed of to great advantage. Such lands as are fituated on the banks of large rivers or brooks, which are capable of being improved by means of watering, are likewife more beneficial when kept conftantly under the grafs fyftem than any other mode of cultivation that can be practifed. The lands of a calcareous nature, which are diftributed in the vallies of the more mountainous diftricts, where old grafs-land is fcarce, and of much importance, and moft part of that in the ftate of tillage incapable of being converted to the coindition

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of good grafs, may alfo, it is believed, be the molt advantageous when continued in a permanent itate of herbage."

But that "the forts of lands that are the moft adapted to the practice of convertible hubbandry are thofe of the loamy kinds, which are not too ftrong 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 fultaining any injury, but frequently with the moft evident advantage, as the practice of fome of the weltern and midland diftricts has fully proved." And "the richer kiads of fandy lands are, in moft cafes, allo well fuited to this fort of hufbandry; efpecially 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 cafes, be the moft beneficially employed in chis mode of culture, ace, from their producing little elfe than plants of the aquatic id. it is obvious that they mult be completely deftroyed, and thofe of the proper grafs kind be introduced, before any ufeful herbage can be produced. And this is capable of being accomplifhed in by much the moft perfect manner under the flate of tillage. But as they are, in moft inftances, much too tender and moift for the purpofe of remaining long in the ftate of tillage, as foon as the above intention has been fully effected, they fhould be reftored to the flate of permanent grafs," either as meadows or pallurelands. Sec Ground and Sorl.

Land Carriage, in Rural Economy, that fort of conveyance which is performed on land, which, in many cafes, is highly inconvenient, and always greatly expenfive and troublefome to the farmer. It fhould, of courfe, be leffened as much as poffible, in fituations that will admit of it, by the fublituting of water-conveyance, by the forming of fmall narrow canals, which may, in many intances, be done at a trifling expence, and thus much leffen the extent or diftance of land-carriage. Much has been done in this way, with confiderable effect, within the laft twenty-five years, in different parts of the country. See Caxal and Inland Navigation.

LaNd-Guard, a furt of fence or embankment conftructed of fones, wood, or other materials, on the borders of rivers and brooks, in order to prevent their overflowing and carrying away the land. The cafes in which they beconse more particularly neceflary, are where they are confined in the parts where they are required to bend, by rocks or other means, to an unaltered charnel; it often takes place in hilly fituations, and where deep poois occur in fuch parts at low water, fo as to render it difficult or impofiribie to provide a good foundation for a pier. The mode of applying and forming the e forts of guards, will be explained in confidering the nature and manner of guarding river-banks, and confining ftreams of other kinds. See Embankifest, and RiverBanks, Guarding of.

Land Mark, in Agriculture, any thing placed as the divifion of land. Thefe marks were formerly chiefly ufed for thewing the different lots or divifions in common field-lands, and other forts of commonable land.

Land-Reeve, in Rural Economy, a perfon whofe bufinefs it is to overlook certain parts of a farm or eftate; to attend, not only to the woods and hedge-timber, but alfo to the fate of the fences, gates, buildings, private roads, drift-ways, and water-courfes: and likewife to the focking of commons (where there are any), and encroachments of every kind; as well as to prevent, or detect wafte and fpoil in general, whether by the tenants of the eftate, or others; and to report the fame to the manager or land-lteward. It has been obferved, that "the utility accruing from thefe inferior officers of an eftate occurred to the writer in the Highlands of Scotland; where they ha , e been commonly appointed on every eftate, it is believed, from time immenorial, 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 crery large eftate ; not merely as helpmates to the acting-manager, but as authentic evidences in matters of difpute, and as intelligent informants to a proprictor in going over, or inquiring after, the affairs of his cltate. Active inteliligent tenants, of known integrity, are generally the moft fuitable perfons for having the management of this fort of truit confided in them."

Land Springs, fuch as rife, or are produced in lands, at fome confiderable depth, from the water being obftructed in its defcent by fome fort of impenetrable material, fuch as clay, \&c., and thus forced up to the furface, where it breaks or oozes out, having different appearances, according to the nature of the foil and fituation in which it occurs. See Spring, and Draining of Land.

Lavd Stequard, the common name of a perfon who overlooks, or has the management of a farm or eftate. The number, defcription, and qualities of-land ftewards muft be regulated according to the nature and extent of the property, and the particular circumftances of the proprietor. In order to be fully qualified, according to the author of "The Modern Land Steward," for the proper management of large effates, the ftewards fhould have attained that thorough and correct knowledge of the bufinefs 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 flould be engroffed by their own private concerns, as, in fuch cafes, they muft evidently neglect their own, or the bufinefs of their employers ; and it would be paying human nature too great a compliment to fuppofe the former. To an ample fhare of agricultural knowledge, they ought to have a thorough infight into the nature of every improvement of which eltates may be capable, whether upon or beneath the furface; or from its local fituation, whether inland or upon the fea-coaft. Their attention fhould be alfo directed to the ufeful fciences of political economy and political arithmetic, as there is a ftrict and happy coincidence between public and private wealth. They fhould be well verfed in, and qualified to fuperintend, the culture of wafte lands, the difpofal 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 conitruction of bridges, mills, and engines; and be poffeffed of a confiderable fkill in rural architecture of every kind. Nor is it lefs neceffary that they thoroughly comprehend the nature of all the various methods in which money bufine $\sqrt{s}$ is tranfacted; together with the advantage of bargaining in the purchafe or fales of eftates. Their intelligence ought allo to extend to the valuable inventions and improvements of other countries, as well as thofe of their own; which, whether in the mechanic or agricultural relation, they fhould ufe their beft means to introduce, and fairly experiment upon the eflates under their care, with the honourable and patriotic views both of private and national benefit. In fhort, with fufficient honefty, a mind amply replenifhed, a cool, deliberate, and calculating head, a quick difcernment, they fhould lay hold of every occafion, as it fprings, to enhance the worth, the reputation, and the embellifiment of the property committed to their charge.
For thele qualifications and endowments they fhould have full and adequate allowances, in the way of falaries or wages, according to the fervice to be performed. Their pract cal fkill in agriculture fhould particularly extend to the r anagment of cattle, and the common outlines, at leatt, of rural architeCture, as far as regards repairs, or ordinary new erections; and they fhould be thoroughly malters of common

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accounts, and able to deferibe or correfpond by letter intelfigibly, and with prapriety. When thus qualified, they may make very capable and refpectable ftewards; 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 thefe branches of fcience ought not to operate to the rejection of thofe otherwife well qualified; fince they are acquired by a very moderate application and practice; and fince there are always at hand profeffional men in thefe fciences, whofe fervices are perhaps, after all, the molt eligible and proper. Land ftewards fhould have the care and management of every thing that relates to the farm or eftate, of which they have the fuperintendence. It is alfo'further adyifed, that " every eftate fhould be accurately furveyed, and correctly defcribed in a map, of which the tenant alfo Mould have one. It is fuppofed particularly neceffary, both to fteward 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 purpofely impannelled at the manor-court: and in order to preferve the bounds and precincts of a parih, with the particular property of the lord, entire, and free from encroachment, and to preclude the neceffity of quarrels and fuits at law, it is good to keep the ancient cuftom of annual perambulation." And it is conlidered as " the duty of thewards to ride over, and make actual perfonal furveys of the eftates in their truft, fufficiently often to offer timely advice, to obviate any dangers, and nip any irregularities or encroachments in the bud: to have in their poffeffion duplicates of all leafes, covenants, deeds, \&c." And that, "where the cafe of default or danger does not admit of immediate remedy through their own means," to exonerate themfelves by inftant application to their employers.

And it is likewife their bufinefs "to infpect all repairs, that they be duly and fubftantially performed; fencing regularly kept up, ancording to covenant ; ditches caft and fooured, water-courfes frce, and common rights fairly enjoyed, according to the cuftom of the manor; the larger tenants not overflocking, to the prejudice of the inferior: in which cafe, the flewards 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 fpots where new plantations may be necefflary or advifable; woodwards to be admonifhed of their duty,-that they report all perfons who trefpafs, either with their cattle, under colour of cutting up handflicks, faggot-bands, or fimilar pretences." And "to difcourage poaching and deftruction 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 poffible effect than to detract from the popular character of the proprietor, and from the fafety of that which fuch meafures are intended to enfure." 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 ftricteft caution be obferved, that all materials produced by the farm or eftate, in any refpect fit for manure, or other ufeful purpofe, fuch as marle, lime-itone, coal, or kelp-a hhes, weeds, fhells, fand, clay, virgin-earth, \&c. be difpofed of and ufed among the tenants of the eftate only, and by no means alienated from it ; fince fuch practice would be to rob the foil of a natural and moft valuable mean of improvement.".

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It is, on the whole, concluded, that "there is great convenience in land ttewards being furveyors of the highways for the parifies in which they refide; in which cafe, it lies in their own power to preferve them in a condition ercditable to the county and the proprictors for whom they act. Nor ought they ever to be indtientive to the cond uce of the furveyors of other parifhes, in which they are concerned; never permitting the lealt neglect, nuifance, decaycd bridge, or dangerous way ; but occafionally, and according to the neceflity of the cafe, making a few examples in a gentecl and temperate, but firm tone, always pleading for their punctilioufnefs, the ftrict and peremptory orders of their employers, which they dare not difobey." And "the like frictnefs is, it is fuppofed, neceflary with refpeet to trefpaffes from neighbouring cattle; for fome farmers are fo exceffively dilatory in this refpect, 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 eltate a refident manager is generally found,-" a land fteward, a man who has fome knowledge of what is termed country bulinefs, and who acts under the controul of his employer, or of a confidential friend who is more converfant in rural concerns, or perhaps of a law-agent who knows lefs of them:" and that fuch refiding fleward, efpecially of a detached eftate, which lies at fome dittance from the refidence of its proprietor, acts without controul. In this cafe, if he is a man of judgment and integrity, he becomes, at leaft in the eyes of the tenantry, a fuperior being ; frequently, in their minds, a more exalted character than their landlord,--than the proprietor himfelf, who, perhaps, never deigned to glance his eye upor them or their lands." But that, "on the contrary, if fuch poffeffory manager wants thofe requifite qualifications, the confequence becomes mifchievous to the lands, their occupiers, their proprictor, and the community. If this unprincipled agent has an intereft in the derangement of the citate, and the ruin which will follow, and is fuffered to make ufe of it,--the crime of neglect, on the part of the proprietor, might well be cognizable as a crime againf the public." And further, that "fimilar evils are liable to befal an eftate which lies round the refidence 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 repofed. It is not more effentially valuable in the fuperintendence, than in the improvement of an eftate. "It is difficult to become an accurate judge of the value of lands, without a practical knowledge of their ufes: nor can any man, without it, properly appreciate the management of occupiers; much lefs affilt them in correcting their errors, and improving their practice." And that "land furveying is another requifite qualification: not fo much, however, for the purpofe of mapping and meafuring an eftate at large, as for checking and correcting the works of profeffional men; as well as to affit in laying out its lands to the moft advantage," and with the greatelt propricty. Further: that " fome knowledge of mechanics, and the other fciences that are requifite to the bufinefs of an engineer, may be highly ufeful in profecutivg 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 difpenfed with. Nor flhould his knowledge and attention be confined to the furface of the

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pafturage by confequence. The ordinance was, that all houfes of hubandry, with twenty acres of ground to them, thould 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. liy thefe means, the houfes being kept up, did, of neceffity, enforce a dweiler; and the proportion of land for occupation being allo kept up, did, of neceffity, enforce that dweller not to be a beggar. This flatute was renewed in king Henry the Eighth's time ; and every perfon who converted tillage into palture fubjected to a forfeiture of half the land, till the offence was removed. In a law of the 25 th of the fame reign, it is fet forth, that many farms, and great plenty of cattle, particularly 'heep, had been gathered into few hands, whereby the rents of lands had been increafed, and tillage very much decayed; churches and towns pulled down; the price of provifions greatly enhanced, and a marvellous number of people rendered incapable of maintaining themfelves and families; and, therefore, it was enacted, that no perfon fhould keep above two thoufand fheep, nor hold more than two farms. In the third of Edw. V1. a bill was brought in for the benefit of the poor, for re-building decayed farmhoufes, and maintaining tillage againt too much inclofing. In the year 1638 , there was a fpecial commiffion from Charles 1. for enforcing the ftatute of the 3oth of Elizabeth, by which no cottage was allowed in any country place, without at lealt four acres of land to it, to prevent the increafe of the poor, by fecuring to them a maintenance; nor were any inmates allowed in any cottage, to fecure the full cultivation of the land, by diffufing the pcople more over it. And by an act in Cromwell's time, no new houfe was to be built within ten mules of London, unlefs there were four acres of land occupied by the tenant. Thus did the policy of our anceftors difcourage inclofing and engroffing, upon the fame general view of their depopulating tendency; and though the increafe of trade and manufactures in more modern times has produced a confiderable alteration in the fate of our country, and may require fome change in our internal policy, yet it is ealy to forefee, becaufe facts juftify the apprehenfion, that inclofing and engroffing, to the degree in which they have lately prevailed, will annihilate the fmall occupiers of land, and reduce the inhabitants of the kingdom to two claffes, viz. gentry and beggars, or grandees and flaves. See this fubject more amply difcuffed, and the arguments for and againft inclofnres and large farms, flated 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 themfelves, it is reafonable to conclude, that the number of people willing to work for others muft have been fmaller, 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 moft five times, higher than it was in the year 1514. But the price of corn is feven times, and of flefh-meat and raiment about fifteen times highcr; therefore the price of labour has been fo far from advancing in proportion to the increafe in the expences of living, that it does not appear to bear now half the proportion to thefe expences that it did formerly. What alteration has taken place lince thefe obfervations were made, we leave others to determine. See on this fubject Price's Obfervations on Reverfionary Payments, Supplement, p. 388, Scc. Appeal to the Public on the Subject of the National Debt, p. 93 , \&c. See Labour, and Labourers.

For the different kinds of inclofure, fee Earti-banks, Eence, Hedge, and Wall.

Land, Arable. See Arable. .
'Land, Bog. See Bog.'
Land, Burning of. See Burn-beating, Burning, Land,
Burning of, and Parang.
Land, Catch. See Catch-land.
Land, Clalk. See Soll.
Lands, Champion. Sec Ciampion.
Land, Charter. See Charter-land.
Land, Chifely. See Ciusely.
Land, Clay. See Soll.
Lands, Court. See Court-lands.
Lands, Fabric. See Fabric-lands.
Land, Fardel of. See Farmel.
Land, Folk. See Folk-land.
Land, Fore. See Fone-land.
Land, Glebe。 See Gifme-land.
Land, Gravelfy See Soil.
Land, Head. See Head-land.
Land in pecrage, Holding. Sce Peerage.
Land, In. See In-land.
Land, Inclofing of. See Land, Inclofing of, and Incios. ing of Land.

Land, Lay. 'See Lay.
Land, Leafe of. See Lease.
Land, Marfbo See Marsuy lands.
Land, Meadow. See Meadow.
Lands, Overflorving of. See Flooding of Land, Inriga. tion, Overflowing and Watering of Land.
Land, Oxgang of. Sec Oxgang.
Land, Plougho See Carrucate.
Land, Rent of. See Rent.
Land, Road. See Road.
Land, Sandy. Sce Soit.
Land-Telefope. See Telfscope.
Lands, Tenementary. See Tenementary.
Lands, Thane. See Thane-lands.
Land, Up. See Up-land.
Land, Waffe. See Wastr.
Land, Watering of. See Watering of Land, Irrigas* tion, sce.

Lands, 1 Vood. 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 fhip which increafes its diftance from the coaft, fo as to make it appear lower and finaller, a circumftance arifing from the intermediate convexity of the fea. This is ufed in contradiftinction to rajing the land, which is produced by the oppofite motion of approach towards it. When a fhip 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, fteeple, windmill, tree, or the like, near the fea-fide, which ferve to direct fhips paffing by how to fteer, fo as to avoid certain dangers, be they rocks, fhoals, whirlpools, \&c.

Land, Setting the, is obferving by the compafs how it bears.
Land, Sbut in. When another point of land hinders the fight of that which a fhip came from, then they fay the land is $\beta_{\text {sut }}$ in.

Land-To. When a fhip lies fo far from the fhore, that fhe can but juft ken land, then the is faid to lie land-to."

Land-Turn, is a wind that blows from the fhore in the night, at certain times, in mof hot countries.
Land, Head, or Point of land, in the Sea Language, is that which lies farther out into the fea than the ref. See Point, Cape, \&c.
LANDA, in Georraphy, a kingdom of Borneo, ceded, in 1778 , to the Dutch company, together with Sucqa. dана

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cana, by the king of Bantam, to whofe crown they were appendages.

## LANDAFF. See Llandaff:

Landaff, a townfhip of America, in Grafton county, New Hampfhire ; incorporated in 1774, and containing 461 inhabitants.

LANDAU, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the diftrict of Wiffembourg, fituated on the river Queich, which runs into the Rhine; containing four churches; formerly imperial. The place contains 5123 , and the canton 15,246 inhabitants, on a territory of $487 \frac{1}{2}$ kiliometres, in 18 communes: N . lat. $49^{\circ} 13^{\prime}$. E. long. $8^{\circ} 10^{\prime}$--Alio, a town of the county of Waldeck; 12 miles N . of Waldeck.-Alfo, a town of Bavaria, on the Ifer; $3^{2}$ miles W. of Paffau. N. lat. $48^{\circ}$ $3^{6}$. E. long. $12^{\circ} 37^{\prime}$.

LAND-CHEAP, an ancient cuftomary fine, paid either in cattle or money, upon the alienating or felling of land in certain manors, or within the liberty of certain boroughs.

At Malden in Effex , a payment is fill made of 13 d. in every mark of the purchafe-money for lands and houfes fold in that town; which is called land-cheap.

LANDE, in Geography, a town of Norway; 36 miles N. of Chriftiania.

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 Pruflian 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. $50^{\circ} 15^{\prime}$. E. long. $16^{\circ} 40^{\prime}$.

LANDED Interest, a term oppofed to monied intereft, in political confiderations; though there is a near connection between them : for the landed intereft is affected by foreign trade. See Monied Interef.

The foreign trade of every country mult decline, that, 1. 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 opprefles its people by prohibiting the importation of victuals, under the pretence of railing the value of its lands. 5. That encourages idlenefs, by bad laws relating to its poor. 6. That tempts foreigners to carry away its coin for lefs than its intrinfic value. 7. That makes the obtaining juftice chargeable. 8. That fuffers a heavy national debt, contracted in time of war, to continue unpaid in time of peace.

The reafon why the decline of foreign trade finks the value of land is, I. Becaufe it finks the markets at home. For, the produce of land being rendered exceffively dear from the caufes above enumerated, foreigners will not take its fuperfluities; and labour being by the fame caufes rendered exceffively dear, we cannot manufacture or improve that produce, becaufe nations which can afford cheaper fupply the markets abroad; fo that the produce of the lands, not being carried off as ufual, mult become a dead ftock on the farmer's hands, and caufe great quantities to be crowded into markets, where, being encouragement but for few buyers, the price naturally falls; as, for inflance, the declining demand of our woollen goods abroad falls the price of wool at home.
2. Becaufe it increafes the number of poor, to burden the land.
3. Becaufe it diminifhes the number of people: for, as employment leffens, the molt induftrious, rather than ftarve here, will fly to other countries, where trade can maintain
them. So the confumption of thefe being taken away, the demand at market mutt grow lefs, and of courfe rents muft fall, yet the farmer's charges mult grow greater; for the fewer the hands, the higher wages are: this mult break him in the end, and produce all the confequences following that misfortunc. Befides, men who trade bring in money; therefore the fewer they are, the lefs moncy will be brought; and the lefs money, the lefs rent can be given for land.
4. Becaufe the decline of trade diminithes our riches. This is a confequence of the above remarks; for having fewer goods capable of being exported by reafon of their dear price, and our manufactures declining, muft in time be loit: therefore the importation of foreign goods muft naturally increafe, and more money go out to pay for them.

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 thefe metals they poffefs, the price of their commodities, and therewith the value of their lands, rife and fall in proportion, which fhall 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 intereft rofe from feventy-two to two hundred and fifty-two millions; and this advance was owing to an increafe of trade.

The Britannia Languens, page 12, fays, if there were but five hưdred pounds in England, an ox could hardly be worth a penny ; therefore the rent mult bear its proportion to the riches. This appears by Maitland's Hiftory of London ; for he fays that, in the year 961 , land fold at one fhilling per acre. The reafon that land then bore fo low a price, was the low price the produce fold at ; for he fays, that, in the year 1000, an ox fold for 25.6 d , a cow for $2 s$, a theep for $1 s$., and a fwine for $8 d$. In 1445 , wheat was at $4 s .6 \mathrm{~d}$. per quarter ; in 1447, at Ss. ; in 1448, at 6 s .8 d ; in $14+9$, at 5 s . A bullock, in 1445 , was 5 s ; a Theep $25.5 \frac{1}{\frac{1}{2} d . ;}$ a hog $1 s .11 \frac{1}{2} d$. ; clothing for a ycar, at the fame period, of a common fervant of hufbandry, 3 s. 4 d. ; of a chief carter and fhepherd, 48 ; of a bailiff of hufbandry, 5s. In 1512, the mean price of wheat in Yorkhire was $6 \mathrm{s}$.2 d ; the price of malt was $\frac{s . \text {, and of oats } 2 \mathrm{~s} \text {. ; fo that }}{}$ the nominal price of grain at this time was about a feventh of its nominal price for the laft twenty ycars; reckoning from the time when the author below cited wrote. The price of a fat ox, at the fame time and in the fame county, wis 13 s. 4d.; of a lean ox, 8 s .; of a wether, $\mathrm{Js}$.Sd .; of a calf, is. $8 d$. ; of a hog, $2 s$.; fo that the nominal price of meat was no more than about a fifteenth of its prefent price, and bore the fame proportion to the price of corn that it would now bear, were it at half its prefent price. In an act of parliament of the $25^{\text {th }}$ of Henry VIII. heef, veai, pork, and mutton, are mentioned as the food of the poor, and their price limited to about a halfpenny a pound. Beef and pork in particular were fold in London at $2 \frac{1}{2} \mathrm{lb}$. and 3 lb . for a penny; at the fame time that wheat was at 7 s . and 8 s . a quarter, and bore the fame proportion to the price of fleth as it would bear now, were it about $4 \%$ a quarter. In 1549, wheat was in London 12s. per quarter, malt 10s., bariey 9s., rye $6 s 6 l_{\text {s }}$, oats $45 .$, a middling ox $1 \% 18 s .$, a wether 3s., butter $\frac{3}{4}$ d. and a penny a pound, and cheefe a halfpenny a pound. See the citations in the Supplement to Brice's Obf. on Reverfionary Payments, \&ce. p. 385 , \&c. This could be only owing to the little foreign isade the nation

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haid at thefe refpective periods, and confequently, to the little quantity of gold and filver which trade had then brought in.

But if it flould be afled, What is the reafon that, at prefent, all things are naturally fo much advanced in price, to what they were in thofe days? the anfwer is, that the quantitics of gold and filver brought to Europe fince the progrefs made by the Spaniards and Portuguefe in America, have made thofe metals more common, and of lefs value than formerly; fo that 20s. will hardly purchafe what 1 s . would before the difcovery of the Weft Indies. On this fubject, fee the article Interest. To which may be added, the great increafe of our national debt and taxes, together with the circulation of the intereft of the principal money of the public funds; and likewife that great circulation of paper credit in trade occafioned by notes and bills, which, by promoting an artificial circulation of property, raife the price of commodities, and give the appearance of weath to the nation ; though they are really the characteriftics of a declining ftate. Poft. Dict. Com.

The dearnefs of commodities and the cheapnefs of money are the fame things.

LANDEGODE, in Geography, a fmall ifland in the North fea, near the coaft of Norway. N. lat. $67^{\circ} 25^{\prime}$.

LANDEN, John, in Biograpby, a celebrated mathematician, was born at Peakirk, near Peterborough, in Northamptonhire, in January 1719. He became an early proficient in mathematical fcience, was a contributor to the Ladies Diary in the year 1744, and was one of the molt ardent friends to that very ufeful 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 pafted the earlier part of his life, as a farmer, at Walton, near Peterborough, at the fame time he gave mathematical inftructio:s to feveral young perfons in the neighbourhood. From Walton, Mr. Landen, in 1762, removed to Milton, the feat of earl Fitzwilliam, to undertake the bufinefs of land fteward to his lordflip: and in this fituation he remained till within a year or two of his death. To return to the mathematical labours of our author.-He publifhed, in the Philofophical Tranfactions for the year $\mathbf{1 7 5 4}$, "An Inveltigation of fome Theorems, which fuggelt feveral very remarkable Properties of the Circle, \&c. "" and in the following year he publifhed a volume, intitled "Mathematical Lucubrations." This title was intended to inform his friends and the public, that the fludy 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 1706 he gave the world feveral valuable works; and on the 16 th of January of this year, he was elected a fellow of the Royal Society: focn after which he inferted in the Philofophical Tranfactions, "A Specimen of a new Mothod of comparing curvilineal Areas;" by means of which, many areas are compared, that did not appear to admit of compatifon by any other method, a circumftance of confiderable importance in that part of ratural philofophy which relates to the doctrine of motion. Thefe are but a fmall part of the works which he produced, and which have given celebrity to his neme. In the years $1781,1782,1783$, he publifthed three fmall tracts "On the Summation of converging Series," in which he explained and thewed the extent of fome theorems which had been given for that purpofe by De Moiyre, Sterling, and Thomas Simpfon, is
anfwer to what he conceived to have been written in difparagement of thofe excellent mathematicians. Mr. Landen was author of a work publifhed in two volumes, and at difo ferent times, intitled "Memoirs." The fecond volume contains his laft labours on the folution of the general problem concerning rotatory motion. It comprifes alfo a refolution of the problem relating to the motion of a top; with an inveftigation of the motion of the equinoxes, in which Mr. Landen has, firft of any one, pointed out the caufe of fir Ifaac 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 Mitton, in the 7 IIt year of his age. Mr. Landen was not only diftinguifhed 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 thofe whom he deemed lis inferiors. His MSS, were fold for wafte paper; a circumftance that did not reflect much credit on thofe perfons who came in poffeffion of them.

Landen, in Geography, a town of France, in the department of the Ourte, and chief place of a canton, in the diftrict 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 $82 \frac{1}{2}$ kiliometres, in 25 communes.

LANDERNEAU, a town of France, in the department of Finitterre, and chief place of a canton, in the diftrict of Breft. The place contains 3577 , and the canton 13,804 inhabitants, on a territory of 180 kiliometres, in 9 communes. N. lat. $48^{\circ} 27^{\prime}$. W. long. $+10^{\prime}$.

LANDERON, a town of Switzerland, in the principality of Neufchatel, fituated at the S.IV. 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, diftricts of Gafcogne, in N. lat. $44^{\circ}$, 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 fquare leagues, and 228,589 inhabitants, and divided into three circles or diltricts, viz. Mont-de-Marfan, which has 72,96 inhabitants. St. Sever, including 78,125 , and Dax, with 77,796 inhabitants, 28 cantons, and 368 communes. Its contributions amount to $145,376 \mathrm{fr}$. and its expences charged on the departments are $203,769 \mathrm{fr} .62$ cents. The foil of this department is for the moft part fandy and unfruitful, the N. and W. parts confifing of heath and marfhes, and poorly cultivated. Some parts, however, towards the S.E. are more fertile; and this department yields fome grain, fruits, and excellent paftures. It has alfo forefts of pines, quarries, and mineral fprings. Its chief town is Mont-de-Marfan.
LANDESHUT, a town of Silefia, in the principality of Schweidnitz, on the Bober. The town was founded in 1292, and it has a Latin fchool, a Roman Catholic church, and by permifion and purchafe a Lutheran church. Its linen trade is flourihhing ; 18 miles W.S.W. of Schweidnitz. N. lat. $50^{\circ} 30^{\prime}$. E. long. $15^{\circ} 55^{\prime}$.

LAND-FALL, is a fea-term, fignifying to fall in with the land, or the firtt land difcovered after a fea-voyage.

Land-fall, Good, is when a thip makes or fees the land, as the expected, according to her reckoning. The contrary is called a bad land-fall.

LAND-GABLE, an ancient term for a tas or rent,
ifluing
ifluing out ni : land ; anfwering to what we now call groundrent.

LANDCRAVE, formed of the German land, earth, and graff, (1, srave, judge, or count, a name formerly given to thofe who scuted jutice on behalf of the emperors, with regard to the internal policy of the country. The title docs not feer. ${ }^{\prime}$, have been ufed before the eleventh century. Thefe jud, 's were firlt appointed within a certain diftrict of Germany; a procefs of time the title became hereditary, and thefe juJges affumed the fovereignty of the feveral diftricts or cometries over which they prefided. Landgrave is now applices, by way of eminence, to thofe fovereign princes of the cinp:: - who poffefs by inheritance certain eftates, called landgravati: and of which they receive the inveltiture of the emperor. There are four princes who have this title, viz. thofe of Tiuringia, Heffia, Alface, and Leuchtenberg. There are affo other landgraves who are not princes, but counts of the empire. See Count.

LANDCUARD Fort, in Geography, an Englifh fort, fituated on : point of land at the S.E. extremity of the county of Sufi $3 k$, at the mouth of the rivers Orwell and Stour, oppofite to Harwich ; furnifhed with a garrifon, under the command of a governor, and a platform of guns to defend the coalt.

Landguard, a point on lake Erie, in Upper Canada; formerly called Point aux Pins, fituated in N. lat. $42^{\circ} 7^{\prime} 15^{\prime \prime}$. To this place there is a great refort of Indians in the fpring, on account of the abundance of finh 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 coaft.

LANDI, Ortevsio, 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 neceffitous circumftances, he attempted to gain a maintenance by the practice of phyfic, which he exchanged, in a very fhort time, for theology, and entered into the order of St. Auguftine. It has been faid by fome writers that he apoftatized from the church, but others fay that in this particular he has been miftaken for a different perfon. While at Milan, he publifhed 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 "Forcianx Qureltiones," in which, under the feigned name of Philalethes, he treats, in an entertaining manner, on the cuftoms, drefs, diverfions, and inhabitants of the different cities of Italy. It was publifhed at Naples in 1536 . He now travelled into France, and contracted a clofe friendifip with Stephen Dolet, who was afterwards burnt as an atheilt. Upon his return to Italy, he entered fucceffively into the fervice of the bifhops of Trent and Catania. In 1540, he publifhed a dialogue againft Erafmus, who had been dead four years, and on account of which he was feverely handled by an able antagonift. While he was at the court of Francis I. in 1543, he publifhed 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 anfwer them himfelf anonymoufly, and in his reply he is faid to have treated himfelf with as little ceremony as any real opponent would have dorie. In 1544, he travelled through Germany, and afterwards through the different provinces of Italy, which he defcribed in a work entitled "Commentario delli piu notibili et moftruofe cofe d'Italia et altri luoghi." He is fuppofed to have died foon after the year 1560 , leaving behind him many other works befides thofe which have been enumesated. He lived in friendhip with feveral of the learned VoL. XX.
men of that age, by whom he has been mueh praifed. Gen. Biog.
LANDINGS, in Arcbitecture, the firft part of the foor at the head of a pair of ftairs.

LANDINO, Cmeistorimer, in Bingrafoys, an Italian feholar, was born at Florence in 1434 . He itudiet firth 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 fupport 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 Cofino and Peter de Medici, by which be was enabled to return to his favourite purfuits, and indu!ge himfelf in the fudy of the Platonic philofophy. He became one of the chicf ornaments of the Platonic academy at Florence, and lived in Arict friendhip with Poliziano, IFiciru, and others of its members. In 1457, he gave public lecturey in polite literature at Florence, which contributed to the prozrefs of learning in that period. At an advanced age he cbtained an office in the ftate, and was prefented with a paa lace for his refidence. He died in 1504, at Prato Vecchio. His "Latin Poems" will bear a comparifon with the mott able compofitions of that age. He wrote commentaries on Virgil and Horace, and Dante, which went through feveral editions. He tranfated Pliny's "Natural Hiftory" into Italian, and was author of "Dialogues on the, Nobility of the Mind," and other pieces connected with moral phi'ofophy. He compofed fome Latin and Italian orations, which were printed.

LANDIVISIAN, in Geography, a town of France, in the department of Finifterre, and chicf place of a canton, in the diltrict of Morlaix; 10 miles W.S.W of Morlaix. The place contains 2124 , and the canton 11,460 , on a territory of 150 kiliometres, in 7 communes.

LANDIVY, a town of France, in the department of the Mayenne, and chief place of a canton, in the diftrict of Mayenne; i8 miles N.W. of Mayennc. The place contains 1872, and the canton 11,223 inhabitants, on a territory of $187 \frac{1}{\frac{1}{n}}$ kiliometres, in 8 communes.

LAND-LOCKED : a flip is faid to ride land-locked, when fhe is furrounded with land, that is, is at anchor in a place where there is no point open to the fea, fo that fhe 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 Anaftafius III. in the year 913. He was indebted for his elevation to Theodora, and her daughters Marozia and Theodora, all of them no lefs famous for their beauty, their wit, and addrefs, than infamous for the fcandalous lives which they led. Lando died within about fix months of the time that he was elcvated to the papal fee, and during that fhort reign he did nothing worthy of note, or that need be recorded in this work. Moreri. Bower.

LANDRECIES, in Georraphy, a town of France, in the department of the North, and clitef place of a canton, in the diftrict of Avefnes, feated on the Sambre. It was taken from the Spaniards by the French in 16 ;5, and continued in their poffeflion by the peace of the Pyrenés, where they enlarged its fortifications. and made it one of the ftrongeft places in the country. It has only two gates, one towards the eaft, called the "Gate of France," and the other towards the weft, called the "Gate of Quefnay." It fuffered feverely by the fiege of 1594 , and furrendered to the allies; but in the fame year the garrifon, confifting of 20,000 men, furrendered to the French. The place contains 2867 , and the canton 8865 inhabitants, on a territory of po kiliometres, in 9 communes. N. lat. $50^{\circ} 3^{\prime}$. F. long. $3^{\circ}+5^{\prime}$. K k

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## L A N

LANDRIANO, a town of Italy; it miles S.S.E. of Milan.

LANDROAL, a town of Portugal, in Alanteijo ; 13 niles N. of Mouran. N. lat. $3^{8^{\prime}} 35^{\prime}$ E. long. $7^{\prime} 12^{\prime}$.

LANDSBERG, a town of Pruffin, in the province of Natangen; 26 miles S. of Konigiberg. N. lat. $54^{\circ} 14^{\circ}$. E. long. $20^{\circ}$ 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.IV. of Nieu-burg.-Alfo, a town of Silefia, otherwife called Gorzozv, in the circle of Oppeln, on the borders of Poland ; 30 miles N.E. of Oppeln. N. lat. $51^{\circ} 3^{\prime}$. E. long. $18^{\circ} 29^{\prime}$.—Alfo, a town of Bavaria, on the Lech; 18 miles S. of Augfurg. N. lat. $48^{\circ}$. E. long. 10 51'- - Alfo, a town of Saxony, in the circle of Leipzig; If miles N.W. of Leipzig. N. lat. $51^{\circ} 34^{\prime}$. E. long. $12^{\prime} 11^{\prime}$. - Alfo, a town of Brandenburg, in the New Mark, on the Warta; containing three churches, a royal mayzzine, and feveral manufactures of ftuff and cloth, with a confiderable trade in wool; 20 miles E.N.E. of Cuftrin. N. lat. $52^{\circ} 4^{\prime}$. E. long. $15^{\circ} 20^{\prime}$. - Alfo, a town of I3randenburg, in the Middle Mark; 14 miles E.N.E. of Eerlin. N. lat. $2^{\prime} 35^{\prime}$. E. long. $13^{\prime} 4^{8}$.

LANDSCAPE, or LANDSKIP, the vien or profpect of a country, extended as far as the eye will reach.

Lavdscape 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, particulady when any portion of the land is feen: and, in the general divifion of the practice of the art into four principal branches, landfcape-painting inciudes all reprefentations of the fea alone; although, in common difcourfe, they are generally termed according to their character: as a calm at fea, a ftorm, a fea-light, \&ec. \&c.

The great points which the artilt ought to aim at, who practifes landfcape-painting, are, to mark jult proportion and true perfpective; to obtain a free and varying touch, which may fully characterize the various objects he mu't of neceffity be called upon to imitate; and to produce the effect of fpace, or what is technically termed diftance.

There are two kinds of proportion which require attention in order to produce a pleafing landfcape. One is, between the quantum of the furface of the picture appropriated to the fiy, and that allotted to the earth or the figures intended to be introduced, be they mountains, houfes, rocks, or trees: and the other is that of the various parts of the picture, reciprocally, according to their various diftances in the fcene. Of the latter, after the fize of the objects on the fure-ground is determined, perfpective is the fole regulator: therefore a knowledge of the principal rules of that fcience is here abfolutely requifite.

With regard to the former of thefe proportions, the fubject of the picture will undoubtedly furninh the belt means of deciding juilly. If the fcene be mountainous, viewed from below, and at a fhort diftance; the face allotted to the iky muft be fmall and near the top of the picture. If, on the contrary, the view be of an open champaign country, the reverfe will be the juft characteritic of the picture ; and the fky 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 courfe the horizon will rife very high; but this would have more the character of a plan, than a picturefque or natural view. Common fenfe poiuts out the rule in the two prefuppofed cafes ; but it is not eafy to regulate this matter in ordinary compofitions, whereas, to make the work captivating, it is of ruch mone importance than is generally imagined,
and a large demand is made upon tafte to regulate it. In general, much more grandeur is acquired by a low horizon, and an ample fpace of fky , than by any other proportion; and next in effect to that, is the direet reverfe. In both, it is the quantity doubtlefs that produces the impreffion; and this principle holds good, not only in landfcape, but in all other fubjects 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 felcction in tyle of defign, or rather choice of nature; the fame aims in compofition; the fame contralts in arrangements of colour, except that they can never, or very rarely, be fo powerful in landicape, as where the picture reprefents animated or artificial objects. In landicape not only are the objects fit to be introduced, of a clafs which are not fraught with ftrong colours, particularly of red or blue, but being furrounded by open sir, and receiving reflections of light and colour in every direstion, their natural vividnefs is diminifhed; and as they recede from the eye, the denlity of the atmofphere intervening between them and the fpectator, envelopes them in a milt, and renders them indiftinct in various degrees; till in the extreme diftance it reduces all colours to one hue of a light greyifh blue, almoft intermingling them with the fiky.
It is by the intervention of this grey hue in the atmofphere, which arifes 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 diflance is-produced ; and to imitate this with truth, and in a tone correfpondent to the kind of day or feafon which. is felected for reprefentation, is one of the principal difficulties of landfcape painting.

It is vain to attempt to give rules for overcoming this difficulty. Different malters have proceeded by different ways to gain poffefion of this defideratum. Ciaude in oae ftyle, and Wiffon in another, have both admirably effected it. One. by fcumbling a grey, or air teint, over the dittant parts; the other by working the teint in the body of colours. Obfervation of their pictures, with tafte cultivated by a long continued obfervance of nature, is the only means of acquiring a juft feeling of the fimplicity and purity exhibited in her works, and the confequent power of reprefenting them in all the varied effects fhe exhibits; either in her more gay, or fombrous momerts; when the face of the earth is illumined with funfhine, and fparkling with luttre; or when clouds bedim and envelope its beautios in fhade, and the forms of diftant objects are lott in the whirlwind and the form.

Though landfcape-painting has not the fame powerful means to work with as hittoric painting, which enjoys the great hdvantage of animation and expreffion in its fubjects, and likewife prefents the greateft difficulty to overcome; yetno true and enthuliaftic lover and obferver of nature, can avoid acknowledging, that it poffeffes the power of exciting great intereft in the mind. A form reprefented by the pencil of Gafpar Pouffin, or a calm by that of Claude, will not fail to imprefs the obferver with ideas of terror, or gentlenefs. The one, who Acilfully traced the paths of the wind in its ravages, and the deformity produced by the falling fhower ; and the other, who loved to dwell upon the beauties of the earth, in moments of undifturbed tranquillity, equally intereft our feelings, and excite thofe emotions which fuch varied circumltances in nature are calculated to infpire. Compared with fuch views of the higher objects and airs of art, the practitioner in landfrape portrait painting, or one who paints views of particular fpots, finks into about the fame ratio, as the portrait painter of mankind holds to him who engages his talents in the reprefentations of hiltory. Yet fill his tals is not desoid either of pleafure or intereft.

The fame principles are required for practice, but they are unfortunately often obliged to yield to peculiarities which deftroy their fimplicity and prevent their cffect; unlefs the artift has obtained that extraordinary talent of introducing cafual circumitances, fuch as ideal thadows, accidental reflections, and agrecable 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 inprover of grounds, or, as he is now termed, the landfcape fardener, fuch ought to be that of the landfcape painter. Wherever bleminhes in form occur, they fhould be hidden, and where natural beauties are beftowed, they fhould be exhibited to view; and adorned with proper adjuncts of trees, water, clouds, or figures. A perfon not converfant with the powers of combination and contraft in defign, can have no conception of their extraordinary power to heighten the effect of the dulleft fcenes, and the meaneft objects. It fhould therefore be the principal talk of the artilt to obferve thofe which are conftantly occurring among natural objects, their effects, and the different fentiments they excite; fo that he may poffefs a ftore to recur to, in time of need.

The beauty of landfcape-painting depends very much upor fimplicity of felection, and clearnefs and frefhnefs of colour. The former fhould not only govern the choice of objects or fcenery, but alfo the manner of reprefenting them, i. e. the artilt mult not attempt to delineate all the forms he fees in a tree or a rock ; that would not only be an almoft endlefs labour, but an imperfect one, even when the greatelt fkill was exhibited; his duty is rather to felect thofe 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 beft landfcape-painters of the Italian fchool, and Rubens and Rembrandt adopted it : whilt Hobbima, Ruyfdael, Both, Wynants, and almolt ail the Flemifh fchool, by attempting too minute an imitation in finaller matters, lof dignity and even interef.

Among thofe who have praftifed with fuccefs this delightful branch of the art of painting, the name of Claude Gelee, ufually known by that of Claude de Lorraine, defervedly flands pre-eminent. He may have been furpalfed by Titian in wild and romantic fcenery, and grandeur of fyle in detign, 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 reprefented the effect of the atmofphere is unrivalied. Even Cuyp and our own Wilfon, who have arrived the nearelt to him, Utill lack his completion of effect. Their art is more apparent than his in his beft works; and great chaflity and fwee!nefs of tafte appear generally to have governed his choice of fcene and of parts. Nicolo Pouffin has left a great number of highly interefting landfcapes, in a ftyle 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 fcenery and the claffic objects he introduced into it. His nephew Gafpar proceeded in another track, and made pictures from the fcenes which the Apennine mountains afforded him; which, while they are wrought with great freedom, fill bear too much the air of portraiture, and too often lack atmofphere. The fame may be faid in a greater degree of the works of Salvatur Rofa, who delighted to reprefent the molt wild and defert fcenes of nature; which he executed with a touch in perfect confonance with their character. It was with Wilfon, as we have above mentioned, that the tafte and talent of Claude for producing the air-teint, (as that which produces the effect of
the atmofphere is technically termed,) was moft powerfulty revived : and of him it may truly be faid, that had his patience in completing hus pietures been equal to his tafte in colour, compolition, and effect, the ancient maiker might have fallen under the modern one; and we fhould have had to boalt, that the greatelt painter of landfcapes the world ever produced, was an Englifhman.

LANDSCRON, in Geography, a town of Bohemia, in the circle of Chrudim; 27 miles E: of Chrudim. N. lat. 49' $50^{\prime}$. E. long 16' $23^{\prime}$.

Landscron, a town of Pruffia, in Natangen; 18 miles N.E. of Heilfperg.

LANDSCRONA, a fortified fea-port town of Sweden, on the W. coalt of the province of Skonc, on an ifland near the Sound: a flaple town, with a good harbour. The harbour lies between the continent and a frall iffand, and is 20 feet deep; 12 miles S. of Helfingborr. N. lat. 55 52'. E. long. $123^{6}$.

LANDSELE, a fmall ifland in the Eaft Indian fea, neat the N. coalt of the great Andaman. N. lat. $13^{3} 3^{8 \prime}$. E. long. $93^{\prime \prime} 7^{\prime}$.
Land'S-END. See Corswall.
Land's-End, a cape on the N. coait of the ifland of Sheppey ; 4 miles N . of Sheernefs.
LANDSER, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the diftrict of Altkirch. The place contains $6 ; 1$, and the canton 10,629 inhabitants, on a territory of 150 xiliometres, in 22 communes.
L ANDSHAAG, a town of Aufria, on the Danube; 19 miles S.W. of Freuftadt.
LAND'S-HEIGHT, or the high ground, in Noth America, that which lies on the chain of lakes between lake La Pluie and lake Superior, where is a portage of 7 miles: Bo 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 Aufpitz.

Landshut, a town of Baaria, 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 fteeple of which is reckoned the highelt in Germany; 32 miles N.E. of Munich. N. lat. $48^{8} 29^{\prime}$. E. long. $12^{\circ} 5^{\prime}-$ Alfo, a town of Auftrian Poland, in Galicia; 72 miles W. of Lemberg.

LANDSKIP. See Landscape.
LANDSORT, in Geography, a fmall illand in the Baltic, near the coaft of Sweden. N. lat. $58^{\circ} 52^{\circ}$. E. long. ${ }^{1} 7^{\circ} 10^{\prime}$.
LANDSTHUL, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the diftrict of Deux Ponts. The place contains 705 , and the canton 7910 inhabitants, in 32 communcs.

LANDSTRASS, or Landstrost, a town of Carniola, fituated on an ifland 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 perfons in refpect of their property, whether by tenths, fifteenths, fublidies on land, hydage or hidage, fcutage or efcuage, or talliage. Tenths and fifteenths were temporary aids iffuing out of perfonal property, and granted to the king by parliament, being the real tenth or fifteenth part of ail the moveables belonging to the fubject. We meet with the payment of fifteenths as far back as the fatute of Magna Charta; in the conclufion of which, the parliament grants to the king, for the concefions made by him, a fiit enth part

## LAND.TAX

of all their morcable goods. This taxation was orignally charged upon the feveral individuals, but in the eighth year of Edward III. a certain fum was rated in every town, \&c. In procefs of time this fifteenth being infufficient 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 parifh in England knew their proportion of it ; i. e. the fame identical fum that was affefed by the fame aid in the cighth of Edward III., and then raifed it by a rate among themfelves, and returned it into the royal exchequer. (See Fifteentie. See alfo T'extio) The other ancient levies were in the nature of a modern land-tas: for we may trace the original of that charge as high as to the introduction of our military tenures; whon every tenant of a knight's fee was bound, if called upon, to attend the king in his army for forty days in e:ery vear. In lieu of this perfonal attendance, a pecuniary fatisfaction came to be levied by affefments, at fo much for erery knight's fee, under the name of fcutages. (See Escrice.) Of the fame nature with thefe were the afferfments of hydage or hidage upon all other lands, and of talliage upon cities and boroaghs. But thev all gradually fell into difufe, upon the introduction of fublidies, about the time of king Richard II. and king Henry IV. (See Sumsmy.) In lien of fubfidies, which were ufually raifed by commiffioners appointed by the crown, or the great officers of tate, the parliament, in the beginning of the civil wars, introduced the practice of laying weekly and monthly affeffents of a fpecific fum upon the feveral countics of the kingdom, to be levied by a pound rate on lands and perfonal eltates; which were occafionally continued during the whole ufurpation, fometimes at the rate of 120,000 . a month, fometimes at inferior rates. After the relloration the ancient method of granting fubfidies, inftead of thefe monthly affelfments, was twice, and twice only reacwed, wiz. 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 lait time of raifing fupplies in this manner. The monthly affeffments beirg eltablifhed by cuftom, raifed by commiffioners named by parliament, and producing a more certain revenue, fubfidies rere difcontinued, and occafional affeffments granted as emergencies required. Thefe periodical affeffments, the fublidies which preceded them, and the more ancient fcutage, hydaye, and talliage, fays judge Blackftonc, were to all intents and purpufes a land-tax; and the affefments were fometimes expreflly called fo. However, in the year 1 (f)?, a new affefment or valuation of eftates was made throughout the kingdom, which, though by no means a perfect one, had this effect, that a fupply of $500.000 \%$. was equal to Iso in the pound of the value of the eftates given in. And, according to this enhanced valuation, from the year 1693 to the prifeat, the land-tax las continued an annual charge upon the fuhect; above half the time at $4 s$ o in the pound, fometimes at 3 s., fometines at $2 s$, twice, ciz. in 1732 and 1733, at is but without any total intermiffion. The medium l:s been $35.3 \%$. 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, acerrding to the valuation of 1692 ; and this fum is affeffed and raifed upon the perional as well as the real eltates of individuals by commifioners appointed in the att, being the principal landholders of the county, and their officers.

It is obferved by Dr. Smith, in his " Nature and Caufes of the Wealth of Nations," (vol. iii.) that a land-tax, like that of Great Britain, affeffed upon each diftrit according
to a certain invariable canon, though it fhould be equal a its firft eftablifhment, neceflarily becomes unequal in procels of time, according to the unequal degrees of improvement, or neglect in the rultivation of the different parts of the country. In England, the valuation according to which the different counties and parifhes were affefied to the landtax by the $4^{\text {th }}$ of William and Mary, was very unequal even at firft eftablifhment. This tax, therefore, offends againk the firlt of thofe four maxims which this ingenious writer propofes, with regard to taxes in general. (See Tax.) This maxim is, that the fubjects of every ftate ought to contribute towards the fupport of the government, as nearly as poffible, in proportion to their refpective abilities; that is, in proportion to the revenue which they refpectively enjoy under the protection of the itate. However, it is perfectly agrecable to the orher three. It is perfectly certain, and not arbitrary. The time of payme:at 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 cafes the real contributor, the tax is commonly adranced 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 fmaller number of officers than any other which affords nearly the fame revenue. As the tax upon each diftrict does not rife with the rife of the rent, the fovereign does not flare in the profirs of the landlord's improvements. It does not therefore obitruct the induftry of the people; nor fubject the landlord to ary other inconveniency befides the unavoidable one of paying the tax. The adrantage, however, which the landlord has derived from the invariable conitancy of the valuation by which all the lands of Great Britain are rated to the land-tax, has been principally owing to fome circumitances altogether extraneous to the nature of the tax. It has been owing in part to the great profperity of almoit every part of the country: the rents of almoft all the eftates of Great Britain, having, fince the time when this valuation was firit eftablifhed, been continually rifing, and fcarcely any of them having fallen. The landlords, therefore, have almoit all gained the difference between the tax which they would have paid, according to the prefent rent of their eftates, and that which they actually pay according to the ancient valuation. But if the flate of the country had been different, and rents had been gradually falling in confequence of the declenfion of cultivation, the landlords would almolt all have loft this difference. As the tax is made payable in money, fo the valuation of land is expreffed in money. Since the eftablifhment of this valuation, the value of tilver has been pretty uniform, and there has been no alleration in the ftandard of the coin, either as to weight or finenefs. : But if filver had rifen confiderably in its value, the conflancy of the valuation raight have proved very oppreffive to the landlord. In circumiltances, fomewhat different from thofe which have actually taken place, this conftancy 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 accord:ing to the improvement or neglect of cultivation, has been: recommended by thofe philofophers called economits in France, as the moft 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 publifregifter, kept by the officers of the revenue in each province or diftrict. A proprietor cultivating his own lands is allowed a deduction of one fifth of the tax, and pays on' $y$ 8 inftead of 10 per cent. of the fuppofed rent. A landtax. of this kind, fays Dr. Smith, is certainly more equal

## I. $\triangle \mathrm{ND}-\mathrm{T} \Lambda \mathrm{X}$.

than the land-tax of England, but it mbght not, perhaps, be altogether fo certain, and the affelfinent of the tax might fremuently occafion more trouble to the landlord, and the levying of it might be more expenfive. In the ancient dominions of the king of Pruffia, the land-tax is affefled according to an actual furvey and valuation, which is reviewed and altered from time to time. According to that valuation, the lay proprietors pay from 20 to 25 por cent. of their revenue. Ecclefiatics from 40 to 45 per cent. In fome other countrics the fame method is purfued. A land-tax affeffed according to a general furvey and valuation, how equal foever it may be at lirft, mult, in the courfe of a very moderate period of time, become unequal; and to prevent its becoming fo would require the continual and painful attention of government to all the variations in the flate and produce of every different farm in the country.

The fum lixed by $3^{8}$ Geo. III. c. 5. f. Io to be paid for the land-tax in Great Britain is $2,037,627 \%$ 9s. $\frac{1}{4}$ d., which is now made perpetual. To this time the land-tax acts had been amual; but by 38 Geo. III. c. 60 . after reciting, that it may materially conduce to ftrengthen public credit, that the duty now payable for one year on land fhould be made perpetual, fubject to redemption by purchafe 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 1799 , on the refpective counties, \&cc. in refpect of the manors, meffuages, \&c. to be raifed and paid within one year, from the 25 th of March, ${ }_{179} 9$, fhall, after the expiration of the faid term (allowing for certain fpecified exceptions) continue, and be raifed and paid after the 25 th of March in every ycar for ever. And all powers and provilions contained in the faid act thall be in full force, and be duly executed ; fubject to the regulations and conditions of redemption or purchafe mentioned in it. Provided always, that none of the provifions herein contained fhall extend to any fums charged by the faid act upon perfonal eftates and perquilites of office; which fums fhall, after the $25^{\text {th }}$ of March, 5799 , be afcertained, raifed, collected, and paid, according to the directions of an act to be paffed for that purpofe. (39 Geo. III. c. 3.) It is allo enacted, that the land-tas not parchafed by proprietors fhall be fold to othe: perfons, fubject to redemption by the perfon in poffeffion, or having any beneficial or future intereft in the lands : provided that in fuch cafes, all fuch lands wheron the land-tax fo purchafed fhall be charged, fhall, until fuch redemption take place, be fubject to a new affeffrent of the faid 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 purchafer to exonerate the fame from fuch land-tax, or to fix the rate of land-tax to be charged thereon. Alfo, where the whole tax in any place fhall not be fold, fuch lands as are not exonerated by this act from fuch land-tax, thall continue fubject to a new affeffment yearly, and from year to ycar, by an equal rate, according to the value thereof, not exceeding in any year $4^{\text {s. }}$ in the pound on fuch annual value. It is alfo enacted, that in cafe perfons entering into any contract for the redemption or purchafe of any land-tax, fhall neglect to complete their contract, fuch contract flall be void, and the tax be revived, and again affeffed and collected; and the perfons thus making default fall forfeit not exceeding one-fixteenth part of the confideration. Where land-tax, remaining unfold, fhall exceed 4 . is the pound on the annual value, the fame fall be fabject to an abatement in the manner directed by the faid act. (38. Geo. III. c. 60. f. 103. 42 Geo. SII. c- I16. f. 181.) By this lalt act, the provilions of the feveral acts for the
veitemption of the lum d. Aarare repealed from the 2 thi of Junc, ${ }_{2} \mathrm{Sc} 2$, from which date all contracts are to be eatered into and made according to that act, and the 43 Cco. III. c. 5 . to render the fame more effectual. As the land-tax not purchafed will remain to be collsected as hefore, it may not be improper or unufeful to detail the following particulars relating to it. By 35 Gco . III. c. 5. the gencral qualification of commilfioners in countics, with fome few exceptions, is socl. a-year of landed, property: thefc commiffioners, befure they can aft, are required to take the oaths of allegiance, fupremacy, and abjuration, under a penally of 200\%. to the king: and by 28 Gco . III. c. 2. f. 49 . an oath, if required, Ipccifying in writing the parifh, lituation, quantity of land, whether frechold or copyhold, of the premifes which entitle them to act as commiffoners. When they firlt meet, they direct the return and appointment of proper affeffors: and by 20 Geo. III. c. 17 . they thall caufe to be delivered to cach affeffor at printed form of affelfo ment, according to which they fhail make their affefiments. At their fecond meeting they direct the affeffors how to proceed in fettling the feveral rates and charges. By 39 Gco. III. c. 3. the feveral fums charged upon eftates in ready money, debts, goods, wares, merchandifes, chattels, or other perfonal eitate, by the act of 38 Geo. III. c. 5 . and which were not authorized to be fold by the faid act of $3^{8}$ Gee. III. c. 60 ; and alfo the feveral fums hereby charged in refpect of any public office or employment, or any annuity, penfon, flipend, or other annual payment, fhali be affeffed and paid in the following manner. That is to fay, the-feveral fums charged by virtue of the faid act on perfonak. eltates as aforefaid, fhall be, and are hereby fet and impofed on the refpective parifhes, conttablewicks, divifions, allotments, ard places, wherein the fame have been, or flall be fo charged by virtue of the faid act, and towards raifing the feveral fums hereby charged on the fame refpectively, all perfons, bodies politic and corporate, guilds and fraternities within fuch places refpectively, having any eftate in ready money, or in debts owing to them, or having any eftate in goods, wares, merchandize, chattels, or other perfonal eftate belonging to, or in trutt for them, (except fuch fums as they may bona fole owe, and fuch debts owing to them as fhall be by the commiffioners adjudged defperate, and alfo except flock upon lands, and fuch goods as are ufed for houfhold ftuff; and allo except fuch loans and debts as are owing from his majelty, fhall be charged with as much equality and indifference as is poflible by a pound rate, viz. for every $100 \%$ of fuch ready money and debts, and for every 1001 . worth of fuch goods, wares, and merchandize, or other perfonal eftate, and fo in proportion for more or lefs, towards the faid refpective fums by this act impofed upons every fuch parifh or place charged therewith as aforefaid, fo that by the faid rates io to be affefled as aforefaid, upon fuch perfonal eltates as aforefaid, the full fum hereby fet upon the fame, fhall be completely affefied, 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, v ing, or exercifing the fame, which are affeffed: by virtue of the faid act of 38 Geo . III. c. 5 ; 5 and all clerks, agents, fecondaries, fubflitutes, and other inferior nimifterswhatfoever, (fuch military officers as are muffered by the mufter-mafler general of the army, or in pay of the army or navy in refpect of fuch offices, only excepted ${ }^{\text {s }}$ ) fhall pay any fum not exceeding what fuch office or employment thall be affeffed in the year commencing 25th March, 179 S , by virtue of the faid akt of 38 Geo . I11. c. 5. And all perfons, guilds, fraternitics, bodies politic and corporate, having any
anauity, penfion, or other yearly payment, eifher out of the exchequer, or any branch of the revenue, or payable, or fecured to be paid by any perfon whatfoever, (not iffuing 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 Gco . III. c. 5 . and not being annuties or ycarly payments which by any act of parliament fhall be exempted from the payment of taxes, ) fhall pay 4 s . for every 20 s . by the year for the fame, to be levied and collected in like manner, and by the fame perfons as the land-tax. f. $3,4$.

It is provided that nothing in this act fhall extend to the queen or royal family; nor to charge the penfions of fuperannuated fea-officers or their widows, poor knights of Windfor, or poor clergy of the Infe of Man, or tolls on turnpike roads. By 38 Geo. III. c. 5. the charge upon real eftates thall be as follows: That the entire fum may be raifed, all manors, meffuages, 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-fprings, and falt-works; all alum mines and works; all parks, chafes, warrens, woods, underwoods, coppices; all fifhings, tithes, tolls, annuities, and all other yearly profits; and all hereditaments whatfoever-fhall be charged with as much equality and indifference as poffible, by a pourd rate, to make up the feveral fums charged by the act on each county or place.

A parion who lets to each parifhioner his own tithes is properly the occupier, and ought to be rated. 16 Viner, 427.

But if a parion makes a leafe of his tithes to one perfon, and that perfon afterwards lets to each parifioner his own tithes, in that cafe the leffee is the occupier, and ought to be rated. 8 Mod. 6 r

Colleges and hofpitals are exempted, together with the buildings that are within the walls or limits of the fame. The act ${ }_{3}$ S Geo. IlI. c. 5. f. 25 .alfo exempts any mafter, fellow, or fcholar, or exhibitioner of any fuch college, or hall, or any reader, officer, or matter of the faid univerfities, colleges, or hall's, or any mathers or ufhers of any fchools; for or in refpect of any ytipends, wages, rents, jprofits, or exhibitions whatfoever, arifing, or growing due to them in refpect to the faid feveral places or employments: or any of the lands which before March 25, 1693, did belong to the fcites of any college or hall, or to Chritt's hofpital, St. Bartholomew, Bridewell, St. Thomas and Bethlehem hofpitals in London and Southwark ; or any other hofpitals or alms-houfes, in refpećt of any rents, or revenues, which, before March 25 th, 5693 , were payable to them, being to be received and difburfed for the immediate ufe and relief of the poor of the faid hofpitals and alms-houfes only. Id. f. 25 .

But this fhall not difcharge any tenants of any houfes or lands belonging to the faid cqlleges, halls or hofpitals, alms. houfes, or fchools, who, by their leafes, or other contracts, are obliged to pay and difcharge all rates, taxes, and impofitions. Id. f. 26.

All fuch lands, revenues, or rents belonging to any hofpital or alms-houfe, or fettled to any charitable or pious ufe as were affeffed in $4 \mathrm{~W} . \&$ M. fhall be liable; and no other lands, revenues, or rents, then belonging to any hofpital, or alms-houfe, or fettled to any charitable or pious ufe, flall be charged or affeffed: but lands given to charities fince the 4 W. \& M. fhall not be exempted. No poor perfon fhall be charged, whote lands, \&ic. are not of the full yearly value of zos. in the whole. The afficfors themfelves are affeffed by the comnifioners. The land-tax fhall be paid by the tepant, who fhall deduct it out of his rent. Papits
and reputed papifts, being 18 years of age, who fhall not have taken the oaths of allegiance and fupremacy, flall pay double land-tax. By 10 Geo. III. c. 6. f. 113. eftates doubly taxed, coming to Proteftants, are to be discharged. At the third meeting of the commiffioners, the affeffors fhall deliver duplicates of the afferfment in writing, figned by them, to the commiffioners, with the names of proper collectors, for whom the parifh or place frall be anfwerable. One of the duplicates, figned by three or more commiffioners, Shall be delivered to the collectors, with warrant for collecting ; and the time and place of appeals fhall then be appointed. The fourth meeting is that of appeal, notice of which fhall be given in the church; and every perfon in. tending to appeal fhall give a written notice to one or more affellors, that they may attend to jultify the affeffment. The commiffioners are empowered to give relief in cafe of overcharge, and caufe the fum abated to be re-affeffed: and when the appeal is determined, it is abfolutely fnal. If any perfon refufe or neglect to pay to the collector on demand, he may levy the fum affefted by diltreis and fale of the goods of the perfon neglecting or refuling to pay; and for want of diftrefs he may be committed by warrant of two commifo fioners to the commor gaol, until payment of the money afeffed and of the charges. The collector is required to pay the money received to the receiver.gencral, or his deputy, quarterly, on or before June 24th, Sept. 29th, Dec. 25 th, and March 25th ; who fhall give a receipt gratis: the collectors are allowed $3 d$. in the pound, which they may detain out of the laft payment ; but if any collector detains the money longer than the time appointed, or fays it otherwife than directed, he fhall forfeit ret exceeding $40 \%$ nor lefs than 5\%. to be levied by diftrefs; and if he refule to pay it, two commiffioners may imprifon him, feize his eftates real and perfonal, and fell them for payment. The receiver-general is appointed by the king, or in purfuance of his directions, and has a falary allowed him by the lords of the treafury, not exceeding 2d. a pound : notice of his appointment is to be given to the commifioners, before the time of the firft quarterly payment. The receiver, within twenty days after the receipt, fhall pay the money into the exchequer, or forfeit $500 \%$ to him who thall fue. The clerks of the commificners are allowed $\mathrm{s} \frac{1}{2} d$. in the pound for writing the affefments, duplicates, \&c. to be paid by the receiver-general, according to the warrant of two commiffioners. Affefors, colletors, \&c. not doing their duty may be fined by three or more commiflioners, in any fum not exceeding 40\% $3^{8}$ Geo. III. c. 5. Blackit. Com. ${ }^{\text {vol. i. Burn's Juttice, art. Land- }}$ Tax.
LANDVELLER, in Geograpby, a town of Sweden, in Wert Gothland; 9 miles E . of Göhenborg.

LAND-WAITER, an officer of the cuftom-houfe, whofe duty is, upon landing any merchandize, to examine, tafte, weigh, meafure them, \&c. and to take an account thereof. In fome ports they alfo execute the office of a coalt-waiter. They are likewife occafionally fyled fearchers, and are to attend and join with the patent fearcher, in the execution of all cockets for the fhipping of goods to be exported to foreign parts; and in cafes where drawbacks or bounties are to be paid to the merchant on the exporiation of any goods, they, as well as the patent fearchers, are to certify the flhipping thereof on the debentures.
LANE, in the Military Art, is ufed when men are drawn up in two rarks facing one another. This is called making a lane, and is generalij done in the ftreets through which a great perfon is to pafs, as a mark of honour. Bu: foldiers are often drawn up in this manner, when an offender is to run the gantlope. See Milifary Execution.

Lane, in Geography, an ifland in the Atlantic, rear the coant of America, a little to the ealt of Scuttock Point. N. lat. $44^{\circ}$ 18'. W. long. $67^{\circ} 56^{\prime}$.

Lane, a river of Ireland, in the comnty of Kerry, which rifes in Magillicuddy's reeks, and receiving feveral freams from Mangerton, and other adjoining mountains, and the river Filefk from the weftward, flows nerth-weftward to Caflemain harbour. The expanfe of the waters of this river, confined by a great lelge of rocks, forms the two lakes, fo well known and fo juflly celebrated as the upper and lower lakes of Killarney, from the town of that name being near them. See Killatinei.

LANEL, a town of Africa, and capital of the king. dom of Galam, on the S. fide of the Senegal.

LaNERK. See Lavank.
LANES, a town of Sweden, in the province of An. germanrland; 30 miles N . of Hernofand.

LANESBOROUGH, a poit-town of America, in Berkihire county, Maflachufetts, N. of Pittsficld fix miles. It has two quarries of marl and contains $144^{\mathrm{S}}$ inhabitants.
Lanesborougit, 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 Rofcommon, in which it has a fuburb, This is a borough town, which was disfranchifed thy the Union, and is $62 \frac{1}{2}$ miles W.N. W. from Dublin.
LANFRANC, in Biograpby, archbifhop 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 ftudies 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 Heary I., taught publicly in the fchool of Avranches, and was attended by a crowd of ftudents of high rank. In a journey from that place to Rouen he was befet by robbers, who plundered him, and left him bound in a foreft near the abbey of Bec. Here he remained, in a mot deplorable ftate, 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 efteem of William I., duke of Normandy, who made him one of the counfellors of ftate. Under the pontificate of Leo IX. he went twice to Rome; the principal object of his fecond journey was to folicit a difpenfation for the marriage of William with the daughter of the earl of Flanders, his firt coufin, which was granted upon the condition that the duke and his lady fhould build a monaltery. They accordingly gave directions for the building of that named St. Stephen, at Caen, of which Lanfranc was appointed abbot in the year ro63. Soon after William was feated on the throne of England, he fent Lanfranc to Rome, to negociate with Alexander II. about the miffion 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 Englifh clergy of their dignities, in order that he might beftow them on his countrymen, or on others, on whofe attachment he could depend: in conformity with this principle, Stigand, archbifhop of Canterbury, was depofed, and Lanfranc raifed to the high wffice in his ftead : he would gladly have declined the honour, but an exprefs order from pope Alexander II. obliged him to accept it. He was accordingly confecrated archbihop of Canterbury in 107:, and in the following year he went to Rome, in company with the archbifhop of York, and was received with uncommon refpect by his holinefs, who had formerly been his pupil at the abbey of Bec. Lan-
frane defended before the pope the claims of his fee 10 fupcriority over that of York. Alexander, however, unwilling to offend either of thefe prebates, or to difoblige the king of England, refured to give judgment in the matter, and declared that it ought to be determined by an Englift fynod. Two councils were held for this purpofe in 1072 , in which the queftion was debated with much warmth, in the prifence of the king, queen, and the whole court, and at length determined in favour of Canterbury. After this, Lanfranc prefided at different councils, in which feveral ecclafialtical 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 thofe who had not wives were forbidden to marry, and bihops were prohibited in future to ordain any man who had a wife. By another, the doctrine of tranfubltantiation was promulgated, which before this period was but little known in our ifland: Lanfranc was, however, one of its molt zealous champions, and employed the weapons of dialectics, with great ingenuity and addrefs, in defence of it, both before and after hiselevation to the fee of Canterbury. Having prefided over the diocefe 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 mult have becn equal to eight or nine thoufand pounds at prefent. As an author, the archbihhop maintained a high rank for the age in which he lived, and his works are written in good Latin : thefe are "Commentaries upon the Epitlles of St. Paul:" " A Commentary on the Pfalms:" "A Treatife on Confeffon:" "A Differtation concerning the Body and Blood of Chritt in the Eucharilt :" and a collection of letters to pope Alexander II.; to Hildebrand, while archdeacon of Rome, and to feveral bifhops in England and Ncrmandy. They were collected, and publifhed in 1648 , in a folio volume. Moreri. Mofheim. Henry's Hift.

Lanfranc, a phyfician and furgeon of Milan in the thirteeifth century. He left his native country, in confequence 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 nthers in his lectures, gained him the refpect and efteem of his profefo fional brethren; and he certainly contributed to the advancement of furgery, which was at that time at a very low ebb in France. Neverthelefs he held fome opinions adverfe to the progrefs of the art ; he condemned the ufe of the trepan, and abfolutely forbade the operation of lithotomy, alleging that the extraction of a calculus rendered the patient impotent. He pointed out in Atrong 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 animadverfions were made.

He left two works in MS., which were depofited in the king's library at Paris ; the one entitled, "Chirurgia parva," the other, "Ars completa totius Chirurgix, five Practica major.' They were printed at Venice in 1490 , with the title of "Chirurgia magna et parva," in folio; and have undergone feveral fublequent editions, and have been tranIlated into the Frensh and German languages. Eloy. Dict. Hit.-Hutchinfon Biog. Med.
LANFRANCO, GIov. Maria da Terentio, in 1538. publifhed his Scintills di Muufica, or "Sparks of Mufic."
a' work which, notwithfanding its quaint tifle, is often guoted with great praife by fubfequent writers. It is now fo fcarce, that it would be difficult to find a copy of it throughout Italy.

Lanerance Giovanni, a painter of hitory, whofe principal merit was the freedom and eafe with which he managed large compofitions in their colour and execution, but to the great lors of character and expreflion. He was born at Parma in 158x, and was at firft a difciple of A gollino Caracci, but alterwards itudied under Annibale, and having obtained a great proficiency of handling, was employed by that mafter in his great work in the Farnefe palace at Rome, part of which he executed fo well, that the difference between his painting and that done by Annibale himfelf is fcarcely to be difcerned.

Endowed by nature with a lively imagination, and having, after he left the Caracci, (under whom he had learnt the art of compoition, ) paid great attention to the artificial Atyle of Corregio, particularly in the Duomo at Parma, and in the cupola there, he obtained a fondnefs for fore-fhortening, loting fight of the fimplicity of nature, and indulging his fancy in ideal furms and groups, which, while they exhibit his fkill, deprive him of a reputation for judgment or true tatte. He was, as M. Fufeli has obferved, "a machinitt in art of the firlt order, and taught his fucceffors the means of filling the eye at a great diflance, by partly painting and .partly leaving it to the air to paint."

His colour was powerful and rich, but not pure. He moit frequently employed very dark fladows, which give his pictures a heavy and fombrous appearance; and not being well verfed in chaiaro-fcuro, the lights in them are not unfrequently ill comnected, or rather lack connection, and are too much in detached fpots. With thofe who prefer fpirit and dafl to more ftudied perfections, Lanfranco will, notwithttanding his deficiencies, 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 pleafure by his labour, that his holineis conferped the honour of knighthood upon him.

His pencil being exceedingly rapid, and his life prolonged to the age of 60 , his works are by no means fcarce, but are to be met with in molt collections. He died in $\mathbf{1 6 4 7}$.

LANG, Join Michael, a German Proteftant divine, was born at Ezelwangen, in the duchy of Sulzbach, in the year 1654 . Having received a gond claffical education, he was fent to the univerlity of Altdorf, in 1682, and there applied himfelf with great ardour to thofe itudies which were to lit him for his future profeffion. He excelled particularly as an oriental fcholar, and was admitted to the degree of M.A. in ${ }_{168}$, and then went to the univerfity 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 profefforfhip of divinity, and appointed pattor of one of the churches. After fome years he was involved in theological difputes, which ended in his quitting Altdorf, and removing to Prentzlow, in the year Iy 10 , where he obtained an appointment, in which he yemained till 1737, when he died, at the age of fixty-feven. He was author of the following among, other works then held in high eftimation: "Differtationes Botanico-Theologica;" "Plilologia Barbaro-Greca;" "De Fabulis Mohammedicis." Moreri.

Lang, in Geograply, a narrow illand of Denmark, fome-
what more than two miles in length, fituated in the Baltic, near the S. coaft of Laaland. N. Lat. $54^{\circ} 43^{\prime}$. E. long. $11^{\circ} 20^{\prime}$.

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 celclebrated the "Olympian grames," which fee. See alfo Olvipia. It is now an inconliderable place; 60 miles S.W. of Corinth.

LANGAROOD, a town of Perfia, in the province of Ghilan, near the S. coaft of the Cafpian fea, which gives name to a road for thips. The cove has 10 feet water, but the entrance is narrow. The filk manufacture is here in high eftimation; 20 miles S.E. of Refhd. N. lat. 27'。 E. long. $5^{\circ} 15^{\prime \prime}$.

LANGASCHANTZ, a town of Sweden, in the province of Harjedalen ; 110 miles S.W. of iSundfwall.

LANGBAINE, Gerard; in Biography, was born at Barton-kirk, in Weftmoreland, about the year 1608 . In 1626, he was admitt a fervitor of Queen's college, Oxford, of which he became a fcholar and afterwards a fellow. He took his degree of M.A. in 1633, and of D.D. in 1646. He had, however, fome years previoully to his taking the laft degree, made himfelf 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 hiltorical and critical kind, difplaying much found learning, and an ardent attachment to the exifting order of things in church and ftate. He was in habits of correfpondence with the learned Ufher and Selden, and is referred to by bifhop Nicholfon as a perfon admirably akilled 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 provolt of his college. He readily fubmitted 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 difcipline. He died in the enjoyment of both his offices, in the year 1658 . He had a fon of the fame name, who is known by his "Appendix to a Catalogue of Oxford Graduates;" and "A New Catalogue of Euglith Plays.".
LANGDON, in Geography, a towfhip of America, in Chefhire county, New Hampfhire, incorporated in 1787, and containing 484 inhabitants.

LANGE, or Langius, Join, in Biography, a phyfician of reputation, was born at Loewenburg, in Silefia, in the year 1485. He purfued his ftudies with fingular zeal at Leipfic, Bologna, and Pifa, in the latter of which univerfities he was honoured with the degree of M.D. He then fettled in the practice of his profefion at Heidelberg, where he foon acquired the efteem of the public, and was nominated firt phyfician to four fucceffive electors palatine; one of whom, Frederic II., he accompanied in his travels through the greater part of Europe. He attained the age of eighty, notwithftanding his exceffive ufe of cheefe, which made a part of all his meals, afferting that phyficians were miltaken in decrying, as indigettible, this his favourite nutriment. He died at Heidelberg in June, 1565 .

The molt efteemed of his works is entitled "Medicinalium Epifolarum Mifcellanea," firft publifhed at Bafle, in 1554 , 4to. This edition contains but eighty-three epittles; but thele were greatly multiplied in the fubfequent editions. The work was full of the various learning of the times; and he in a great meafure anticipated Sydenham in recommending the cool reginen in inflammatory difeafes. He likewife publifhed the following works: "De Syrmaimo et ratione

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purgandi per romitum, ex Egyptiorum invento et forntu-
 together with the treatife of Sennertus on the fame fubject. -"Confilia quxdam et experimenta," 1676 , 4to. together with the Confilia Medicinalia of Velfchius. Eloy. Diet. Hilt.

LANGEAC, in Gcography, a town of France, in the department of the Upper Loire, and chief place of a canton, in the diftrict of Broude; 12 miles S. of Brioude. The place contains $180 \%$, and the canton 9753 inhabitants, on a territory of $232 \frac{1}{2}$ kiliometres, in 16 communes.

LANGEAIS, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the diftrict of Chinon, feated on the Loire; 12 miles W. of Tours. The place contains 2229, and the canton 9465 inbabitants, on a territory of $322 \frac{1}{2}$ kiliometres, in 12 communes. N. lat. $47^{\circ}$ I $8^{\prime}$. W. Wong. $0^{\circ} \mathrm{I}^{\prime}$.

LANGEDORF, a town of Germany, in the duchy of Wurzburg: 7 miles S.IV. of Kiffingen.

LANGEFIORD, a fmall inand near the coaft of Lap. land. N. lat. $69^{\circ} 3^{8^{\prime}}$.

LANGELAND, a fertile ifland of Denmark, fituated in the fouth part of the Great Belt, between the inlands 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 beft in the kingdom, and under the fame government as Funen. The chief town is Rudkioping. N. lat. $55^{\circ}$. E. long. $10^{\circ} 50^{\prime}$.

LANGELMAKI, a town of Sweden, in the province of Tavaftland; 42 miles N . of Tavafthus.

LANGELSHEIM, a town of Weftphalia, 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 Birchofswerder.-Alfo, a town of Pruflia, in the province of Ermeland; 25 miles N.W. of Heillberg.-Alfo, a town of Bavaria, fituated on a fmall river, which runs into the Danube; II 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 Anfpach.

LANGENES, an iffand in the North fea, near the coaft of Norway, about 24 miles in circumference. N. lat. $59^{\circ}$ so'.

LANGENFELD, a town of Saxony, in the Vogtland; 10 miles S.S.W. of $Z$ wickau.

LANGEN-SALZA, a town of Saxony, the capital of Thuringia, on the Salza. Its environs are pleafant and manufactures flourifhing. It contains about 900 houfes, two churches, a collcge, and a cafte; I4 miles W. of Erfurt. N. lat. $51^{\circ} 4^{\prime}$. E. long $10^{\circ} 42^{\prime}$.

LANGENSCHWALBACH, a town of Weftphalia, in the county of Cat renelnbogen, celebrated for its mineral waters; 9 miles N.W. of Mentz.

LANGEN-SEE. See Lake.
LANGENTHAL, a town of Switzerland, in Berne, advantageoufly fituated for commerce with France and Germany; for the convenience of which it has three fairs, at which are annualiy fold from 10,000 to 11,000 pieces of linen, 8000 of which are whitened; thefe are exported to Spain, Portugal, America, \&c. Cheefe is likewife fold here in great quantities, befides horfes, cattle, grain, and many other articles, both of agriculture and manufacture. Vor., XX.

## L A N

In its ricinity are mincral fyrings; 18 miles N.E. of Berne. N. lat. $47^{\circ} 12^{\prime}$. E. lung. $7 \times 33^{\prime}$.

LANGENZENN, anciently called Cinna, or Cimata a town of Gernany, on the river Zenn; 12 miles W. of Nuremberg.

LANGEROGE, a fmall ifland in the Cerman fua, near the coalt of Eaft Friefland, with a fmall town. N. lat. $53.42^{\prime}$. E. lont. $7^{\circ} 24^{\prime}$.

LANGESCHEED, a town of Wertphalia; 25 miles W. of Brilon.

LANGESUND, a fea-port town of Norway, in the dioccfe of Chriftiania; 50 miles S.S.W. of Chritliamis.
L.ANGEIVANG, a town of the duchy of Sciria; 1 (6) miles N.E. of Pruck.

LANGFORD, a town of America, in the fate of Kentucky; 25 miles E.S.E. of Stamford.
Langrond Bay, a bay of the ifland of Antigua, on the N. coaft, W. of P'eycrfon's Point.

LANGHOLM, a fmall ifland on the E. fide of the gulf of Bothnia. N. lat. $60^{\circ} 45^{\prime}$. E. long. $21^{\circ} 40^{\prime}$.
Lanoholm, a market-town and burgh of barony under the duke of Buccleugh, is fituated in a parifh of the fame name, in the diffrict of Efledale and county of Dumfries, Scotland. The population of this town is ftated, in the parliamentary reports of 1 SoI, at 2039 perfons, but it is prefumed, this number includes the whole parifh. A market is held here every week, and four fairs annually ; that helơ on the 26 th of July is confidered as the greatelt in Scotland for lambs. At a flort diftance from the town is the village of New Langholm, which has been erected by the duke of Buccleugh for the eftablifhment of an extenfive cotton manufactory. The country along the banks of the Enk is generally flat, well fheltered with woods, and yield luxuriant crops, particularly of oats and barley. The other parts of the parifh confilt chiefly of fmall hills, covered with werdure, and affords excellent pafture for theep. The duke of Buc. cleugh has built in this neighbourhood a very handfome manlion called Langholm-lodge, which ftands in a delightful valley.

LANGHORNE, Joun, in Biography, an excellent Englifh poet, was born at Kirkby-Stephen, in Wefmoreland, in ${ }^{7} 735^{\circ}$. 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 fchool-learning at Appleby under Mr. Yates, who joined elegance of tafte to the acquirements of a claffical fcholar. Langhorne continued under his tuition till the age of eighteen; when the narrownefs of his circumftances obliged him to engage himfelf as dameftic tutor in a family, near Ripon. He nlade himfelf known as a poet, by a poem entitled "Audley-park," defcriptive, as its title imports, of the beauties of that place. He foon after became an affittant at the free-fchool of Wakefield, and taking orders, acquired popularity as a preacher. In 1759, he undertool the tuition of the fons of Robert Cracroft, efq, of Hackthorn, near Lincoln, and while in this fituation he made a collection of fuch mifcellaneous poems as he had written, and publifhed them in a volume for the benefit of a friend in diftrefs. In the year ${ }^{2} 760$, he entered himfelf at Clare hall, Cambridge, for the purpofe of taking a degree, and dated from that place a poem on the king's acceffion, printed in the Univerfity colfection of verfes on that occafion. In 1761, he officiated as curate to the clergyman of Dagenham, in Eflex, and at the fame period he publifhed feveral poens, which made him generally known among the votaries to the Mufes, and in 1762 , he appeared as a profe writer by his. "Letters on relig:ous Retirement, Mcłanckoly, and Enthu*

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fiafm," and by his caftern tale of "Solyman and Almena." He was, at this time, likewife a writer in the Monthly Review. His next work, publihhed in $1_{7} \sigma_{3}$, entitled "Letters fuppofed to have paffed between Theodofins and Conltantia," founded on a ttory in the Spectator, hecane popular, and obtained for the author much applaufe. Mr. Langhorne, in the following year, rewoved to the metropolis, where he was appointed curate and lecturer of St. John's, Clerkenwell, and in the fame year he publifhed two volumes of fermons, which he entitled "'Iracts of religious Philofophy:" Dr. Hurd now appointed him affitant preacher at Lincoln's-Imn, and Mr. Langhorne fuon after gave the public his " Letters on the Eloquence of the Pulpit:" and "Letters to and from felect Friends, or Effufions of Friendihip and Fancy." He is faid to have publifhed a dcfence of lord Bate; but a paltoral poem, entitled "Genius and Valour," he avowed, the object of which was to vindicate the natives of Scothand from the rancorous abufe thrown upon them by Churchill. This obtained for the author a complimentary letter from the univerfity of Edinburgh, with a diploma of doctor of divinity. He had, in the year 1760 or 1751 , quirted the family of Hackthorn, on account of beins refufed the hand of one of Mis. Cracroft's daughters ; in 1767, when he bad obtained a ftation of much greater refpectability, and when he was looked up to as an author and c'ergyman, he renewed his fuite, and was fuccefsful. The living of Blagdou, in Somerfethire, was purchafed, which afforded the newly-married couple a defirable refidence, but this happy union was fatally duriolved by the death of Mrs. Langhome in child-bed, in the enfuing year. Life now feened to have lott its charms on the furvivor, he quitted a place which ferved only to remind him of his heavy affliction, and retired to the houfe of his brother William, a clergyman at Folkettone, in Kent. In this retreat, inftead of giving himfelf up to melancholy, he very wifely sccupied his mind with a literary talk of fome labonr and extent, and the two brothers jointly produced a new verfion of Plutarch's Lives, with notes critical and explanatory, and a life of the author, which was publifhed in 177 I , and met with a favourable reception. He had publihed, previounly to this, "Letters fuppofed to have pafled between St. Evremond and Waller," two vols.; and "Frederic and Pharamond, or the Confolations of Human Life," a philwfophical difcourfe. His "Fables of Flora"" were publifhed in 1771, as was another poem, entitled "The Origin of the Veil." In 1772 , he paid a vifit to his native country, which produced a fecond matrimonial connection, and having induiged 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 thofe of a magitrate, 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 Jultice." The firl part appeared in IFIt, and was greatly admired for the manly itrain of its fentiments, and the beauty of its defcriptions. The two other parts were of inferior merit, and publifhed at different periods. In 1776, he loft his fecond wife in child-bed, which mult, to a man of feeling, have been an unufually fevere calamity, and from the efiects of which he probably never wholly recovered. His affiction 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 bifhop of that fee. His health was, however, declining, yet he continned to amufe himfelf and the public with writings of different kinds, the laft of thefe was a romiantic tale, entitled "Owen of Carron," He died at Blagdon, in April 1779, in the
forty-fifth year of his age. He was amiable in his manners, but is faid to have been rather too much addicted to convivial indulgences: if this lazbit was incurred by domellic misfortuncs, though not to be juttified, it mas, in a meafure, be palliated, and the fubject of it is to be truly piticed. "His poetry," fays an able critic, " is generally harmonious, abounding in plealing imayery, but over-loaded with ornament, and not frec from obf, urity 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 tyle, and the falle pathos of their fentiment. In religion he was inclined to enthufiafm, but the morality of all his works is pure and rational "

LANGIN, in Gcograpby, a town of France, in the department of Mont Blanc; 6 miles N. of Bonne.

LANGINES, a fmall ifland of Denmark, in the North fea, near the welt coalt of South Jutland; 2 miles N.W. from the inand of Norditrand.

LANGIONE, a town of the kingdom of Laos, confidered by fome as the capital. N. lat. $22^{\circ} 30^{\prime}$.

LANGLE'S BAy, a bay on the welt coalt of the inand of Saghalien, fo calied by M. La Peroufe. N. lat. $47^{\prime} 49^{\prime}$. E: long. ${ }^{1} 4^{\circ} 49^{\prime}$.

LaNGLe's Pcak, a mountain on the north coall of the inland of Jeffo, faid to be more than 1200 toifes above the level of the fea. N. lat. $45^{\circ} 25^{\prime}$. E. long. $142^{\circ} 20^{\prime}$.

LANGLEY Island, a fmall ifland, near the fouth coaft of Newfoundland, about 3 miles S. from the inland of Miquelon. N lat. $46^{\circ}{42^{2}}^{\prime}$. WW. long. $56^{\prime} 5^{\prime}$.

LANGOE, a fmall ifland of Denmark, near the north coalt of the ifland of Funen. N. lat. $55^{\circ} 35^{\prime}$. E. long. $10^{\circ}$ 11'. - Alfo, an ifland in the North fea, about 80 miles in circumference, and to from the coaft of Norway, celebrated for its marble quarries. N. lat. $68^{\circ} 16^{\prime}$.

LANGOGNE, a town of France, in the department of the Lozére, and chief place of a canton, in the diftrict 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. $4444^{\prime}$. E. long. $3^{2} 54^{\prime}$.

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 10,602 inhabitants, on a territory of 130 kiliometres, in 13 communes.-Alfo, a fmall ifland in the north part of the gulf of Bothnia. N. lat. $6 \boldsymbol{j}^{\prime \prime} .32^{\prime}$. E. long. $22^{3} 6^{\prime}$.

LANGORAN, a fmall inand on the eat fide of the gulf of Bothnia. N. lat. 63 32., E. long. $22^{\circ}$ I $S^{\prime}$."
LANGPORT, a market-town and parilh 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 cultom, still claim feveral boroughprivileges. This town confilts chiefly of two ltreets, and is divided into two parts, called Langport-Eaftover and Lang-port-Weltover. The government is vefted 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 Bridge.water, 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 weft fide, formerly ornamented with handfome ftatues. Adjoining to the town are two large commons, called Common-Moor and Ragg-Common; ; the former confifing of 150 , and the latter of 70 acres of good meadow ground, upon which all the inhabitants not only affume the right of feeding cattle, but even of building
as they deem moft convenient for themfelves. The houfes in Langport, according to the parlamentary returns of 1800, amounted to $126^{\circ}$ in number, and were ocengied lis. $75+$ inhabitants. Here are a weekly market and there annual fairs. Collufon's Hitory, \&ec. of Sonserfithite, 3 vols. 4 to.

LINGRAVA, a town of Portugal, in the province of 13eira, having a medicinal fpring; 12 milcs $\mathbb{N}$. IV. of Pinhel.
LANGREL-SIOT, is a fort of fhot fometimes ufed at fea, made of two bars of iron, with a juin, or fiackle, in the middle; by which means it can be ihortench, and io put the better into the gun; and at each end there is a hale bullet, cither of lead or iron.

This fhot, when difcharged, flies out expanded, and fo does more execuion among the enemies rigging, \&ic. It is never ufed in royal fhips, but very often by privateers and merchantmen.

LANGRES, in Geozraphy, a town of France, and chief place of a ditrict, in the department of the Upper Marne. In the time of Julius Cxfar, this was the captal of the Lingones. On the irruption of Attila, it was taken and burnt; and after having been rebuilt, the Vandals dettroyed it. It was, at an early period, erečed into a bifhopric; and from the reign of Philip) Auguftus to the revolution, the prelates were peers of France. It afterwards belonged to Burgundy, and fell with the reil of that kiugdom to France. N. lat. $47^{\circ} 52^{\prime}$. E. long. $4^{\circ} 25^{\prime}$.

LANGRISH, BRowye, in Biograply, a phyfician of the latt century, who diftinguifhed himfelf as an adrocate for the mechanical theories of phyfiology and medicine, and by the numerous experiments with which he fupported thofe doctrincs. A mose accurate inveltigation of the nature of the animal economy has exploded them; but Dr. Langrifh had the merit of afcerraining feveral interelling fact in refpect to the nature of the circulating powers. He died in London, on the 29th of November 1759, and left the folIowing works: "A new Efliay on Mufcular Motion, founded on Experiments, Scc." ${ }_{1733}$, Svo.; " Modern Theory of Phylic," 1738, Svo.; "Phylical Experiments upon Brites,", 1745, Svo.; "Croonian Leciures on Mufcular Motion," ${ }^{17+7}$. Eloy. Dic. Hitt.

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. $16^{3} 49$ '.
LANGSKAR, a fmaillifland on the ealt fide of the gulf of Bothnia. N. lat. $63^{\circ}$. E. long. $21^{\circ} 9^{\prime}$.

LANGTON, STEPien, in Biography, archbifhop of Carterbury in the 13 th century, was a native of England, but was educated at the univerlity of Paris, where he afterwards taught divinity, and explained the Scriptures with much reputation. His character flood fo high, that he was chofen chancellor of that univerfity, 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 fupport their refpective claims. His holinefs not only determined againft both the contending candidates, but ordered the monks of Canterbury, then at Rome, immediately to proceed to the election of an archbifhop, and, at the fame time, commanded them to choofe cardinal Stephen Langton. After various excufes, which the pope knew how to get over, by abfolving the agents in the bufinefs from all lorts of promifes, oaths, \&c. and by threatening them with the higheft penalties of the church, they complied, and

Langton was confecrated by the pope at Vitcrbo. As foon as the news arrived in England, king Johm was incenfed in the higheft degree both againd the pope and monks of Canteringy. The latt, being within the reach of his power, csperienced the cffects of his maignation. He fent two wficers wath a company of amed men to Canmbury, touk poti.ficu of the mematery, banithed the monks out of the longdom, and fizad ali their property. He wrote a finited leter to the pope, whom he accufded of iagstlice and preflam,tion, in sathg a Aratger to the highent dignity in his kntrom, withont cren his knowted, ; and he added, that if this holinefs did not irflantly repair the injury, he would break off all commnnication with Kome, Then, unfortunately for himfelf and his tingedom, was unlit for fo arduous a contelt ; and he, in the end, fubmitted to the mott difgraceful terms. (Sce Jons, and Innocert Ill.) In 1213, cardinal Langton arrived in Eugland, and took porfeflion of the fee; and though he owed all his advancement to the pope, yet the mument he became an Englifh baron, he was in!pired with a zealous altachment to the liberties and independence of his country. In the very year in which he came over, he and fix other bifhops joined the party of the barons, who affociated to refift the tyranny of the king; and at length they were fucceffful in procuring the great charter. Langton was equally zealous in oppofing the claims of the papal agents, particularly of the pope's lecrate, who aflumed the right of regulating all ecclefiallical affairs in the moft arbitrary manner. In the grand comelt which took place between king John and the barons about the charter, the archbifhop's patriotic conduct gave fuch offence to the pope, that, in 1215 , he laid him under a fentence of fufpenfion. Neverthelefs, in the following year, we find Langton affilting at a general council held at Rome; and during his abfence from England at this time, king John died. In 1222, he held a fynod at Oxtord, in which a remarkable canon was made, prohibiting clergymen from kecping concubines publicly in their houjes, or from going to them in other places fo openly as to occafion feandal. 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 refufed, and he initantly gave orders for the affembling of parliament. 'The archbifhop itewed, in feveral inftances, that he was friendly to the legal prerogatives of the crown; and by a firm and impreffive conduct, in a cafe of great difficulty, he prevented the calanity 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 flourifled. He wrote "Commentaries" upon the greateft part of the books of the Old and New Teftament. He was deeply fkilled in Ariftotelian dialectics, and the application of them to the doctrines of Scripture. The firt divifion of the books of the Bible into chapters is afcribed to this prelate. The hiltory of the tranflation of the body of Thomas a Becket was printed at the end of that archbifhop's letters, at Brufels, 1682 . His letter to king John, with the Ling's anfwer, may be feen in d'Archery's Spicilegium. Motheim's Eccl. Hift. Henry's Hitt, of Eng.

Langton, in Geography, a town of Scotland, in the county of Berwick; 2 miles S.IV. of Greenlaw.
LANGUAGE, a fet of words which any people have agreed upon, whercby to communicate their thoughts to each other. Or, language, in gencral, fignilies the expreffion of our ideas by certain articulate founds, which are ufed as the figns of thefe ideas. See Arriculation.

Whatever

## LANGUAGE.

सhatever be our opinion relpecting the progreflive amelioration of brutes, if the capacity of language were communicated to them, there can be no hefitation in admitting the progrelfive detcrioration of the human 〔pecies, if they were deprived of it. If man had not poffefed this, er fome other extenfive power of communication, that alfonifhing fyllem, which we call the human mind, would have remained in inactivity, its facultics torpid, its energies unexcited, and that capacity of progreflive improvement, which furms fo important a part of the mental conflitution of man, would have been given in yain, would have been unknown, except to him who gave it. But in cyery part of the creation we difcerna unity of defign, which equally proves the wifdom and benevolence of the great Tirft Caufe. The means of brinzing his powers into activity are bettowed upon man, as well as the powers themfelves; and it is a polition which will bear a vigorous examination, that the accuracy of human thought and the extent of human intellect gencrally procced in equal Reps with the accuracy and extent of languace. "This ineitimable prerogative," fays Smellie, " is perhaps one of the greatell fecondary bonds of fociety, and the greate? improvement to the human intellect. Without artificial language, though nature has beftowed upon every animal a mode of exprelling its wants and defires, its pleafires and its pains,-what a humiliating figure would the human fpecies exhibit, even upon the fuppolition that they did aflociate. But when language and fociety are conjoined, the human intellect, in the progrefs of time, arrives at a high degree of perfection. Society gives rife to virtue, honour, government, fubordination, arts, fciences, order, happinefs. All the individuals of a community conduct themfelves upion a regulated fyltem. Under the influence of eftablifhed laws, kings and magiftrates, by the exercife of legal authority, enconrage virtue, reprefs vice, and diffufe through the extent of their jurifdiction the happy effects of their adminiftrations. In fociety, as in a fertile climate, human talents germinate and are expanded; the mechanical and liberal arts flourifh; poets, orators, hiltorians, philofophers, lawyers, phyficians, and theologians, are produced. Thefe truths are pleafant, and it were to be wifhed 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 neceffary 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 deftitute of the power of communication, he would not have rifen above the level of the lealt cultivated of his fellow-mortals. Conceive him (to ufe the ideas of Condillac) bereft of the ufe of vifible figns, how much knowledge would be concealed from him, attainable even by an ordinary capacity! Take away from him the ufe of Epecch,-the lot of the dumb teaches you in what narrow bounds you enclofe him. Finally, deprive him of the ufe of all kirds of figns; let him not know how to make with propricty any gellure;-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 lowelt fage, -that of mere brutality. His lordhip's -pinion is too lingular to be omitted here. He fuppofes, on the authority of feveral travellers whom he quotes, (and of whofe paffion 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. - me of them, to complete their relationfhip to the monkey tribe, Had actually tails. This, with other opinions, which
difplay rather the credulity of the man of fyftem than the fober and cool judgment of the philofopher, has been expofed to the lively ridicule of Horne Trooke: and though we wifh never to countenance the idea, that ridicule is a proper telt of truth,-we are willing to admit, that there are forme opinions which it is below the dignity of reafon to refute.

We fee in language a complicated whole, which we have been accultomed to confider as it is, without attempting to afcertain what it has been. We fee all regularity and beauty; and we do not afk ourfelves the queftion, 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 inveution of neceffity, gradually perfected and brought to a fyltematic form, by caufes which have operated generally, but have received modification from the influence of local or temporary circumftances. A complete fyitem of the origin and progrefs of language would be a hiltory of the progrefs of human intellect. This we fhall not aitcmpt : perhaps our refources of knowledge are not fufficient to render the attempt in any degree fuccefsful; but a fhort outline of the early hiftory of language, particularly of written language, will be neither uninterefting nor ufelefs.

Our direct evidence is not extenfive, and we are too much obliged to have recourfe to hypothefis, in tracing the progrefs of improrement in any department of fcience. We are unable always to afcertain (as Mr. Stewart oblerves) how men have actually conducted themfelves on particular oceafions; and we are then ted to inquire in what manner they are likely to have proceeded from the principles of their nature, and the circumftances 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 fecculations. "In examining the hiftory of the human mind, as well as in examining the phenomena of the natural world, we cannot always trace the progrefs by which an event bas been produced; and it is frequently of importance to difcover how it may bave becn produced, by caufes known to exilt. The fleps in the formation of language cannot probably be determined with certainty; yet if we can thew 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 philofophy which refers to a miracle whatever appearances, either in the natural or moral world, it is unable to explain."

Diodorus Siculus (lib. i.) and Vitruvius (A rchit. lib. ii, c. 21.) fuppofed that the firlt men lived for fome time in the woods and caves, like the beafts, uttering only confufed and inarticulate founds; till affociating for mutual afiitance, they came by degrees to ufe articulate founds, mutually agreed upon for the arbitrary figns or marks of thofe ideas in the mind of the feaker, which he wanted to communicate to the hearer. By what degrees they proceeded from inaticulate to articulate founds, thefe writers do not attempt to point out; and unlefs we admit that thefe articulate founds were connected with certain feelings, in the fame manner as what are called the natural ligns, or that they were cafly produced, which will not be allowed by thofe who have attended to the ftructure of the organs of fpeech, the account we have received from a better informed hittorian will not lofe ground.

Plato, in Cratyl. p. 383. p. 425. ed. Scrrani, feems to maintain, that the firll language was of diviee formation; for he fuppofes that the names of things had-originaily fome matural comection or congruity with the things themfelves,

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and that the firt names muit have been juftly impoled, be taufe they were impofed by the gods.

Mofes, however, on whofe authority we may more confidently depend, gives us to underitand that the rudiments of language were begun by man, under the fuperintendence of his Maker. The Supreme Being caufed all the mimal credtion to pafs before their lord, to receive from limn their names. If we conlider that the numerous varieties which we obferve in the fubordinate clafles of the brute creation probably originated in a comparatively finall number of individuals, as the almont equally numerous varictes of men fprang from our great progenitor, this alnott endlefs tak, as it at firt fight appears, is very much reduced in its magnitude. Here is the lirft flep. Miracles are never ufed exsept when they are neceffary, that is, when the fame effect cannot be produced by the common laws of nature: and hence we feel inclined to believe, that here the divine communication ceafed; and that what man had been inftrucked to begin, he was left to complete for himfelf. Indeed, if we fuppofe that more than the application of names to natural objects had been divinely taught, yet we mut admit that thefe communications would be bounded by the wants of the being to whom they were made. It is not probab!c that the divine initructor would lead man to fix upon words, to denote things then unknown, or to denote ideas which were not then acquired. "It is not neceffary to fuppole," fays Liett, "that the Creator infpired the firlt parats of mankind with any particular original or primitive language; but that he made them fully fentible of the power with which they were endued of forming articulate founds, gave them an impulfe to exert it, and left the arbitrary impofition of words to their own choice." This"feems to be intimated Gen. ii. 19. See Shuckford's Connection, vol. i. book ii. p. 111 .

Let us then fuppofe the ufe of articulation given, and its application in fome inflances pointed out, in the invention of the names of animals ; which, we may obferve, is, in fact, the firlt ftep that would probably have been taken, prefuppofing the power of articulation, if ne divine direction had been given. Words would originally be fimply the figns of things, and farther of individuals. Every new object, for which neceflity required a name, would receive a different name from others: but if there were a flriking fimilarity 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 impreffion would recal the idea of the former object which it refembled, and confequently the word with which it vas 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, ufed to call every dog he faw Sailor. There is little or so difficulty attending the application and claffification of fenfible objects: it feems to be an operation fimple and eafy, if we prefuppofe (as we have done) that fome articulate founds were known.

When feveral objects had received the fame natne, it wou'd be fometimes neceliary to diftinguifh them. Our procedure in fuch cafes is to connect with the name of the object, the name of a diftinguihing quality, or to fpecify fome relation it has with other objects; but this fuppofes that to be already done, which we mult confider as yet to be done. Now we muft bear is mind that fimilarity, (fenfible external femilarity,) and local connection, are thofe principles of affociation, which are known to be moll active at prefent in the minds of the illiterate and unculkirated; they muft alfo have
been moftactive in the minde of all men in the rude flates of fociety. A peculiar colour, (which would furning one pris ciple of diilinction,) would naturally be denoted by the name of an object remarkable fur that colour, and this that e, joised with the general term, would conli.e it to the parthcular object it was meant to \{pecify. This is a procedure fo fimph, that one may expect to find fone traces of it Rill remaining, and it is what we actually do in comron language. An orange villon will precifely explain our nestanis. We wilh to ditinguifh a ribbon from cthers by its culour ; in this inllance we are able, agreeably to the cutom of our language, to employ the name of an object remarkable for that colour, to denote the colour itfelf; and it is to be co. furved, that fenfible qualties were thofe, and thofe orify, which would be firlt noticed, and moll requilite to be noticed.
Local fituation, or vicinity to fome object, would furninh another ground for diftinction ; the founthin ncar the cave, fur inllance. Now in order to exprefs this, the prozedure woud be finple and intelligible, if immediately preceding or following the term employed to denote fountain, the term denoting cave were added. As we thonid at prefent ufe che exprcfiion, the barn-yard, for the yard near to, or adjoining the baru; the bermibase-walk, for the walk leading to the hermitage. 'i'his juxtapofition of the ligns, to fignify' the congruity or funilarity of the objects they denote, is the molt natural, and in a language little extended, fufccient'y adequare for all the purpofes of common lifc ; but it is obvious that it would allow very great latitude of interpretation; and hence, as language became more copious, contrivances were ufed to denote the nature of the cornection which fubfifted between the objects denoted by the figns employed. The chief of the fe is the employment of prepolitions, at firt feparately, and afterwards, in fome cafes, coalefcing with, and forming a part of the word; and the origin of thefe furnithes additional proof that the procedures we have frozen of were in reality thofe of the early framers of langt: je (fee Grammar); but thefe were centrivances of a luje: date than thofe of which we here fpeak.

By degrees it was found converient, at leaft by fome tribes, to defignate thofe rames which were employed, in c -nneftion with cther rames with a tiew to point fome diality or reitr:cting circumfance of the thing fignified, ty fome note that they were fo employed. The Tpeaker migtt cettainly bave left the inference to fimple juxtapofition; but this appears to have been done in few languages, after improvements brgan to take place; and to effect fuch defignation words (in fome cafes denoting add, join, like, \&c.) were fubjoined to the particularizing names, and they then were ufed only as adjectives, (or, to ufe a more general. term, as admouns.) The Chinefe, however, Aill nake no dintinction in form, between words when employed as nouns and as adrouns; the fame word when placed firlt being an adjective, and when placed laft a fubttantive; thus bao gin is a good man; and gin te hao is the goodnefs of a mau. We ufe the fame word in many inttances both as a noun and an adnoun; but a large propertion of our fimple adje ctives are formed as above, and are never employed as fubflantives; the Chinefe, on the other hand, when a fubflantive is sot to be ufed as an adjettive, add the defignating fyllable $c$ a to it.

As far as the proceffes we have defcribed regard fenfible objects and their connections, all feems very plain; and we find fo many tracts of fimiar modes of proceeding in languages at prefent in ufe, that we can fcarcely doubt that at leafli: Itromgly refembles the aEtual procedure in the early flages of language. Bind we may renark, as we go on, thats.

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that every procedure, in order to be probable, fhould be fimple, and fuch as might calily be adopted. It would not be long before art was applied to perfect and correct that which neceffity began; but even this mult have had the features of fimplicity, mult have been direeted by circumifances which would not lee under the controul of man. It is not probable that any variations would be formed by regular analogres, except fuch as really exilted in the fituation or comection of the object; nor that they would form any combinations of words, excepting when the objects they figsilfied had fome reat or appretiended connection.

In order to exprefs objects which were not fenfible, fo as to convey to others notions or feelings which exitted in the mind of the fpeaker, words would be ufed which had previoufly been appropriated to objects to which thofe objects of the mind's cye appeared to have fome refemblance, or other connetrion. This refemblance or conncetion was frequently forced, and to thofe whofe fituation was different would not be at all ftriking; in other cafes it was correct, and the jultnefs of application is proved by a fimilar procedure of uncomected inventors. We may derive great light here from the hieroglyphics; for there cannot be a doubt that where the vifible fign which originally reprefented only a fenfible object, was applied to denote fome quality difcovered by reafoning and obfervation, or fome internal feeling, the audible fizn or word was applied in a fimilar manner. The writing would, of courfe, as Warburton very juflly obferves, be that very picture which was before painted by the fancy, and thence delineated in words. Some inttances will be adduced, when we come to confider the hieroglyphical mode of communication; at prefent we will add one or two as illuftrations of the principles we have laid down. The term ufed to denote the mouth, denoted alfo /peces ; this, connected with the dor, fignified the dog's voice. They proceeded further, and ufed this compound, at leaft the hieroglyphic denoting it, to fignify lamentation and the forrozw which produced it. At firlt view this procedure appears extraordinary; to enter fully into the refemblance, we muft 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 expreffion of lamentation among the lower claffes of the Irih. It was a procedure much more naturai when the term dog joined with the word denoting a field was made to fignify bioting. Our readers will be able, even in the prefent refined period of our language, to trace numerous intances, in which the names of intellectual things have been obvioufly transferred from fenfible things; and to thofe who have attended much to the fubject, it will not appear too much to affirm, that in every inftance where a word is not the name of a fenfible object, it has acquired its prefent force by a gradual tranfition from its primary application to fenfible objeets. Mungo Park has furnifhed us with fome grod fpecimens of the commencement of this tranfition in the Mandingo language : thus telin-
 terally the beart c mes out, fignifies angry; a beagee, literally is bere, fignifies alive; Sc. In every known language the trantition has been begun ; but it is only among the more refined that it has been complete. In our own, we find abundance of inflances in almott every intermediate ftage of the progrefs, as weil as in its termination.

Language would pröceed but awkwardly without thofe wheels which have been gradually made for it ; but all which $c$ an be thought neceffary for communication are the noun and the verb; and even of the latter, as a ditinct clafs of words, the necelfity may juitly be doubted. We regard it as nest to
certain that the whole of what is now (by affociation) ime plisd or denoted by the verb, beyond what is denoted by the acknowledged noun, was originally mere inference from the juxtapofition of the verb-nom with another noun. We cannot indecdacyance one flep in oral communication, without leading our hearers to the inference that certain ideas are sonnected in our minds, or that we believe certain objects, properties, or events, to be connected. The comnecting link, however, weed not always be itated; in the firlt flage of language it would not exit, becaure the firft 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 exill. Words are placed together ; and it is cafily underflood that the correfponding ideas arc connccted in the mind. "Mamma, milk-good," would furely be underftood by any one; and depending upori the cafe of inference, the ancient writers (long after words had been appropriated to exprefs affirmation) continually left their readers to make it for themfelves. But how flowly, and how ambiguoufly, communication would, in many: cafes, proceed, without fome appropriated link of conuection, any one may be convinced by attempting to exprefs a train of thoughts without thofe words which have the idea of affrmation aflociated with them, in the forms fo expreffing affirmation.
The chief diffeculty oppofing the admiffion of the opinion that verbs were originally nouns, arifes from the peculiarities exitting in the external character of verbs, the notion of time and of modes of exiftence and action having become affociated with them, and the fubject in numerous intlances, and occafionally the object, having coalefced with the verb; but thefe are all accidental circumftances; and the mere Enslim fuholar has here advantages which the learned do not poffefs, becaufe he continually meets with verbs in his own language the fame in every external character as the noun, and frequently ufed as nouns. The point, however, to be carefully kept in view, and what muft gradually remove: every dificulty, is, that the only effential difference between the noun and the verb is, that the latter (of courfe by affociation) expreffes affrmation; all the fuperadded circumftances may be convenient for communication, but are in no way neceffary; and in our own language, thofe fuperadded circumftances are in moft cales expreffed by adjuncts and not by the verb itfelf. If, in any form, a word employed to exprefs affirmation, does not exprefs it, it ceafes to be a verb. For grammatical convenience we may arrange fuch forms with thofe which exprefs affirmation, but it is merely

 vent much mifake as to the nature of the verb, if the infinitive and imperative moods were always arranged together under the clafs of the noun-fate of the verbs. The infinitive is the verb-noun with a termination (originally, without a doubt, exprefivc by itfelf, as all terminations milt have been,) denoting that it is to be employed as a verb; thus in the Anglo-Saxon verb cean, če is the verb-noun, and an is the verbalizing adjection; fo тvสт, ama, \&c. are the verb-nouns,
 zustev, \&c.) and amare, have the refpective verbalizing ad. jections joined to them. In fhort, in our opinion, the imperative is the verb-noun it[elf; and the notion of command, entreaty, \&ic. conveyed by it, is merely the inference of cuftom; whether we fay to a fervant bread, or, bring fome bread, we merely fecify, in the latter cafe, the action and the object of the action, and, in the former, the object alonel, the relt is inforred from tone, manner, \&c. The fact indifputably is, that in every department of language, fully as much is done by inference as by actual expreflion; and even

## $\mathrm{L} \wedge \mathrm{NG}_{\mathrm{G}} \mathrm{U} \wedge \mathrm{GE}$.

as it is, thought is by far too quick for words. Though we are now encroaching on the department of grammar, we muft add as fome 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 fame as the infinitive. But to proceed;

Men, fisht, are names, and are thll acknowledged as fuch; when they are placed together, efpecially if accompanied by ditinguifhing tones of voice, it would be naturally inferred that the fpeaker intended to raife in his hearer's mind that belief which exilts in his own; or at leait, to inform his hearer of a connection which circumflances had formed in his mind. By degrees, at lealt in molt nations, fome of thofe names xhich 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 pro. portion of thofe verbs which are cmployed as verbs, (i.e e conveying the inference of affirmation,) are thill immediately recognized as nouns. In the Chinefe, very few names are ap-p-opriated as verbs, but are ufed indifcriminately, and without any variation of form, either as nouns or verbs; in the Hebrew, the ront, (which does not, like every part of the indicative in the Greek and Latin verbs, include a pronouri, is a fimple name, and is ufed, in many cafes, as a noun; and in our own language, many names are ufed either as nouns or as verbs. When we have adranced to the frequent ufe, and gradual appropriation of fome names to convey the inference of affirmation, the reft is cafy and almoft certain. With refpect to the fimple affirmation, the fubject of it would, in the cafe of the frit and fecond perfons, always be a pronoun, and, in the fame diftrict, the fame pronoun. This, where $\sqrt[\beta]{ }$ oken language made material progrefs, would gradually coalefce with the verb; and the word fo formed would be completcly invelted with the rerbal character, and never be employed but with the inference of affirmation. The Hebrew prefents us with this coalefcence in its incipient and obvious ftate; the Greek and Latin fhew it in a much more complete ftate, and the component parts cannot always be detected ; no reafonable doubt can however exift but that the procedure has been the fame in all. The fame might alfo be the cafe refpecting the third perfon, but the coalefcence would, in this inftance, be more nowly formed; and in fome languages where the coalefcence took place in the other perfons it did not in this; it mult, however, be admitted that, in others, the contrary is the fact.

Refpefting the changes of the verb, to make it exprefs other circumftances belides thofe of affirmation, we mult refer to Grammar and the connected articles, and thall content ourfelves with the following general remarks. There appears to us to be little or no reafon 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 exiftence and action, (as well as thofe of number and perfon,) have been formed in confequence of the coalefcence of words of appropriate fignification ; and though the gradual refinement of language may have greatly varied the affociations of words, from what they originally poffeffed, yet that thofe changes were originally found fufficient to anfwer their refpective purpofes. In fome cafes the contrivances adopted can be fill traced; and from the new turn which has lately been given to philological fpeculation, we may expect other difcoveries refpecting the caufes or origin of particular flexions. We fhall only mention two inttances, which will ferve to fhew how fimple thofe contrivances originally vere. The future of the French verb is nothing more than the infinitive of the verb, with the prefent tenfe of avoir;
thus aimerai is ai aimer: and $j^{\prime}$ amerai, means, I bave to love, which mode of expreflion is, in our own langraage, ufed with a future force. This leading diflinction between the paft and the future tenfe of the Hebrew verts is. that ine the pait tenfe the verb, is placed lafore the fragment of the pronoun forming the perfon, and in the future offer it ; to intimate (as may be reafonably fuppofed, that abe action. has paffed the fulyect in the lirft cale ; in the fecond, that it is yct to come.

The force of the prenouns (the legritimate fubltantive pronouns) is very clear. I means the ferfon forathing ; tho:t, the perfon Spoken to ; lin, fiee, it, the fail pertun or thing, the perfon or thing lefore mentianed or refericed to; and fo on in the plural. When this limple view of the fuljict is taken, no one can fecl any mytlery in the origin of pronouns. The firit plan would undoubtedly be, to ufe the names themfelves; and fuch is the firtt prosedure in childhood: "Mamma loves Mary, and hopes Mary will be a good girl." Children ufe pronouns by degrees only ; and thofe of the firit and fecond perfons much later than thofe of the third, for the obvious reafon that the fe latter are whe moft convenient in their limited intercourfe. The pronouns of the third perfon identify the object now fpoken of, with that befare fpoken of, and fave much circumlocation, and Itill more ambiguity; the pronouns of the firlt perion are of great convenience, in cafes 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 muft ctherwife be often repeated. -The pronoun is then a very valuible, but not a neceffary part of fpeech. How it might be formed, the very pro bable procedure in a few inttances will fufficiently fhew. Horne Tooke thews that it, formerly written bit, is the palt participle of the verb $7 \lambda, r \lambda \lambda$, to name, and therefore means the perfon or perfons, thing or things named or aforefaid; and accordingly it was applied by all our old writers indifferently to plural and to lingular nouns. We do not know whether a fimilar opinion as to the origin of pronouns had been previoully laid before the public, but the philofophical Greek profeffor of Glafgow (who in his very interefting and important inveftigations, has often anticipated Horne Tooke) long ago delivered it as his opinion, that fome, at leaft, of the pronouns, are participles, and, if we miftake not, traced the origin of syow and iple as follows: Eう八, in one of its earlier forms, was kysy, which is an obvious abbreviation or corruption of $\lambda_{E \gamma} \omega^{2}$, fo that $\varepsilon \gamma \omega$ (whence the Latin and other languages have their firf pronoun) fignifies the perfon fpeaking. Iple is the Latin paft participle from $\varepsilon \pi \pm ;$ and though this verb is not to be found in Latin writers, thofewho 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 perfon, \&c. Whatever be the origin of ille, it is obvious that it is in itfelf merelfy an adnoun, (exactly correfponding to our that,) employed to point out, and probably accompanied in the firit inflance by the ation of pointing out: now from this demonttrative adnoun, ( 3 pronoun only by a fubauditur,) the French have taken not only their demonftrative $l \varepsilon$, but alfo their legitimate pronoun il. Ille is never employed without a fubftantive expreffed or underitood; il will not admit of a fub. ftantive ; and this fact, among many others which meet us at every ftep of our inveftigations, fhould prevent us from imagining that a procedure cannot have been, becaufe we can now find no traces of it: the origin of il was an adnoun it is itfelf a proncun. We fhall add one more example of the probable origin of pronouns. $T_{u}$ is found in the form tute; tute is the vocative of tuitus or tutus, from tueor, to fer, to obferve, and fignifies a fern gerfon: we look at the perfon
-we fpeak to, and, by dired inference, tute denotes the perfon $f_{R}$ oken io. It may be objected that $h$ is from $7 v$, a form of $\sigma^{\nu}$; it appears to us in no way unreafonable to fuppofe that the Latin has preferved a verb from the early Greek dialect which the common forms of the Greek have lolt.

We do not think it neceffary to enter any farther into the fubject of the origin of oral language. It can farcely be doubted, by thofe who have ftudied the nature of the otber 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 thofe who profefs to fhew the original caufes of language, is to prefent a probable otigin of thofe claffes of words. In thofe procedures which have been here itated, there is nothing which fuppofes metaphylical refearch, or much obfervation ; and to rende: any procedue probable, it mult wear the marks of fimplicity. In the prefent period of the language, we fee the grammarian pointing out the analogies which are found to exilt 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 dicates of circumitances; and whatever regularity we may perceive in their inventions, mult be attributed to the fimilarity of thofecircumftances. We fee the philofopher inventing a new term, agreeably to prevailing analogies, to exprefs fome power of the mind, or fome emotion which had not received any denomination ; but thofe who originally gave names to mental Feelings, derived them fimply from fome analogy, fancied or real, between the internal and an external object, and thofe names which now fuggeft to us ideas the moft fubtle and refined, were originatly only the names of objects obvious to the fenfes. The reafoner, when he ufes a word whofe meaning has not been accurately afcertained, defines the ideas which he intends to attach to it, and ufes 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 circumftances, by the cuftoms of the age, or the appearances of nature in particular fituations.

In languages in which the coalefcence between the verb and its adjuncts has taken place, and alfo the coalefcence between nouns and their connective words, much greater liberty of inverfion is practicable than in thofe in which fuch coalefcence 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 inftances, more upon the found than upon the fenfe; and nearly in all cafes may be made fubfervient to the former. This gives fuch languages confiderable advantage over thofe whin admit of but few changes, fo far as relpects their modulation; and farther, the coalefcence renders them much more forcible, where emphafis or any of the fractional parts is not required. Whenever flexion increafes perfpicuity, the advantage is decifive and obvious; with refpect to modulation, though an object of fome confequence (fince we may fometimes find the way to the head and heart by plealing the ear), yet all cultivated languages will be found to poffefs fufficient power of pleafing the native ear ; and among thofe who made found fo much an object, fenfe was often facrificed to it : with refpect to force it may fairly be doubted whether the advantage of greater precifion by means of more accurate emphafis, does not counterbalance it. We ase willing to admit, on the whole, that the advantage is fomewhat in favour of thofe languages in which flexion is extenfively adopted; but we can by no means admit the opinions of thofe, who think it neceflary to a perfect lan-
guage. That language is not the mot perfect, whichenables us to exprefs our thoughts in a great variety of ways, but that which erables us to exprefs any thought with precifion and perficuity; and contemptible as our own uninflected language may appear to thofe, who can think nothing good, but what accords with the objects of their early tatte, we are difpofed to believe that in its real powers, it rifes beyond all the ancient languages and moit of the modern.

Before we leave the fubject of oral language, we mult pay fome attention to the following inquiries; whether words are originally imitative; whether they were long; and of what kind of articulations they were compofed. The latter are of importance in tracing the gradation from hicroglyphics to alphabetical writing.

Wiords in their prefent ftate are fimply arbitrary marks, ufed to dcwote 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 fuppofed to be this refemblance, very much may be attributed to the fancy of the obferver. It is obvious, however, that there are fome words which are formed upon found, and are traly imitative; fuch, for intance, as denote the various founds of animals. When we carry our enquiries further back, we are led to fuppofe that this might be the cafe in the earlier flages of language; that the original words would be formed from fome refemblance, real or imagined, between the fousd and the thing fignificd. What elfe, at firlt, could induce them to fix upon one found rather than another? We have already feen that fenfible objects were the firt which obtained names; and of fenfible objects, the number is confiderable which either emit fome imitable found, or perform fuch motions as have generally fome connection with found. Of thefe latter the number is evidently fmall; waving and regular, rapid and flow motion, violent and fmooth motion, appear to be all the varieties which found would denote. With refpect to founds, whether produced by animate or by the motion of inanimate objects, thefe might and probably would be imitated; and the names of thofe objects which were connected with the founds would be derived from thofe 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, becaufe he often repeated the found bog, which in the Ruffian language fignifies God. With refpect 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 lound, when, for example, we call to mind the idea of the blind man, that a fcarlet colour was very much like the found of a trumpet. A circumitance which appears to have milled feveral ingenious writers on this fubject, is, that obferving certain letters applied to denote a clais of ideas which have, among others, fome common features of refemblance, they have fuppofed that thofe letters were fignificant of that common feature; for example, that $c$ denotes cavity or hollownefs. Now fuppofing that there is that general idea, varioully modified, in every word in which the $c$ forms a principal part, does it follow from this that the $c$ figuified by its found cavity or hollownefs? We can difcover no fuch fimilarity. We apprehend that the coincidence may be better accounted for in a different way, that the original word denoting hollownefs, which has entered, varioufly modified, into the words in queftion, was $c$ with fome vocal found. That is the extent of the inference which may be juftly drawn from the coincidence ; that it was fo applied, but not that it was fignificant of the quality. We have been accuftomed to ufe founds in given comections

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with fucli regularity and confancy, that they appear to us to have a connection of real fignification inftead of merely arbitrary inflitution. Frequently, from our acquaintance with the fenfe, we read a combination of words as the fenfe dictates, and fuppofe that imitation in the words, which in reality exifts only in our mode of enunciation ; but it is only with words feparately, confidered from their comeetion with other words, that we are here concerned; and with refpeet to them we cannot but confine the refemblance of their found to their fenfe, tr cafes in which they denote either found, or motion, ufually accompanied with found.

In tracing the tranfition from-hieroglyphics to alphabetical writing, the probability of the theory advanced will much depend upon the fhertnefs of the words of that language in which the tranfition was made. It is generally fuppofed that this was the Egyptian; but of the ancient Egyptian we have no remains, excepting fome words which the modern Esyptian or Coptic has preferved, many of which, hovever, are monofyliabic. It will be worth white, therefore, to ftate it as a general enquiry, whether the original words of original languages were. long or fhort. Lord Monboddo fuppofes that all human founds were originally inarticulate cries; and that the firf articulate founds were imitations of the cries of animals, and confequently were of great length. "For fuch cries of almoft all animals have a certain tract and extenfion (as his lord/hip exprefles himfelf) fuch as the lowing of an ox, the neighing of a horfe, the braying of an afs, the roar of a lion, $\& \in \cdot$. And that we may not think them an exception to this ruie, we need only attend to the dumb perfons among us who utter inarticulate cries, fometimes very loud, but always of a confiderable length." There are few loofer reafoners than his lordhip, at lea't among thefe' who poffefs fuch a fund of information as his lordfhip certainly did. To adduce dumb perfons as an example of what men poffeffed of the powers of articulation would do when they firft began to ufe thofe powers, feems a very incorrect mode of argument. We mult, however, remember that lord Monboddo fuppofes men to have arifen from the ftate of mere brutality. We fuppofe, and on far better authority than that on which he reffs his faith, that man was never a brute, and that the firft man was led by divine interpofition to ufe 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 furnifh names for thofe animals. If we confine imitation to this, great length of words is unneceffary and improbable: unneceflary becaufe one or two dittinct articulations would generaily be fufficient for diftinction; thus, bow roow would anfiver the purpofe to denote a dog, as well as a continuation of the found to a hundred fyllables. It is improbable, becaufe articulation is at firft very difficult, and it is therefore fcarcely fuppofeable that more articulations would be ufed, than were neceffary to exprefs dittinctly what object they were intended to denote. If we extend the priaciple of imitation further, and fuppofe that man imitated thofe cries in order to exprefs 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 firt fight, the hypothefis 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 compofed of words, of from two to feven fyllables; with fcarcely any of one. - The third, on the other hand, is compofed folely of words of one or two fyllables.

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With refpeet to the former, even where viordis aqually denote objects of ferfe, our inferences that they are uncompounded flould be carefully drawn. The moon is exprefied by two words, Tulifca-pefim, fignifying the nizh-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 priefts thic appellation of the malter of life's man; and it is by far the molt probable fuppofition, that, in uncultivated nations, names of new obje:1s would, when pofiible, be formed rather by fignilicant combination of words in ufe, than by the formation of new words. Thus, as we learn from Mr. Park, the Mandingo nation ufe the following (among many) circumlocutions: fruit is eree-ding, child of the trees; noon, teeleekoniata, the fun over bead; finger, boullakonding, child of the band or arm; brother, ba-ding-kea, mother's male child; filler, ba-ding-moofa, mother's fomale child. Some others we have already noticed.
L.ord Monboddo is very unforturate in the choice of examples of his theory ; for not one is of that clafs of names, which, in all probability, were the original ones, names of fenfible objects. They are the following: wonnazuucktuckluit, fignifies much, and mikkeuawkrook, little, in the E\{quimaux language; and poellcrrarorincourac, is the name for three among fome South American Indians. With refpect to the two former, the examples above adduced, authorize us to conclude that they are circumlocutions, defcriptive of the fignilication. With refpect to the laft we may obferve, that the names of numbers were, probably, originally fignificant in all languages; and that the length of thofe names would depend upon the length of the original words, and the manner adopted in combining them. Thus fix is, by the Kamtichatkans, denoted by innen-milchin, i.e. one and five. Numbers are fo familiar to us, and fo dilkinctly arranged in groups, that perhaps in no inftance are our ideas more clear. Yet this clearnefs entirely depends upon the dilitinctnefs of the figns we ufe to denote them. We fpeak of ten and twenty, Sce. and all feems very clear; but it is evidert that if we attempt to form a conception of ten, twenty, \&c. we mult pafs over every one fingly, and endeavour to combine thera together by proceffes which will be varied by the habits of the individual. If we give a frefh name to every group of objects, and then confider thofe groups as units, and fo on, we are capable of extending our ideas of number indefinitely, and of fpeaking and thinking of them with accuracy ; but if the fmall extent of our intellect, or the circumitances of our fituation, prevents this grouping, and we conine our attention to individuals, cur arithmetic mult be very confined. Thofe nations which reckon only by a computation with their fingers, carry their ideas of numbers no farther than ten ; thofe who with the Kamtichatkans take in the toes, go as far as twenty; theie prople can reckon mo farther, and when they have adranced to this limit, they fay " where fhall we go now?" It is difficult to conceire what circumftances could bound the arithmetic of lord Monboddo's Indians to three, or rather what fhould induce thens to choofe fo troublefome a node 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 ufe fhorter words to form the combination, we cannot conjecture, unlefs it were that their tribe was originally very fmall, and that they mentioned the names of one, two, or three in ordet to denote thofe one, two, or three; and that thefe names, being proper names of perfons, would be fomewhat long. But this is entirely hypothetical. It feems a moren Mman natural

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natural procedure to repeat the word as often as there were numbers to be denoted, but the ear would not readily follow 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 - exprefsly fays that they are compounds. He gives us one fpecimen of their mode of combination. It is a title of addrefs, Notlazomalruitzteopizcatalzin, and fignifies my very worthy fatber, or, revered prief. It is compounded of tive words (taking away eight confonants and four vowels), prefixing no, which correfponds to my, and adding tzin, which is a particle expreffive of reverence ; fo that there are no fewer than feven words compounded together. Their language is very copious; and one caufe of the length of their words is probably the deficiency of confonants, which would render a combination of founds neceffary for diftinction. It is entirely deftitute of the $b, d, f, s, r, s$, but abounds with $l, a, t, z, t, t z$.

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 thefe North American Indians favours the hypothefis of long words without any injury, for among them alphabetical writing never exitted; and we fhould have enlarged lefs on this point, if it had not led us to notice fome curious procedures of language. Yet it feems reafonable to admit, as au inference, that the original, or rather fecondary words of language, would have been long (though not to the degree lord Monboddo fuppofes), if the circumrftances of man had not required a varied vocabulary; for the more confined the number of articulations, the more extent mult be given to fome words to diftinguifh them from others. But when we advance further, and inquire of what kind the original words of man really were, we fhall fee fufficient reafon to conclude them to be fhort. Language was firit ufed in the Eaft, and there, too, writing was firtt invented. We have already mentioned, that of the ancient Egypti-n words which are preferved in the Coptic, a confiderable number are monofyllabic. The Chinefe, which, as far as original language is confidered, appears to have undergone little alteration, or combination, and is probably nearly an original language, is compofed entirely of monofyllables. Probably, indeed, this was the very caufe that the Chinefe never advanced into the alphabetical mode of writing. They had no compounds of founds; and they varied their words by inflection of voice inftead of additions of articulation. The original words of the Hebrew, Greek, \&c., that is, thofe which are not varied by the addition of other words, are flort, frequently only of one fyllable, feldom of more than two. And of the vocabularies which we have had an opportunity of confulting, of the uncivilized nations of the Ealt, the words are generally monofyllabic or diflyllabic.

Having now attended to the two former of the inquiries with which we propofed to finifl the fubject of oral language, we fhall proceed to the laft-Of what kind of artienlations the early languages were compofed. It appears that in the early languages conforant founds were at lealt generally accompanied by vowel founds; but though this is a material point in tracing the tranfition from hieroglyphic to alphabetical writing, it will not be neceflary to enlarge much upon it. We think this pofition proved, by the following, in fome meafure unconnected, confiderations. I. Vowel founds are by far the moft eafy ; and confequently they confirute the earlieft vocal founds of children, and a large pru-
portion of the rocal founds of uncivilized nations. Several words among the South Sea illanders are compofed entirely of vowel founds; and fo great is the difficulty which thefo people find in pronouncing confonants together, that they called fir Jofeph 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 cafy. z. Yet as the fhades of diftinction between them, when employed alone or together, are too nice to furnifh, at leaft to the unpractifed ear, many obviouny different words $;$ and as man was not at firft in that low fate of intellect in which he has fometimes appeared, a vocabulary formed of fuch founds would be very inadequate to his wants; and, therefore, we mult fuppofe that in the early languages there would be very few words without confonant founds. 5. Some of the firft articulations of man were withour doubt employed in naming. thofe of the inferior animals with which he was concerned. Now their names would almolt certainly be given from their: diftinguifhing cries, and the cries of fuch animals confifit of confonant founds, each followed by a vowel found. 4. Its articulation would at firit be nearly as difficult as we now perceive it to be in children, the firft words would be compofed of fimple articulations, that is, of confonant founds, each followed by a vowel; and new words would be formed by the combination of fuch; fo 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 cafes 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 Ruffians, we believe, does the fame. The Chinefe never join two confonants, unlefs we mult except ng ; but this appears to be only a fimple found, though reprefented by two of our letters. With refpect to the Chinefe the point is of confequence, becaufe there is great reafon to belicve that they came from the Atock of the Egyptians, before there had been any confiderable addition to their vocabulary by combinations of founds, and before the tranfition had been made from hieroglyphical to alphabetical writing. It is true many of the Chinefe words end in confonants, which feems to render improbable the pofition advanced; but it is to be obferved, that in fuch cafes the words fhould be confidered as of two fyllables; for it is impofible, in continued fpeaking, to utter a complete confonant 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 eattern languages) never founded a corfonant without a vowel, may be inferred from this circumftance, that thofe who invented the denotements of vowel founds, while at leaft the leading features of the pronsnciation remained, thought it neceffary to add or fuppofe underfood a vowel found after every confonant.

Having gone over the principal topics relative to oral language, we proceed to written language. Writing has been juitly confidered as one of the moft noble and beneficial inventions which human ingenuity can boaft. We fhall not expatiate upon its advantages in embodying and perpetuating our thoughts, but fhall proceed to give a hiftory leds enveloped in obfcurity in molt of its ftages than that of oral language. Difficulties indeed attend it, as muft occur in every inveltigation into antiquity ; but we bave here data

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on which to found our conclufions, which the flecting nature of oral language would not permit.

Vifible language firtt ufed marks as the figns of thinges ; and we can trace it through its various ftages from the limple picture to the arbitrary mark. The rudett fpecies of vifible communication with which we are acquainted, is that of the Peruvians; it was by means of knotted cords of various colours. We have reafon to believe, however, that this was not the only fpecies of vifible 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 poffeffed regular annals of the empire; but it feems reafonable to hefitate here. They might have fome fignificancy by agreement, but without oral interpretation they could denote little more than that fomething was to be remembered, in the fame manner as perfons of weak memories fometimes adopt the contrivance of tying a piece of ftring round their finger to remind them that recollection is neceflary. According to the opinion of the beft 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 Enot a diftinct number: fo that they might ferve as a kind of regitter of the number of inhabitants in each province, or of the quota they furnifhed to the general treafury of the nation. As they had picture-writing, though to no great extent, and numbers mult be denoted by arbitrary figns to render calculation at all extenfive, this account is by far more probable than that of thofe who fuppofe them defigned for hiltorical purpofes. In this view they could anfwer no. farther purpofe than the twelve flones which Jofhua fet up after the paffage of the Ifraelites over the Jordan.
The Mexican picture-writing was the firlt fep in the progrefs towards alphabetical writing. The effential difference which it will be defirable to keep. in mind between the latter and all the intermediate feeps, is, that in alphabetical writing we ufe figns for founds only; except with the deaf, they are in the firlt inftance fignificant of things or ideas only by an intermediate ftep: picture-writing, in all its various flages, prefents figns for things or ideas directly, and only for founds as being the denotement of them.

The fimpleft fpecies of picture-writing was that in which a mere delineation of the thing to be denoted was employed; thus, to exprefs man or dog, \&c. a drawing of the animal would be given. This we learn from fir William Johnfon is the procedure of the North American Indians: when they go to war they paint fome trees with the figures of warriors, often the exait 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 tomahaws with human figures, to figaify prifoners; and draw the bodies without heads to exprefs the fcalps they have taken. To thefe fimple annals the warrior trults for renown; and pleafes himfelf with the belief, that by their means he fhall receive praife from the warriors of other times. Thus, too, the Mexicans, when the Spanifh invaders firft arrived on their coafts, fent large paintings on cloth as expreffes to their emperor Montezuma. But the Mexicans had made much greater advances than their favage countrymen ; except in fome few inflances they did not indeed go further than fimple delineation, but by a proper difpofition of their figures they could exhibit a more complex feries of events in hiftorical order. They could defcribe, for inftance, the occurrences of a king's reign from his acceffion to his death; the progrefs of an infant's education from its birth to the years of maturity ; the different recompences and marks of diltinction conferred upon war-
riors, in proportion to the exploits they had performed. Some very curious fpecimens of this peture-writing are preferved; the molt valuable one has been publihed, and may be found in l'urchas's l'ilgrim. It is divided into three parts. The firlt contains a hittory of the Mexican empire under its ten monarchs; the fecond is a tribute roll, reprefenting what each conquered town paid into the royal treafury; the third is a code of their inltitutions, domettic, political, and literary.

The defects of this mode of painting mult have been carly felt. It was, where applicable, a tedious operation; and no objects but thofe of fenfe could be denoted by it. The human intellect, flimulated by the neceflity of improveraent, would probably have gone through the fame courfe in the new world as it had done in the old, and have proceeded from the picture to the fimple hieroglyaldic, then to allegorical fymbols, and laftly, to arbitrary characters; but a lkop was early put to the progrefs of their improvement by thic deltruction of their molt cultivated empires. In the fimple hieroglyphic, a principal part or circumftance of the fubject is made to ftand for the whole; and to this the Mexicans had made approach. In the hiftorical painting before mentioned, the conquered towns are uniformly denoted by the rude delineation of a houfe, to which is added fome dittinguifling emblem. The kings themfelves, or the leaders of their armies, are in like manner denoted by heads of men with fome emblematic mark conjoined. Thefe emblematic mark: 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 itill further, and made ufe of the mere figurative hieroglyphic. When they wihed to exprefs a monarch who had enlarged his dominion by force of arms, they placed the reprefentation of a target, ornamented with darts bet ween the figure of the king and that of the cowns which he had fubdued. To denote numbers, arbitrary figns were ufed. It will be feen from this account, that the Mexicans had actually in fome initances paffed through all the intermediate ftages of writing, though the fhort duration of their empire prevented them from extending thofe rudiments to a regular fyftem. Indeed Clavigero jufly complains, that injuftice is done his countrymen. They evidently made confiderable ufe of the fimple 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 fuppofed to have made no advarices beyourd 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 Sooo, which again had a new character, and which they doubled, \&c. as before. So that with thefe three characters, and the points, they expreffed numbers as far at leaft as 20 times 8000 , i.e. 160,000 . At leaft, however, it muft be acknowledged, that the annals of a nation, conveyed in the manner we have defcribed, mult be very fcanty and imperfect. And accordingly Clavigero admits, that their paintings ought not to be considered as a regular full hiltory, but only as monuments and aids of tradition. The parents and malters took the greatelt pains to inftruct the riling generation in the hiftory of the nation. They made them learn fpeeches and difcourfes which they could not exprefs by the pencil; they put the events of their anceltors into verfe, and taught them to fing them. This tradition difpelled the doubt and ambiguity wh ch painting alone would have occafioned ; and by the affilta ce of thele

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monuments perpetuated the memory of their herose, their mythology, their laws, and their caltoms. Sce Robertfon's America, - vol. iii. p. 173-180, and Clavigero, vol. i. p. 4C0- ${ }^{11}$.

This fimple picture-writing would foon be contracted by neceffity ; parts of the object, or the principal circumfances of the action, would be delineated to denote the whole of the object or action which it was intended to reprefent. 'This woald correfpond to what we flould call in writints a plain Ityle; but it is obvious, that language, whether writien or fpoken, if confined to words denoting objects of fenfe merely, would be very meagre and imperfect. To enlarge the powers of vifible communication, the real or fuppofed inftrument of a thing was placed for the thing itfelf. And a ttill more refined fpecies of hieroglyphic is, where qualities, \&c. were reprefented by objects which had fome real or fuppofed analogy to them ; this correfponds to a figurative ftyle. We here fpeak of hieroglyphics as intended for the purpofe of communicating, not concealing knowledge. It was long fuppofed that the latter was their firft and only purpofe; but bifhon Warburton has fatisfacorily proved that this ufe was not made of them after the other was rendered unneceffary by the invention of alphabetical writing. It is for the purpofe of communication that we wifh to confider them. Warburton feems to confider thefe three kinds of hieroglyphics as in reality three dilfinct (pecies of communication; but as De Guignes juftly obferves, this difference regards the Atyle alone. And though probably the molt limple hieroglyphics were thofe firtt ufed, yet as language mult have made fome progrefs by the ufe of permament vilible communication, it was found neceffary, and confequently muft have given metaphorical meanings to the names of many fenfible objects, it is not to be fuppoled that the hieroglyphics tvould be confined thus even in their very earlieft flages. We mutt remember, too, that even the rudef kind is an improvement upon the picture-writing ; fo that we are not to confider them as the firft attempts of neen to embody their thoughts.

The moft fimple fpecies of hieroglyphics was when the delineation of part of the object or action reprefented the whole ; thus the ancient Egyptrans 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 nther a bow, to denote a battle, \&c. Now if we direct our attention to oral langtage, we fhall perceive that it fill retains many of thefe contractions, particularly in poetry. The fail, for infance, to denote the whole flip ; the hand, to denote the whole man, \&c.; where, however, it mult be remarked, that thefe contractions are for the purpofe of denoting the part of the otject, \&c. which is moft to be attended to in the given circumfances, and therefore come under the fecond kind of hieroglyphics, where the real or fuppofed intrument is ufed to denote the performer or the thing performed. And indeed fo long as oral language denotes fenfible objects, there is no advan:age with refpect to brevity in placing the name of a part to denote the whole, fince, except in peculiar cafes, the name of the whole may be pronounced with as great facility as of the part. Examples of this fecond clafs of hieroglyphics, are the eye and the fceptre to denote a king; a fword to denote a bloody tyrant; the mouth for fpeech and voice; an eye placed in an eminent pofition, to denote the prefence of God; and the fun and moon in like manser were ufed to denote the fucceftion of time. Inftances of fimilar metaphors in common language are very numerous; to take the laft two initances, we lay the eye of God is upon us, meaning that the omnifcience of the Supreme Being extends to us; and though perhaps it would be too bold even for our poetry to ufe the expreflion
of fun for the time of his apparent revolution; yet we might employ moon to denote the time of a lunation. The lalt kind we mentioned, was that which employed, to reprefent one thing, another which had fome refemblance or analogy to it. Hence was the laft procefs in the invention of oral as well as pictured language, and it is perfectly fimilar to what at prefent we confider as an ornament, figurative language. For it muft be obferved, that what we conlider as a beauty, was originally the invention of neceflity. For inftance, among the Egyptians the dog's head, (as among the Chinefe the dog's vcice, was the fymbol for forrow; fcience was denoted by dew falling from heaven. This very metaphor is expreffed in the form of a fimile, in Deut. xxxii. 2. "My doctrine thall drop as the rain, my fipeech fhall dittil as the dew, as the fmall rain upon the tender herb, as the fhowers on the grafs." Thefe fymbolical hieroglyphics would be very frequently derived from very fanciful analogies, founded frequently on the popular prejudices of the times. As an inftance, may be mentioned the figure of an hyæna, which was ufed to denote a man who fupported his misfortumes with courage, and rofe fuperior to them. This took its rife inthe opinion that the flkin of the hymena rendered the wearer fearlefs and invincible. The laft we fhall mention, is the fanzous infcription at the temple of Minerva at Sais, where we find the figures of an infant, an old man, a hawk, a fifh, and a river horfe. The hawk and fifh were one chardeter; this kind deftroys fifh, and is therefore the fymbol for hatred. The river horfe was the fymbol 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 hypothefis, that originally all words, even verbs, were nouns. This hieroglyphic was a plain admonition, defigned for the inll ruction of the people; for it was engraved on the veltibule of a public temple ; and is therefore juftly confidered by Warburton, as one proof that the original hieroglyphics were for the purpofe of communication, not of concealment. If the Scythian king hadd been able to delineate objects, he would perhaps liave fent as painting to Darius inftead of the real objects. The pi\&ure of a moufe, a frog, a bird, a dart, and a plough would have anfwered the fame purpofe as the things themfelves, and have. been "lefs inconvenient. They would then have been reals hieroglyphics.

The firt object of thofe who invented hieroslyphics, 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 firlt be employed as were of obvious interpretations. Figures founded on their language (which, as we have already obferved, mult have made confiderable advances towards improvement,) would be readily underttood, even if the analogies which gave birth to the: words were forgotten. By degrees they were employed:for. the more refined purpofes of philofophy ; and analogies and refemblances were the foundation of hieroglyphics, which would be intelligible only to thofe who were acquainted: with the fciences from which thofe analogies were deduced.: This progrefs, as we fhall afterwards fee, is the fame withthat of the Cbivefe language, which in all its flages is an object worthy of our curiofity. Still, however, there was. nothing done for concealment. The purpofe of communication was ftill kept in view, and knowledge of the theories of. the times alone was fufficient for their interpretation. But, by degrees fuperitition appropriated them for the purpofe of concealment,
eoncealment, and thofe whofe dominion oter the vulgar confilted in the poffeflion of mylleries, wfter the invention of alphabetical writing, which would otherwife have aumihilated the ufe of hiernglyphice, filll employed them to keep the fecrets of the pricthood from the eyes ot the profane vulgar. Their fymbols, which for the purpofes of commumeation Should have had an obvious analogy, were introduced from far-fetched refemblances. A cat was ufed to denote the moon, becaufe 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 hicroglyphic denoted by a burning cenfer with a heart upon it. In the natural progrefs of hieroglyphics, qualities would be denoted by the objects which would be confidered ats poffeffing them in a great degree; as we have feen in the infeription at Sais. But to make the hieroglyphic a real myltery, one animal or fenlible object was made to denote a variety of contrary qualities; thus the hawk denoted fublimity, humility, victory, excellence, \&cc. And on the other hand, the fame idea was denoted by various hieroglyphics. It was this ufe, which was probably potterior to the invention of alphabetical writing, that has attached to the hicrogly phical fyitem the character of myitery.

It is obvious that the exact manner of delineation would be tedious, as well as voluminous. The more ufe was made of vifible communication, the more we may expect to lind the written charatters depart from the fimple picture, and become arbitrary marks. Not, indeed, arbitrary in their original invention, but perfectly arbitrary to thofe who afterwards ufed them. We fee, 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 procefs of time th, y ufed only the outline; and thefe, again, they changed, as the convenience of the writer dictated, till at lait it lolt 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 curfive 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 fhew its derivation ; $\mathbb{U}$ is obvioully et ; but continual changes have been made upon it, till the $\mathbb{E}^{\circ}$ of the writer no longer bears marks of its origin. We ceafe now to confider the letters of which it is compofed ; it is the reprefentative of an idea, and, confequently, of the word dencting it in the refpective nations that ufe it. We ufe it tor and without confidering at all the meaning it originally had. The ufe of the curlive hieroglyphics would, in like manner, take off the attention from the fymbol, and fix it upon the thing lignificd; a progrefs which we equally obferve 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 inftances, of thofe 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 fimple, and as the actual procedure; but it is imagined that flill there is a great gulf, whofe depth is unfathomable. Many of the preceding obfervations have been made with a view to this difcuflion ; and by their means it does not appear difficult to afcertzin the exact procedure. Perhaps we fhall not be able to trace all the minute fteps of the mind's march; but the general tract we hall find no difficulty in purfuing:

Truth, Horne Tuoke obferves, has generally been fuppofed to be at the bottom of a well ; he thinks it lies much vearer the furface. More has been fuppofed neceffary than conuld have been done, at lealt than is probable, at the periods of which we fpeak; and this has deterred thofe who faw the necefity of timplicity from attempting any thing. We fhall fee that much was not necelfary; certainly not fo much as to render requifite the exertions of genius, aided by the light of philofophical refearch. Signs, we have feen, become at laft arbitrary marks for ideas or words. From this flage we may confider written language as taking two different churfes; in one the fign became merely the fign of the found, and its combinations the figns of thole of found; in the other the fign was confidered as the fign of the idea, and its combinations did not correfpond with any combinations in oral language, but were reprefentative of combinations of ideas. The former we may expect to occur where oral language was copious, the latter where it was fcanty; the former where learning was confiderably diffufed, the latter where it was confined to a fmall proportion of the perions ufing the language. Where the vifible figus became merely figns for founds, alphabetical writing, as we fiall hereafter fee, catily followed; where they were arbitrary figns for ideas, every new combination not attended by a correfpondent combination in oral language, placed the introduction of alphabetical writing at a greater diftance than ever. This latter we fhall find to be the cafe with the Chinefe language, to which, as far as refpects the objects of the prefent dif, cuffion, we wih now to call the attention of our readers; as prefenting fome molt important features in the hillory of language.

We have feen that written language originally confitted of pictures of the things to be denoted; then of abbreviated forms of the fame; that thefe pitures and abbreviations were employed to denote, not only the objects they reprefented, but others which had fome real or fuppofed refemblance to them; and finally, that through gradial changes and abbreviations of the written character, it became at lat, inftead of a picture, a mere arbitrary character. Through all thefe tlages has the written language of China pafied: from caufes, fome of which we can trace, they here ftopped. Other nations procceded further, and ufed thefe marks as the figns of founds and of ideas through their intervention; the Chinefe employ them as the figns of ideas, without the intervention of founds, and their combinations and changes have no correfponding combinations and changes in their fpoken language.
Before the time of Fohi, the firlt Chinefe emperor, the Chinefe ufed knotted cords, limilar to thofe of the Peruvians. Fohi, in the place of thefe knots, employed two horizontal lines, the one whole, the other divided, and by their various combinations in threes, formed the text of the moft ancient work among the Chinefe, known under the name of Ye King, or the book of production. The Chinefe regard this work as a precious monument of the molt ancient plilofophy; but, notwithtanding the numerous commentaries which have been publifhed upon it, fome fo early as 1 roo years before Chrit, it is flill unintelligible. They are, however, fuppofed to contain, in a few lines, the moft fublime truths, and are ftill employed for the purpofes of divination. Subfequent to the trigrams of Fohi, Xin-nang, the next in fucceffion, is faid to have invented fixty-four hexagrams, which are fuppofed to exprefs the whole circle of haman knowledge, and, together with the trigrams, are to be confidered as the moft ancient written characters of the Chinefe. It is fuppofed that thefe characters were taken from the knotted cords; and it appears:
to us highily probable that they expreffed no more. It does not appear at ali likely that thefe marks fhould be intended to denote the myfleries of philofophy, whether we confiter the time of their invention, which is carried back to the age of Noah, or their inadequacy to expreis any thing but numbers. It is allowed that the earlieft writing of the Chinefe was the refult of the rotation of numbers by the knotted cords. In fact, the prefent numerals of the Chincfe appear to lave an equal right to be confidered as the myfterious denotements of my/teries. The prefent Chincfecharacters are not to be deduced from thefe combinations of lines, but from pictures and fymbols. Their prefent form $\begin{aligned} & \text { oes not }\end{aligned}$ prefent any objection to this fuppofition. Many of them, indced moit of them, bear little or no refemblance to their original form; but the progrefs can be traced in very many cafes, and hence it is a fair inference that they were deduced from pictures and fymbols, even where the connecting fleps are loit. Several examples of this are given in the Philofophical Tranfactions for $\$ 769$, vol. lix.

Before we proceed further in the conficicration of the written character of the Chinefe, we fhall find it expedient briefly to confider the fingular ftructure of their oral language. This, as we have before obferved, is entirely monofyllabic; and every word may be expreffed by an European confonant and a vowel, and about one-third of the words end with $n$, or the nafal found of $n$. We mult not expect to find a monofyllabic language very copious in founds; and we fhall expect a ftill fmaller variety of words awhen we find that their confonant founds are lefs numerous than our's, as they are deftitute of the $b, d, r$, and $x$; in fact, the number of their words is not more than 330 . This number is fo fmall, that we fhould fuppofe it inadequate to the purpofes of life, much more fo to thofe of fcience. The capabilities of their oral language are, however, very much increafed by the variation their words undergo by means of tones, or other inflections of the voice. For inflance, the 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 confufion, and this to things very oppofite, or at leaft very different in their nature. Thefe nice diftinctions certainly require a very difcriminating eye to perceive them, and very flexible organs to exprefs them ; but we know the power of habit. We have in our own language inftances of words approaching fo nearly in found, that many never pronounce them correctly, yet feldom leave any room for ambiguity; for intance, bair, air, lpeir, are, bare, are all different founds, Sbut their fimilarity is fo great, that many confound them in pronunciation. Staunton ebferves, that fynonymous words are very much ufed in converfa ion ; and this malt materially leffen the ambiguity. This, however, muft be only for the fake of thofe who have any difficulty; for it feerns to be the genius of the Chinefe language to exprefs the ideas of the !peaker in as few words as poffible. "The Chinefe," fays a writer in the Philofophical Tranfactions, vol. lix. P. 495. "fpeak as fatt as we do, fay more things in fewer words, and underttand each other." The laft refort to diminin the occationa? 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 diftinct rounds camot be confidered as copious. It is probably fufficient for all the purpofes of life, but for the purpofes of feierce sery inadequate. Mof nations have improved their oral language ; the Chinefe have directed all their attention to the improvement of their witten language.

They have refrained from combinations of words to exprefs: combinations of ideas; and what appears ftill more fingular, the combinations which have been formed in their vifible, have not been carried into their oral language. In fact, the Chinefe writing may be confidered as totally dillinet from their oral language. One might have fuppofed, as Freret fays, that it was invented for thofe who do not paffefs the capacity of fpeech. The written not laving been founded. on the fpoken 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 eafy to introduce changes in the language of fcience, than of the vulgar, the philofophers combined, and combined their combinations of characters, but did not, perhaps could not, carry their combinations into oral language. 'Thus, for inftance, the character for boufe named mien, and that for fire named $b o$, when combined denote calamity, expreffed in oral language not by mien-bo, but by tfai. On the other hand, as our writing is a denotement of found, every combination of written words will have a correfpondent combination of found: and no combinations will be formed except fuch as can be fpoken. We may compare the Clinefe characters to the arithmetical cypher, or to algebraic or aftronomical characters, which may be underitood by thofe who are unacquainted with the words we exprefs to denote them. Prefent an arithmetical calculation, or algebraic denronftration, to ten mathematicians of ten different countries, every one underftands it immediately. In the fame manner the Chinefe characters are intelligible not only in all the provinces of this valt empire, but farther in Japan and Cochinchina, whofe fpoken languages are totally different from that of the Chinefe. If thefe nations converfe they employ an interpreter, but the obftacles to communication vanifh, as foon as alley trace their written character. There appears, however, a confiderable difference between the common ufe of the arithmetical cypher, and the ufe the Chinefe philofophers make of their characters. We always think of one, two, \&c. if we ufe $1,2, \& c$.; at leaft this mult be the cafe 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 themfelves without the intervention of found, real or conceived. When we think in words (as we always do when we reafon, 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 cafe where the habit of folitary ftudy and feclufion from the world has. not been formed. Our written words are more or lefs exact: reprefentatives of the found, and it is therefore difficult to feparate them even in imagination: but the Chinefe characters have no connection with found, except by their common connection with ideas. And as they have no vifible reprefentation of the found, its intermediate affociation cannot be fufficiently ftrong in the minds of their literati to render it neceflary in the train of reafoning to ufe the found at all.
All the Chinefe cha:acters are compofed of 214 clefs, keys, or tribunols (as the Chinefe themfelves call them). Thefe reprefent the moft fimple ideas, and by their combinations are produced, exprellions for the more complex ideas. In fact, thefe keys exprefs fire, zwater, earth, air, wood (which are the finer elements of the Chinefe), the fun, the moan, bird, man, different kinds of animals, mountains, wallies, \&c. fatber, mother, fon, life, death, the body, and. different parts of it, and fome veffels and inflruments, and many other things fimilarly fimple. All thefe can be traced ta fimple paintings or fymbols; and hence the whole written language may be juitly conlidered as deducible from the

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more fimple writing of the Mexicans and the Egyptians. Indeed, the refemblance between the ancient Chinefe character and the Eyyptian hieroglyphics is fo ftriking, and this in cales where the analogy on which both are founded is not an obvious one, that De Guignes confiders them as derived from the fame fource. The actual number of the keys at prefent is 214; anciently they were more or lefs 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. Thefe keys are formed at prefent from fix fimple Itrokes, 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 fuppofe, that the inventors of the Chinefe characters fixed upon thefe fix elements, and compofed all the characters from them methodically: this is the procedure of art. But as writing gradually paffed from painting, it loit its correctnefs of delineation, and then the -bject was to facilitate, as much as poffible, the labour of writing. It reduced all the characters by degrees; the more compounded, to others lefs fo; and thefe again to fimple ftrokes, fuch as have been mentioned. Thefe 214 keys are each employed alone, as a character ferving to exprefs an idea, or differently combined one with another when they are confidered only as part's of a group. The feveral parts of this group, or combination, form a kind of phrafe expreflive of the idea it is intended to communicate. Thus, the Chinefe character for night, is compofed of three characters, fisnifying darknefs, the ation of covering, and man, which rendered literally, fignifies darknefs covering man; a phrafe which perfectly expreffes the idea of night, and which is fimilar to the language of poetry. Both, in fact, iffue from "the cradle of the human race." This figurative kind of language (the offspring of neceflity) is what we admire fo much in the facred writings; it comes home to our feelings and our bofom; it points to our minds, and calls up their conception forcibly and correctly. Hence it is juntly deemed a beauty, and whenever the language of feeling is neceffary to excite the mind to activity, will generally be found a prevailing trait.

We might fuppofe that all the Chinefe characters, being compofed of fimple charatters, might be eafily underftood, when the meaning of the keys compofing them is known; as is the cafe in the two examples which have been given. If it were actually fo, the Chinefe would be the molt eafy of all languages, and might be adopted as a general or philofophical languare ; but the analogies and metaphors on which the compolition is founded, are often forced and often erroneous. Their principles of philofophy furnihed a wide field for combination; but frequently thefe are abfolutely falle : their ancient cultoms and their popular fuperftitions all afforded fcrpe for the invention of new characters; and to underitand the compound characters of the Chinefe, without the aid of oral inftruction, we mult underftand their ancient phyfical 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 Chinefe language; in order to trace the origin of words, the fame references are often neceflary, but we have more frequently the data requifite to enter into them. For inftance, candidus in Latin fignifies zwbite, candidatus, a candidate (a perfon who offers himfelf to fill a lucrative or honourable fituation), a perfon dreffed in white. We fhould lave been unable to folliow this analogy if we had not been informed by hitury, that among the Romans all candidates Eor places wore white robes. In a funilar manner the Chinefe character, pao, to rut, is compofed of two, that of
wrapping, and that of feet ; this is not an obvious proce. dure, and the Clinefe do not retain any esplanation of it; but we know that the favages of Louiliana, 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 mult refer to a fimilar cultom.

We have now traced the various procedures which have been adopted to perpetuate the remembrance of actions or opinions. We have feen the artlefs contrivances of men in early ftages of cultivation; we have obferved the progrefs of the art of vifible communication from the rude quipos of the Peruvians to the curfive hieroglyphic of the philofophic Egyptians. We have found that when the vifible marks loit their original correCtnefs of delineation, they became mere arbitrary characters. From this flage two procedures have been purfued; fome nations have ceafed to conlider them as figns for things, and have retained them as figns for founds; others have continued to ufe them as figns for things without any immediate connection with found. The latter have combined, and combined thefe combinations to form expreffions for ideas without any regard to analogous combinations of found ; the former have combised them to exprefs combinations of found, and of ideas only by their intervention. In the one the written language is a picture of the fpoken, in the other it is a picture of thought. We now proceed to the object we have all along had in view-the inveltigation of the other procedure, where vifible marks became figns for elementary founds.

In tracing the origin of oral language, we derive fome affiftance from the Mofaic records; we afcertain the degree of divine inteference. In tracing the origin of alphabetical writing we muft expect no fuch alfiftance ; 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 fuppofe miraculous interpofition merely from the difficulty of accounting for a phenomenon, we fhould argue à priori, that no miraculous interpofition took place in the prefent inftance. This would not weigh in the lealt if we were affured by the fcriptures of the reality of that interpofition; but it- weighs very much againft all prefumptive 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 ftating thefe and the anfwers which occur to obviate or leffen the difficulties they prefent, we fhall point out what appears the moft probable account of the tranition of hieroglyphics to letters.
rit. Alphahetical writing may be traced to one fource. Now if it were an invention of man, efpecially if it be a fimple invention (as it mult be thewn to have been, in order to give any plaufibility to the hypothefis), there is no reafon why it fhould not have been an independent invention.

Two anfwers may be given to this argument. I. If we examine the alphabets of Afia, we fhall find it difficult to admit that they may be traced to one fource; there is fo great a degree of diflimalarity among them, that it requires Itronger evidence than any we have yet feen to prove it. When, however, we contider the clanges that we know have actually taken place in the fame character, we may admit the poffibility of the orginal identity, and perhaps other circumftances may induce us to admit its probability; but this probability camot, we apprehend, become fo great as to give any force to the argument in queftion. But even admitting its certainty, we obferve, (2) that this can only prove the high antiquity of the invention. That it originated before mankind were much feparated from each
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other; and that the ground-work being laid by thofe who had made the greatelt advances in cultivation, was built upon by thofe people who afterwards penctrated to a diftant part of the continent.

But it is urged, in the fecond place, that we have not only no infitance of independent difcovery, but have cven 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 objention is materially increafed by the circumplance, that their writing, equally with the alphabetical, originated in hierorghphics, aid actually went through the fame flages, viz. from the fimple picture to the arbitrary mark.

This lingular procedure of the Chinefe, which certainly prefents a difficulty againtt the theory of the human origin of alphabetical writing, may probably be obviated by the four following coniderations: (1) The written language of China was cultivated nore for the purpofes of philoophy than of common life. Their combinations were founded on their philofophy; and it probably would not have been in their power to have carricd thele combinations into the oral language of the vulgar. A complete nomenclature of chemiitry has been introduced, founded on the precailing theory of chemiltry. This is univerfally received, wherever the new fyitem is embraced; but it would have been impoflible for the philofophers, who invented this beautiful fpecimen of philofophical language, to have induced the illiterate of a whole nation to change their language, or adopt a new one, however expreffive and correct. The philofophers of China might indeed have formed an oral language upon their characters; but the genius of the Chinefe feems rather to direct them to ftudy than to converfation, and abitract philofophy is better taught to the ftudious by written than by oral communication. Befides, (2) the fpoken language of China did not favour the plan of making their writing reprefentatives of found; for their words being all monofyllabic, and not very numerous, there would not be the fame neceffity for attention to elementary founds: and what is more important, they did not vary the articulation, but the tone, in order to exprefs 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 Chinefe: and to thefe confiderations we may add, (3) that the empire of China, with its dependencies, was fo extenfive, that there mult be a very great variety in the Chinefe dialects; and this would contribute to increafe the attention of their literati to the written language, fince this (as we have fren it actually is) might be undertood independently of their fpoken words. ( 4 ) If we admit the very probable hypothefis of De Guignes, that the Chinefe characters were brought from Egypt, and that they had originally no connection whatever with the fpoken language of the country into which they were introduced,--that, in fact, they were applied to denote names different from thofe with which they had before been connected,--we fhall perceive at once the reafon 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 fpoken language, eipecially among people fo little addicted to innovation as the Chinefe appear to be.

It is urged, in the third place, that the invention of writing is, by many of the ancients, afcribed to the gods; and that Pliny, in particular, exprefsly fays that the ufe of letiers was eternal.

To this it is replied, that the ancients univerfally afcribed
to the gods all inventions of which they knew nat the origin : and that as for Pliny, he exprefsly fays elfewhere, that the Phonicians were famed for the invention of letters. The moll 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 fome arguments a priori, which remain to be confidered: thefe are, firl, the difficulty of the invention in any flage of human progrefs; and, fecondly, its antiquity, which very much increafes the improbability of its human origin.

Fir/l, With refpect to the difficulty of the invention, it is obferved, that we are to fuppofe that the inventors decompofed the founds of words, not only into fyllables, but into letters; obferving the component parts of fyllables, and denoting thefe parts by appropriate marks; and ufing marks for thefe elementary founds in the vifible reprefentation of other words, into which thofe founds were found to enter. This distinction of the articulate founds of man, tracing them through all their various combinations, and expreffing them by a few fimple marks, whofe combinations may exprefs every polfible combination of found, appears to fuppofe a habit of patient experiment, of difcriminating examination, and of generalization, which ill accords with the uncultivated flate of the human intellect in the early periods of fociety. But, fecondly, when we confider the antiquity of the invention, when we are forced to carry it fo far back as to have been in a ftate of perfection as early as the time of Mofes, this difficulty appears infuperable. We muft admit, it is urged, that men, in the earlieit ages, ftepped at once from a tedious and awkward, frequently unintelligible, method of communication, to a method which anfiwers every purpofe of communication, in the fhorteft way; and that, unlike all other inventions, it was brought at once to fuch a flate of perfection, that no furceeding alphabet has any real fuperiority over the ancient Hebrew.
This objection againt the human origin of letters is more weighty in appearance than in reality. With refpect 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 circumflances of the cafe, can be pointed out. To obviate the difficulty arifing from the apparent perfocion of the original invention, we may obferve, (1) that if the perfection of an alphabet couffits in its capability of exprefling all the founds of fpoken language, there is no known alphabet which is perfect. Every letter fhould exprefs only one defnite found, and avery kiown found fhould have a correfponding letter. We do not mean that it is necelfary that the alphabet of one language fhould be capable of expreffing all the founds of another, but of its own. Now we have no inftance of this among living languages; and we cannot, therefore, fuppofe that it was the cafe in any former language. But even admitting this, we may obferve, (2) that no known alphabet, however ancient, is in the Itate of its original invention. Cadmus, who was born in the Eaft, carried with him into Greece only fixteen letters; the leaft copiois alphabers we are acquainted with have twenty-two. It is not in the leaft probable that Cadm:1s would introduce fewer than he poffeffed: it is more probable that he introduced more, to exprefs 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 eafy introduction in the early periods of mental culture, all arguments à priori fall to the ground. It has generally been fuppofed of late that alphabetical writing was

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formed from hieroglyphics: it appears nearly certain that it was fo; but the tranfition was never, we apprehend, explained with probability before the time of De Guignes. His hypothefis appears to have been unobferved by fubfequent writers, who have attempted to trace the tranfition; and the only fatisfactory flatement which we have noticed in our own language is in a paper in the Irifh Philofophical Tranfactions, by Dr. Hearney, who advances one im. portant ftep, by fuppofing that letters originally reprefented fyllables. Dr. Hearney, however, fpeaks of the human nind as accuflomed to analylis, when the tranfition tnok place; and fupports his hypothefis on the fubject with arguments which appear little conclufive.
"Perhaps," fays De Guignes, " we have done too much honour to the inventor of letters (whoever he was), in fuppofing that he diffected the woice into two parts, and invented marks of two kinds, fome to exprefs confonants, the others vowels. It is more natural to fuppofe that the hieroglyphical writing was abridged by little and little, by fuppreffing a great number of figures; and that thofe which they adopted preferved always the founds which they had before; that they read them as they had read hieroglyphics; that they were always words, but very fimple, and words whofe bafe was a fingle confonant; that finally reduced into a regular order, (which we call the alphabetical,) they were regarded as confonants, capable of being differently modified by a fimple vowel found."

Our ideas on the tranfition from hieroglyphics to letters, (derived in a great degree from De Guignes,) may be thus Itated:-The hieroglyphics, with their exactnefs of delineation, loft their original fignificancy, independent of Spoken language. This mult firf be the cafe with werds of the molt frequent recurrence, and which entered moft into combination with other words. Having become fimple denotements of found, they were employed to exprefs their refpective founds 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 refpective founds entered. They were always words, but very fimple, confilting only of a confonant and a vowel. Variation in the pronunciation of the vowel would occur in diferent dialects: and herce thefe marks would gradually be regarded as confonants, capable of being differently modified by fimple vocal founds. Letters, at firl monofyllabic words, then became marks for the component parts, or fyllables of diffyllabic or polyfyllabic words; and then for the unchangeable part of thofe fyllables, that is, for confonants. In the moft ancient itate of the oriental languages, vowel founds had no difinct marks; in the latter, marks were joined to the confonants, to exprefs the different founds with which the radical confonant was invelted. Among the weftern nations, a different procedure was adopted. In fome cafes, they ufed the marks which they had received from the oriental nations, for an a/pirate and vozvel, to denote the vorwel itflf; and having once commenced the ufe of diftinct marks for vowels, the procedure was continued, and new marks adapted to exprefs noticed variations of vocal founds.

In fupport of this hypothefis, may be adduced the following obfervations:

Ift. We have feen that hieroglyphics did become fignificant of fornds: and that words originally fignificant of one clafs of ideas being applied to a fecond, loft their connection with the former, and became directly fignificant of the latter.
2. We have reafon to believe that words were originally Vol. XX.
monofyllabic in thofe nations whore alphabetical writing was invented, and that the combiration of old founds, or the ufe of them uncompounded, to exprefonew ideas, was the mode employed to extend the capabilitics of their Language. Hence the fanse word would frequently occur in combination, and though its different Ggnilications muf originally have been reprefented by diferent hieroglyphics, get as thefe lolt their figuiiticancy, they would catily liecome as crevolive in their meaning as the formens the melelves. And it in otvious that the moft fimple of thofe hierortyphics which were ufed for the fame found, would be employed to reprefent the found.
3. It has been fhewn to be highly probathle that originally every confonant had its vowel found. I ence all fyllablea might be reprefented by two, or at moft, three European letters. This circumfance would matcrially diminifh the varieties of fyllabic founds.
4. The probability of the theory advanced depends greatly upun the hypothefis that originally letters were fyllabic. The following facts appear to prove this. The ancient oriental alphabets had no denotements for vowels; and even if this be difputed, it mult be admitted that they had many words into which none of the fuppofed rowel marks entered. The Ethiopian alphabet is entirely fyllabic. The fimple letters denote a confonant and a flort $a$, and marks were added to them to denote other vowels, where ufed. What is doubly fingular and important, they have in many cafes added merks to thefe fyllabic characters, to denote that they have no vowel helonging to them. In the Coptic and Arabic, there are fyllabic characters. The alphabets of the ealtern A fiatics are principally fyllabic, fome with ä, others with ŏ joined to a confonant. Thefe circumftances render very probable the account here given of the trantition from hieruglyphics to letters. The following obfervations 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 tranferipts of them, that a fimple infpection is fufficient to convince us that hieroglyphics were the origin of letters, and this pcint is almoit univerfally admitted. This however proves little as to the nature of the invention of alphabetical writing, except that it was fubiequent to the ufe of hieroglyphics.. But,
6. Thefe characters in many inflances retained their original fignificancy, which proves them to have been, as De Guignes fuppofes, denotements for words. We mult not expect to find this fignificancy in all words of which they form component parts; but in fuch only in who?e vilible reprefentation the original hieroglyphic formed a component part. Now we muft obferse, firft, that the names of feveral of the oriental letters are tifl by themfelves fignificant, and that fome of thefe 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 Chinefe character for Band. The 7, daleth, of the Hebrews, Phœnicians, and Ethiopians, fignifics a gate, and the aftion of opening. The hieroglyphic which among the ancient Chinefe reprefented a gate, is exactly fimilay to this letter. The פ, phi, of the Hebrews, and of the Ethiopians, lignifies the mouth. The Chinefe charaders for the mouth all refemble it. The y', ain, fignifies the eye. The Phoenicians and Chinefe employed the outline of the eye as a denotement of the object. The $\mathcal{E}^{\prime}$, $\operatorname{Bin}$, in Hebrew figuifies the feeth, and its figure is ftill found among the Chincfe, with the fame fignification. The $\%$, mem, fignifies zuater. The correfponding Samaritan and Ethiopian characters have a clear refemblance to the Chinefe hieroglyphic for water. Laftly, the $\mathbf{N}^{\circ}$, aleph, (originally perhaps fignifying ox figniN n

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fies unily, the aition of conduging, pre-eminense. The Phocnician form of this letter exactly reprefents the Chinefe character for one, and every ation ly which we are at the bead of others. But thefe letiers are not only fignificant by themfclves, but fecondly in combinations. "Thus, was expreffed by the monafyllable yat, ye, or yo; to this another monofyllabke, which had equally a figmification relative to the figure being added, formed a word of two fyllables. For inftance, jollead of the prefent denomination of 7 , daleth, we may reafonably fuppofe its original found to have been $d c_{0}$. The word T', yada, hiernglyphically reprefented by a sate and a Fond, is fuund in the Hebrew with a fignibication derived from that of the letters compoling it ; to cig? cult, (as we might fay, bourd him so the door,) io extond. Add to this the word I", ain, (originally, probably, founded ho, which firnilies the eye, and we have yodulo, which fould lignify to ofen the cyes, to catcud the ciecue, \&c. and metaphoricaliy, to hrice:, to urderfland; and in fact this is the fignification of $y\urcorner$, in Hebrew. But this is not all, for exactly the fame procedure has been adopted by the Chinefe. Kiz, which fignifies to examine, is compofed of three radical characters, of whach the firt lignifies the kank, the fecond a oote, the third the eyce So alfo Kiul is compofed of threc charaters, one dignifying the teeth, the other two, gate or opening, which figmilies to break througy, to make a great opening. In Hebrew, Mave is Gmilarly compoled, and lignifies to plunder, to lay seafle.-Tchi is a large collexitan of cuater. It was compofed of the characturs for hand and suater. The fame compound was formed among the Hebrews, and ire, yam, lignilies a criat colluciton of cuater, or otbe fica. In Arabic the letters then, i. e. earth, and mim, i. e. weater, form the word thene, and fignify a floorl. The Hebrew then is compofed of the thet or carth, and the niun, which fignaifics misn, i. c. man of the earth, and further, to form, to crotate. In both thefe inflances the Chinefe corretpond in thair combinations with the alphabetical writung.-Many other inttances might be brought. We will adduce one, to which there is no correfponding combination in the Chineele lunguage. $A b$ or $H a b a$ fignifies fattber; the component parts of it tignify principal of the boulf.

The papers of $D e$ Guignes, to which we are very greatly indelted on this fubject, are to be found in Memoires de 1'Acadimie des Inferiptions et des Belles Lettres, vol. 34, \&c. Seè̀ ifhadet, Hieroglyfincs, Letters, Words, and Wramse.

Lavgiace, Siracure of, comprehends the nature and arrangement of the different parts of fpeech. See each under its proper head. (See alfo Gramamr.) No grammatical rules, however, have fuficient authority to controul the firm and ettablifhed ufage of language. Elablinhed cuftom, fays Blair (Lectures, vol. i.), both in fpeaking and writing, is the flardard to which we mult at laft refort, for determining every controverted point in language and tyle. But it will not follow from this, that grammatical rulcs are fuperfeded as ufelefs. In every language, which has been in any degree cultivated, there prevails a certain ftructure and analogy of parts which is underitood to give foundation to the molk reputable ufage of fpeech; and which, in all cafes, where ufage is loofe or dubious, pofteffes confiderable authority. In every language, there are rules of fyntax which mult be invilably obferved by all who would either write or lpeak with ary propricty. For fyntax is no other than that arrangcanent of words in a fentence, which renders the meaning of each word, and the relation of all the words to one another, moof clear and intelligible. See Syntax.

Ufage and cuftom, fays F. Buffier, are the rule of a lanGuage ; and thefe hold their empire indenendent of reafon,
or any other caufe: nor has reafon any thing to do in lan. guage, unlefs to fludy or teach it, fuch as it is. Here then commences grammar ; a jult plan of which fuppofes a language already introduced by ufe, and, without pretending to alter or amend a tittle, only furnifhes reffections, called rulis, to which the manmers of fpeaking ufed in that langraage may be reduced; which affemblage of refections is what we call the grammar of that language. This remark may obviate an abufe introduced among grammarians, who are ever crying out, "Ulage is, in this point, oppolite to grammar; or the language here frces itfelf from the rules of grammar, \&cz.'

It is chance then to which we owe ufage, and ufage that makes the rules and neafures of language. Ulage, indeed, is fomewhat dubious, and may be divided into good and bad. If it be afked, wherein the difference between thefe lies? it is in this: that the one is better ellablifhed, or authorized, than the other ; and if it be afked, wherein that difference of authority confifts? it is anfwered, 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 queftioned, which are the belt? thofe are allowed fuch, who wrote when the ftate was in its greateit glory. Thus the age of Auguttus, being the moft diftinguifhed by great men, who then flourifhed, we call that good Latin which is conformable to the manners of fpeaking uled by authors, who wrote within fifty years before, and lifty after, the reign of that emperor. As to living languages; the good ufage, or mode, is that which obtains among the molt 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 ufage of a language, the manner of fpeaking ufed by the foundeft or beft part of the court, conformable to the manner of writing among the beft part of the authors of the time. But this definition, how judicious foever, may occafion infinite doubt ; for which is to be deemed the beft part of the court, and of the writers? Each party, doubtlefs, thinks itfelf the beft. F. Buffer, therefore, very juftly, inflead of the belt past, fubfitutes the greatelt part, which brings the matter nearer to a certainty: the moft numerous part being fomething fixed and palpable; whereas the moft found part may be infenfible or arbitrary. There is found a conftant refemblance 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 fiveetuefs. The Romans, who feemed only born to command, had a language noble, nervous, and anguit: and their defcendants, the Italians, are funk into foftnefs and effeminacy, which is as vifible in their language. as in their manners. The language of the Spaniards is full of that gravity and haughtinefs of air which make the diftinguifhing character of that people.

The French, who have great vivacity, have a language that runs extremely brifk and lively. And the Engliih, who are naturaily tho::ghtful, and ufe few words, have a language more concife and fententious, though far from being deficient in refpect of copioufnefs.

Languages, the Diverfity of, is generally allowed to have taken its rife from the confulion at the building of the tower of Babel. See Confusion of Tongues, and Dispensions of ATanlind.

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 childres to be brought up, wish

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exprefs prohibition not to have one word pronounced before them, but to leave nature to fpeak of herfolf; and the firtt word they fooke happened to be beccos, which, in the Phrygian language, figuities bread. The Egyptians, however, were not convinced with this proos. The Arabs difpute the point of antiquity with the Hebrews; but the Jews, jealous, even to excefs, of the honour of their nation, pofitively infit on it, that the Hebrew tongue, fuch as it is found in the Holy Scriptures, is the primitive lenguage, and that fpoken by the firft man. For the arguments alleged in favour of this opinion, fee Hebrew Langruge.

Of all the oriental languages, except the Hebrew, the Syriac has had the greater number of advocates, efpecially anong the caltern authors. 'They have alleged, that a dialect of this language was fpoken in Mefopotamia, Chaldra, and Affyria, where mankind firt 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 thofe 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 firft relled in their comntry: the Greek, on account of its great extent and copioufnefs, the Teutonic, from which fome have pretended to derive even the Hebrew itfelf, and the Chinefe, have afpired to preference, in point of antiquity.

The pretenfions of the Chinefe, in particular, have been fupported not only from the great antiquity of that nation, their carly acquaintance with arts and fciences, and their having preferved themfelves fo many ages from any confiderable mixture or intercourfe with other nations; but alfo from the fingularity of the tongue itfelf, which confilts of few words, all monofyllables, and is molt fimple in its conftruction, having no variety of declenfions, conjugations, or grammatical rules. Befides, it is urged, that the Chinefe are the polterity of Noah, and that Fohi, the firlt king of China, was Noah.

Mr. Webb, an ingenious writer in the reign of Charles II., Arenuouly maintains that this is the only original language, and that they now talk in China the language of Paradife.

Others maintain, that the language fpoken by Adam is loft ; and that the Hebrew, Chaldee, and Arabic, are only dialects of the original tongue. So far are they from yiving the priority to the Hebrew, that they maintain Abraham fpoke Chaldee before he paffed the Euphrates; and that he firlt learned the Hebrew in the land of Canaan; fo that this was not a fpecial language confecrated 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 copioufnefs, elegance, and perficuity ; it is dry, and dettitute of ornaments, infomuch that, wanting expreffions to vary the phrafe, the fame periods are perpetually returning. The rabbins, converting its poverty into an excellence, fay, it is fo pure and chafte, that it has no proper names for the parts of generation, nor for thofe by which the excrements are difcharged. See Hprrew.
The Arabic is held the molt copious of all languages. Sec the Preliminary Difcourfe to Sale's Koran.

Lancuage, Euphony of, for Singing. It feems as if the rocal mulic of every country depended on the purity of the rowels, neat articulation of the confonants, and eafy utter.
ance of the words of which a language is compofed; ant there can be doubt but that the dialect which has the greateit number of open vowels mixed with its conforants, is 1 : moft fivourable for vocal purpofes. 'The tones of voice cant only be heard with purity and clearnefs by the affifance of vonch: as the words, zaculs and wiace, are equally derived from ooculis, which implies a found, a mefloal tor, woeal lody, or modulation. Aud it is mot only from the geters facility with which the fyilables of a lampare can be wi:tered with neatnefs and articulation that it is remetreil tavourable to the finger, bat from the number of areal herminations, or words ending with vowels, which aliow the voice to expand, and finifh a mufical plirafe with cafe and purity:
It is generally allowed that the French lariguage is vafat, the German suthurel, and the Eng-linh filitating, and loaded with confonants, nafal fyllables ending with nag, and other harfh and mute terminations. We have, indeed, filed cai the Saxon roughnefs in words where ghoccur: as congh, trough, laugh, ploush, through, cirht, ficight, cnoryb, àe. which ufed to be pronounced in the Tentonic manner, and which are fill guttural words in Scotland, and fome parts of England.
But befides the obfructions which the roice meets with in its paffage, from clafhing conforants in the middie of words, we have a greater number of terms that end with abfolute mute and abrupt confonants, than either the Feench or Germans: fuch are thofe which terminate in $b, d, g, k$, or hard $c, p$, and $t$. And it is nut eafy to defend our language from the biffing of which it is accufed by forcigners, on account of the frequent ufe of the letter $s$ at the end of words, and the great number of words which terminate with a double s. For though the plural number of French nouns is diltinguifhed in writing by an $s$, as well as the Englifh, yet the final $s$ is never pronounced. The German plurals too are terminated by the letter $n$ : as Laus, Vaufen; Arafs, Arafin; pferd, pferden; \&x, in the fame manner as houfe ufed to be baufen in the plural, bofe, hofen; and as the fubitantive $0 x$ ftll has oxen 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 jufly charged, by changing the $(t b$ and atb of verbs into is and as; and faying givers for giveth, has for bath, \&c.
The learned Dr. Wallis, a profound nufician, in his treatife "De Loquela," prefixed to his Grammar of the Englifh T'Iongue, has confidered with great exactnefs the accurate formation of all founds in fpecaking, to which few have attended before; but with refpect to finging, the work is Atill to be donc.

Dr. Holder, who was a very learned mufician and a compofer, though he has admirably analy fed the principles of pronunciation, and defcribed the organs of utterance, with refpect to colloquial language (Elements of Speech; an Eflay of Inquiry into the natural Production of Letters, 1669), has not pointed out the means by which the mufical voice in articulating words is affilted or impeded in its formation and delivery, or the caufes of its arriving at the ear with more or lefs clearnefs and purity. It was a fubject that did not immediately concern the purport of this excellent effay, which was written with the benevolent intention of affifing perfons born deaf and dumb to comprehend the fpeech of others by the eye, from its effect on the external organs; and, therefore, the omiffion of fuch enNiz
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quiries as feem neceffary in this place cannot be termed a defect.

Rouffeau, in his ingenious and fpirited "Lettre fur la Mutique Francoife," 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, Supericr to a "Vaudeville," or "Chanfon à table :" for the words of thefe compofitions 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, indecd, it is at the ferious Frencls opera, and by the performance of flow nufic, and airs tendres, that thofe accuftomed to good linging are molt offended. However, in the parallel which Rouffeau has drawn between the languages of France and Italy, aftcr defcribing all the inconveniences arifing to a finger from the compound, mute, nafal, and dead fyllables, of the French language; he afferts, that the pancity of fonorous vowels, and abundance of confonants and articulations, force the lyric poet to exclude many words, and allow the mufical compofer to give only elementary, or fhort and fingle founds, to the others. There is nolanguage in which all the words of its vocabulary are equally fit for mufic, or lyric poetry; acco:ding to Salvini, out of forty thoufand words in the Italian language, only fix or feven thoufand can be adopted by the writers of ferious mufical dramas. Indeed, fome of thefe rejected words, by their want of dignity, as well as foftnefs, may be unfit for lyric compofitions. Hence, the melody neceffarily becomes infipid and monotonous, and its movement flow and tirefome; for if the time of fuch mufic be at all accelcrated, its velocity refembles that of an angular body rumbling on a pavement. He goes on with his frictures, and fuppofes, that " fuch a language as he hath been deicribing, has a bad profody, unmarked, without exactitude and precifion; that the lung and fhort fyllables have no fenfible and determinate proportion betwecn them in duration, or numbers, by which the rhythm can be rendered agreeable, exact, and regular; that it has both long and fhort fyllables of an uncertain duration, with others that are neither long nor fhurt; and that the difference between them is wholly incommenfurable.
"'Thefe vices and inconveniences," he ax'ds, " have fuch an effect upon the time or meafure of mufic, when applied to fuch words, as to render it wholly unmarked, irregular, and disjointed.

His character of the Italian language, and defeription of its beauties, and advantage over all others, for vocal purpofes, are fo appofite to the prefent enquiries, that we flail faithfully tranilite the whole paflige.
" If it flould be afked what language is the moft grammatical, I hould anfiwer, that of the people who reafon the belt; and if it thould be afked what people are likely to have the belt mulic, I fhould fay, thofe that have the beft language for it. Now if there is in Europe one language more favourable to mufic 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 wocal mulic. It is foff from its articulations being uncempouniled; from the infrequency of clafling confonants; ani from cyery word in the language being terminated by a vowel. It is fonorous from moft of its yowels 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 fweetnefs, which renders it wocal even in declamation and common fpeech, without the affit-
ance of mufical notes. But what renders the Italian hane gnage more peculianly mellifluous, as well as more exprefive of fentiment, than any other, is the great compafs and variety of its tones, and the choice it allows in painting the palfions. '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 Itanzas of Taflo."

> "Teneri fdegn ie eplacide è tranquille
> Repulfe e cari vezzi e liete pace,
> Sorrifi, parolette, e dolce fille
> Di pianto e fofpir, tronchi e molli bacci
> Fufe tai cofe tutte, e pofcia unille,
> Et al foce tempro di lente faci;
> E ne formo quel fi mirabil cinto
> Di ch' ella avena il bel fianco fuccinto."
> Canto IV. Stanza xxxiii.
"Chiama gl" abitator de l'ombre eterne Il ratuco fuon de la tartarea tromba; Treman le fpaziofe atre caverne, E l'aer cieco a quel romor rimbomba; Ne fi ftridendo mai de la luperne Regione del cielo il folgor piomla, Ne fi fcoffa giammai trema la terra Quando i vapori in fen gravida ferra." Canto XVI. Stanza xxv。
It will be found, perhaps, equally difficult to express in any other language the fweetuefs of the one or the vigour of the other of thefe flanzas. But the roughnefs of the laft Atanza does not confitt in hard and uncouth words; they are all fonorous, and, though rough to the ear, eafy of utterance.

Thefe ftanzas, however, which Roufleau, and, after him, almoft all mufical writers have inftanced as of remarkably eafy utterance, thould have been confined to reading and declamation; for better lyrical or vocal verfes may be found in Metaftafio, and, indeed, in almoft all Italian lyric poets, fince it has been found that the vowel $a$ is the beft for divifions, and all the other vowels have been long in difufe for fuch purpofes, by the beft latian compofers for the flage. In the flanza cited as a model of foftnefs, in vocal verfes, there are but two words, to which, in a lively air, divifions would be given: Cari, pace. But even thefe, in which the vowel $a$ occurs in the finf fyllable, would have no long divifions affigned them, if there was a final.fyldable terminated by that letter, as in the third perfon lingular of the future tenfe of verbs, vectrà, uuciderà, farà, darà, parterà̀, cantarà, fuggirà; in the elifion of the infinitive mood, trionfar, Tipofar, frordar, Iufingar, saufragar; and in the fubltan tives, fedeltà, pietà, felicità, libertà, crudeltà, and Mar.
In fetting Metaltafio's early operas, till about the middle of the prefent century, we find the beft compofers giving divifions to the vowels o and $e ;$ as in morirò, dovrà, fugiro, $r e$, te, fì, freme, ffeme, vender, woler, è, mercè, \&cc. but never to $i$ or $u$.
Rouffeau declined difcufing the accents of the Italian tongue; but if, as has been imagihed, the Gréek accents were ufed as a notation of the tone or tune of vcice in reading or fpeaking; the acute accent raifing the voice, the grave deprefing it, and the circumflex keeping it at a middie pitch or tone, the Italian would afford a more varied and pleafing melody than any of the otber 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

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to the acutencfs or gravity of the tone. And, according to Dr. Wallis, this gravity, or acutenefs of tones in fpeech, depends on the opennefs of the aperture in the laryax, which is the feat of the voice; and roughefs and fmoothuefs of rocal tones, he refers to the llate of this organ.

But as thefe learned philoiogers have only diffected our alphabet, and analyfed the pronmaciation of our language, as far as concerns its articulation in fpeech, we fhall examine it with refpect to lyric poetry and linging, to which our remarks will be ltrietly confincd.
If it be confijered that of the five vowels in European alphabets, only $\mathrm{two}, a$ and $c$, are favourable to the clear emiffion of rocal found; that of the ninetwen confonants eight are abfolutely mute, as $b$, hard $\epsilon$ and $g, b, k, p, q, t$; feven femi-mute, that is, allowing only a murmuring noife, but no mufical found, as $f, m, n, \int, v, s, z$; that the foft $g$ and confonant $j$ are likewife of this kind; and that $r$, though accounted a liquid, only admits of a fararing, canine kind of a noife; $l$, indeed, is a true liquid, allowing a continuation of found after it is forned; and $e y$ and $y$ may be accounted femi-vowels; yet fo numerons are the impedinents to a neat, clean articulation, as well as fweetnefs and purity of mufical tones, that fome care fhould at leatt be ufed by the lyric poet in the felecion of words, as well as great precaution by the compofer, 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 wices and tendencies to impede or corrugt mufical founds, both in their formation and paflage : that $f$ admits only of a whilper; for though regarded as a femi-vowel on account of its allowing us to breathe after it has been pronsunced, wi:hout altering the form of the mouth; yet, as Dr. Holder has well obferved, "it is one thing to breatbe, and another to vocalife that breath." $\tilde{n}, n$, and $n g$, likewife allow us to breathe ; but as it is only nafal breath, the found we are able to emit is finuffing and impure. $S$, and its fubftitute, foft $c$, are bilfing; $v$ and $z$ afford only a jarriag buz, by the vibration of the teeth and underlip, like that' of a wafp or bee; the cannot be uttered without a $h / p$; and the Saxo-Norman fyllables ble, cle, fle, gle, kle, ple, the, are all unmufical, and of difficult utterance.

The vowel $a$, according to our manner of founding it in the words all, ball, call, \&c. affords the pureft and moft open paffage to the voice through the mouth; and long divifions and vocal effufions fhould be appropriated as much as poffible to this vowel, which is ftill more convenient to the finger when combined with no other letter, which alters the form of the organ. O, a lows a free paffage to found; yet, as it feparates the lips and teeth lefs than the letter a, it is in lefs favour with fingers: however, the Englifh words blow, fow, glow, flow, woo, Sc. are well calculated for mufical divifions. $E, i$, and $u$, partake of the na ure of confonants, by putting the organs of fpeech in motion when they are firft founded ; and in dwelling upon thefe vowels no woce di petto, no woice can be produced from the chef, as they confine it to a fmall part of the mouth, or render it nafal. Indeed, the $u$, by almolt clofing the lips, allows but a very narrow and inconvenient paflage to the voice; the i and the $e$ are more favourable to a faliet, a voce da tefta, or feigned voice, than to a true portamento, or conduct of the roice.

Tofi, in his " Opinioni de' cantori antichi e moderni, - fieno offervazioni fopra il canto figurato," or florid fong, fourfcore years ago, recommended the exercifing of the voice upon the three open vowels, which, with the Italians,
are $a, e$, , equivalent to our atu, $a, 0$. The Italian i, founded like our double $c$, and $u$ an our double o, are never honoured with divigions or long founds by the belt compofers or finging matters of Italy.
As opeñ vowels are the moli cefirable to fingers; fo diftinet, determinate, and uncompounded confonants, a"e the befl crutches for the voice to lean on; for a neat, clear, and articulate pronunciation of confonants is as necelfary to the intelligence of what is finging, as open wowels are to its being well fung. The letters $\beta, t, k$, for inflance, are fuch clear and diftinct articulations, that the voice, after any one of them, is delivered with a gentle kind of explolion, which confiderably augments its force.

The $\boldsymbol{i}$, in Englifh, as it is founded in the word fimile, and which is fo peculiar to Enghfla mouths, feems a diphthong. compounded of e feminine, and $y^{\prime \prime}$, or the Greek diphthorg ts, or rather the German ei, as founded in eifenac, eichner, \& C. and not a fimple, or original vowel. Indeed, moft of the diphthongs in our language require aetion in the organ, and fpring in the mufcles, as ay, oy, $\mathrm{Cu}, \mathrm{ou}$, in the words bay, boy, Europe, our.
As accent and emphafis have great influence in varying the found of oral language, they are rot indifferent to vocal melody: the Italian tongl:e, though it is caly to pronounce, and foft and mellifluous to the ear, from the opennefs 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 chalcet has peculiar inflections of woice 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 contitcna, than any other with which we are acquainted.
Diomedes calls accent the foul of fpeech, anirra vocis. And every word of more than one fyllable in profe, mutt have one emphatic or accented fyllable among the reft. However, in verfe, this. rule cannot be oblerved without abfurdity.
"Of min's firft difobedience, and the früit Of that forbidden tree," \&c.
"Awake my Säint John, leave all meaner things To low ambītion, and the pride of kings."
In each of thefe two lalt verfes, were they fet in recitative, which is the beft mufical criterion of accenting any language, there can only be two emphatic, accented fyl. lables: as in Handel's opening of "Alexander's Feaft;"
"'Twas at the royal feält, for Perfia wōn."
A fyllab'e in Englifh, as well as Latin, which has two confonants after a vowel, is long, except one of theie confonants be mute, and the other a liquid, as in rĕgrèt, rĕplēte. 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 cafe of double rhymes this rule fhould be oblerved: as pleafure, meafure, manncr, Banner; which thould all have fhort notes. Here accent and quantity certaiuly differ. By applying Italian melody to Englif words, we feem to lofe in fenfe what we gain in found. The univerfality of double rhymes in Italian poetry mult have an influence upon vocal melody, which our fingle rhymes but aukwardly imitate.
Dacier, in a note to his tranflation of Plutarch's Life of Lycurgus, fass, that "the progrefs of mufic, 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 fuccefsful cultivators

## LANGUAGE.

of the fine arts; and nothing was achiered in then, throughout their empire, but by Grecian artilts. For this we may, however, account, by the flaves only being allowed to cultivate the polite arts, among the Romans; whereas, in Grecee, on the contrary, they were wholly prol:Bited their uf

No vilionary innovation, or fantaltical change, is here intended, in a language fo excellent as our own for every purpofe of reafon, fcience, philofophy, and we may furely add, poctry; all we would recommend, is care to our lyric poets in the felcetion and arrangement of fyllables, as well as unity of fubject (fee Italian Tour. p. 4 \&, and our articles Soxe, Swamerky, and Uxity of ATclody), and attentive ubfervance to the compofers who fet them to mufic, not to dwell on harfh, mute, nafal, or guttural words, whish either prechude or vitiate all mulical fotund.

Song and fing, unfortunately, the two moll common words in our lyric poetry, begin by a biff, and end with a found entirely nafal ; and if we exanine the fyllatles which terminate each line in Dryden's Ode on St. Cecilia's Day', the belt of our lyric poems, and perhaps the mott noble production, to read, of modern languages, we fhall find that the dead letter $d$ predominates; terminating in the courfe of the poem no lefs 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 paffage, but through the nofe. However, this junction is not fo imjurious to vocalifed found, as $n g$ in the words fung, youns, berinning, suinning, deflroying, enjoying; or $f$ and $z$ in ears, bears, Spheres, comes, drums, prize, /Rics. \&cc, which terminate each mulical phrafe or period with a hifs. The impervious confonant $t$, in futu, fiate, fizt, \&c. preceded by a vowel, is lefs difficult to pronounce, and lefs offenfive to hear, than the libilation in bradf, oppref, sc.

Admirable and fubline as this ode is in the perufal, fome of the lines are extremely difficulv to fing, without injuring either the poct or mufician; the firtl, by a languid and inarticulate utterance, or the latter by a pronunciation-too rough and violent. The recitatives may, with propriety, admit of ftrong accentuation, as coly fuch a portion of found is wanting as will render the words more audible, and nearer finging, than mere fpeech : but as recitative is the medium between declamation and mulical air, fome attention feems neceffary in felecting the words, and polifhing the verfes, even for this narrative melody; in fhunning harfh alliterations, fuch as in the lines, thrice be flew the flainthe fweet enthufiafl from ber facred flore, \&c. where there is a coniltant and unavoidable hiffing 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 verfe, where the punctuation requires a repofe, or long bote, as will neither wholly filence the voice, nor impede its expanfion. If fuch precautions fhould be thought neceflary for words of quick aitterance in recitative, flill more folicitous fhould 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 fiveeten and refine.

It is very natural for poets to wifh that the language, in fetting it to mufic, fhould be more refpected than it has generally been, particularly in our church compofitions, by old malters, which the lite Mr. Mafon, in his "Anthem Book for York Cathedral," has very juftly cerifured ; but he commends Tucker, who was gentleman of Charlcs IId's chapel, for his very accurate attention to accent and lenptli of fyllables; and fums up the excellencies and defeets of
our ecclefiaftical compofers brought up in the King's chapel, after the Refloration, by fpeaking with exact difcrimination of "the plealing melodies of Wife; pathetic airs of Clarke ; majeflic movements of Blow; and fublime Itrains of Purcell."
But Purcell, the pride of every Englifuman who loves mulic, was, in general, not only accurate, but happy and touching in the expreffion of words. Many of his melodies are, however, now become wholly obfolete and unconth, from the temporary graces, with which he overloaded them, for the fake of ignorant fingers; and, indeed, he wrote for no other. Bat thefe being the furbelows and flounces of a particular period, are very fhort-lived, and foon difgrace that melody which they were intended to embellif.
Languages are in general divided into orlginal or motbertongues; as the Hebrew and Arabic, in the Ealt; the Tcutomice and Sclavonic, in the welt.
Lavguages, Secondary, or derivative, which are thofeformed out of a mixture of feveral others, as Latin, French, \&c.
Kircher will have the Coptic a mother-tongue independint 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 thofe fooken in the north. See Gotinc.
Some add the Bafque, or Bifcayan, and Bas Briton, to the number of mother-tongues, imagining them to have been thofe of the ancient Celtr, or Gauls.
Langusges, Lcarned, or Dead, are thofe which only fublitt in books, and which mult be learned by the rules of grammar ; as the Greek, Hebrew, Syriac, and Chaldee.

Raimond Lutly folicited the eftablifhment of the ftudy 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 fhould be inftituted profeffors of each, who fhould have falarjes from the refpective courts. The monks, however, vigoroully oppofed the fireading of thefe ftudies; and with fo much fuccefs, that Erafmus tells us, in his time, "Grace noffe fufpectum, Hebraice prope hereticum."
Languages, Living, are thofe fill fpoken in fome coun* try or other; and which may be learned by converfation. The molt popular among thefe are the French, Italian, Spanifh, and Englih.
The Spaniards feem to place the noblenefs and gravity of their language in the number of fyllables, and the fwelling of words; and fpeale lefs to be underfood, than to be admired. Their terms are fonorous; their expreffions haughty; pomp and oftentation run through all they fay; their language cannot paint a thought to the life; it always magnifies it; frequently diftorts 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 embelifhes them more; yet thefe ornaments and embelliflhments are not real beauties. The Italian expreffions, thus rich and brilliant, are like thofe faces covered with patch and paint, which make a fine fhow; but the finery is all deceit.

The French language (as fome of their authors exprefs themfelves) is fimple, without lownefs; bold, without indecency: elegant and florid, without affectation; harmonious, without fwelling ; majeftic, without pride; delicate, without foftnefs; and itrong, without roughnefs. Though; as to the points of ftrength and majelly, the French mmit

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give way to the Englifh; which in thefe, as well as in copioufnefs, exceeds moft of the living languages; as far as it is inferior to fome of them in fmoothnefs and delicacy.

Of all the modern languages, the French is generally allowed to be the molt clear, and fit for philofophecal and critical fubjeets; the chalteft and molt refersed in its diction; the mof judicious and fevere in its ormanemts.

The language of France, for vocal purpofes, may be compared with that of Italy. That the Italan tanguage is favourable to the pure emifion of found, and confequently to finging, and the French the contrary, none but a native of France will difpute. Yet M. Framery, a man of tate and knowledge of mufic, and who fometimes feems to feel and acknowledge the defects of French muicic and its language for vocal purpofes, fays in the Encyclopédic Methodique, p. 235: "de celébres compofiteurs, Meffis. Duni, Gluck, Piccini, Sacchini, ont dit, ont ecrit, qu'ils aimosent mieus eompofer fur la langue Françife que fur la langue Italienne!". credat Judaus. M. Framery never furprifed us more, or convinced us lefs. Thefe compofers may have faid fomething flattering to the lrench, in public about their language, while at Paris; but in private, Gluck and Sacchini, to our knowledge, fpoke of French as a mufical language with no great refpect. The Italians have often pretended, in Scotland, to prefer Scots tun:s, and in Ireland, Irifh, to Italian mufic. Geminiani and Tenducci did this in both countries ; but in England, and among their own countrymen, they turned to ridicule both thefe national mufics, 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 orhers, the Englifh is faid to be the moft honeft, open, and undefigning language. With all its fublimity, it is gay and pleafant on occafion; but its gaiety is ftill moderated and reftrained by good fenfe; it hates excefive ornaments; and, for the greater fimplicity, would almoit choofe, as fome fay of the French, to go naked; it never drefies more than decorum and neceflity require.
The Englifh language is derived from fo many and fuch different fources, that, on this account, it is deficient in regularity and analogy. Yet we have this advantage to compenfate the defect, that what we want in elegance, we gain in copioufnefs, in which laft refpect few languages will be found fuperior to our own. See Exgeisio.
Ennius and Cecrops are celcbrated for their knowled e of many languages. Mithridates, king of Pontus, it is faid, underttood twenty-two tongues, which was the number of different people over whom he commanded; and thofe langruares he knew fo well, that he was able to harangue each of his people in their own tongue. It was a faying of Charles V. "That fo many languages as a man underftands, fo many times he is a man." Sultan Soliman's irnterpreter fpoke perfectly well feventeen different languages. But among the moderns, none has been more remarkable in this way than Poflellus; who, belides a perfect knowledge of all the dead languages, was fo well acquainted with the living, that it is faid he could have made the tour of the globe, without the ufe of an interpreter. See our asticle 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 publifhed an Introduction to the Learning of the politer Languages, in a common Method, in $154^{\mathrm{S}}$. Mepiffier, a fcheme of forty different languages, and different dialects, fpecimens of exch whereof he gives in the Lord's
prayer, in 1503. Dc Recol-s, in his Addition to the World of Daviti, has publifhed the Pater-nolter in all the languages fpoken among Chriltians ; and Mr. Chamberlayne propofed to do the fime in a hundred languages, a feecimen of whicte has been publifted. Albericus Gentilis wrote of the mixture of languages, in 1633 . Atul father lecienier's Difcourfe on Etymologics, is a work of the fame kind. In $161_{13}$, Durer publified a treafure of the hitlory of all the languages in the universe. Guichart has a treatife of the ctymolegical harmony of languages, pu'd lifhed in 1619 . Drarewood has given us ctrious enquiries into the diverfities of lanmuares and religions, publifhed in $1635^{\circ}$

Language, Ibilyoflical. See Cmaractrire, Unimerga'.
Languagie is alfo ufed, in the order of Malta, for nathon. The knights of Malta are divided into eight languages: three whereof are for Prance; viz. the languages of Provence, of Auvergne, and of France; two for Spain, thofe of Caftile and Arragon; the other three are the languages of Italy, England, and Germany.

Each of thefe languages has its chief, who prefides in affemblies of the language to which he betongs. See Malta.

Language, Frome. See Frank.
Lavguage Helicmilic. Sce Helitemistic.
Laxguage, Laze. See Law Lambaze.
LaNGUED, Laxgue, in Heralury, is applied to fuct animals whofe tongues appear out of their mouths: being of a colour different from that of the body of the animal.

LANGUEDOC, Occitania, in Gcography, 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 $42^{\circ} 40^{\prime}$, and $45^{\circ} 20^{\prime} \mathrm{N}$. lat., and between $1^{\circ} 20^{\prime}$, and $4^{\circ}+5^{\circ}$ E. long. In $43^{\circ} 30^{\prime}$, the parallel of Touloufe nearly, it extends 53 leagues from W. to E. ; but towards either extremity, it does not excced 33. Its breadth, for the greatelt part, is 33 to 38 leagues, except towards the middle, where it fcarcely amounts to 40 miles. The coaft from Agde eaftward is confiderably augmented, the fea baving retired, as appears by comparing the fituation of the maritme 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 forefts, there are lead and iron mines. The lower tracts are fertile, and well watered, yielding grain, wise, and fruit; but one half of the province is of an ungrateful and unproductive foil. The principal rivers are the Rhone, Garoune, 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 in bihoprics, and the Cevennes, comprehending three. Geographers have divided this province into Upper and Lower; containing three archbifhoprics, 23 bihoprics, 61 abbies, 637 priories, 353 religious houfes, 60 commanderies, 200 towns and villages, 2 univerffies, 6 academies, 1000 ecclefiaftics, 342,758 fanilies, and $1,560,000$ iuhabitants. The ecclefiattical divifion has been differently arranged fince the revolution. The capital of Upper Languedoc was Touloufe, and of Lower Languedoc, Montpellier. It is now divided iuto feven departments, viz. the Ardêche, Lozere, Gard, Herault, Tarn, Upper Garonne, and Aude.
LANGUENBRUCK, a town of Switzerland, in the canton of Soleure; 54 miles N.E. of Soleure.

LANGUEPOUR, a town of Hindooftan, in Bahar; 43 miles S.S.W, of Bahar.
LaNGUET, John Baftist Josebit, in Biography, fon of Denis Languet, attorney-general to the parliament of Dijon, in which city he was born in the ycar 1575. He received the clementary parts of his education in his native place, and then went to purfue his fudies at Paris, where he refided at the Seminary at St. Sulpice. In the year 1698 , he was admitted a licentiate of the faculty of the Sorbonne, and was ordained, foon after, a prieft at Vienne, in Dauphiné. He returned to Paris, took the degree of doctor in 1703 , and attached hinfelf to the community of St. Sulpice, "here, by the exertions of his benevolent labours, he rendered himfelf to ufeful that he was chofen curate to M. de la Chetardic. The duties of this appoinment he difcharged ten years, and fold his eftate, that he might have it in his power to relicve the neceffitics of the poor. In the year 1714 , he fuccecced to the living of St. Sulpice, and finding the church much too firall for the number of his parifhioners, he conceived the delign of building a place tbat fhould excel every other church in the world in magnifcence, and architectural decorations. This great work he accomplifhed by means of donations, 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 I[., king of Prufin, was induced, from an account which he read of the proceedings on that occafion, to fend a polite complimentary letter to M. Languct. He eftablifhed likewife "La Maifon de l'Infant Jefue," interded for the accommodation of 30 or 40 poor ladies of noble defcent. Here they were boarded and educated in a manner fuitable to them, but at the fame time were taught to be ufeful. They were empluyed, by turns, in attending to donictlic concerns, and in other offices that would render them ferviceab'e to their relations in the country. Another objuct of this eftablifhment, was to afford an afylum to more than eight hundred poor women and girls deflitute of the means of fupport, belonging either to the city or country. They were provided with daily food, and were made to earn their fupport, chiefly by Epinning cotton and linen. Without entering into the minutix of the regulations of the place, it is fufficient to fay, that this ellablifhment has proved a moft happy retreat for numerous infortunate femalcs, who had been abandoned, by infamous betrayers, to difeafe and wretchedrefs. Here, by good example and excellent moral inftruction, they have been recalled to virtue, and habituated to induftry, and many of them have proved ufeful and honourable members of the fociety. For their encouragement when they quited the houfe, they were paid in money the amount of what they had earned by their labour. Though the land attached to the houfe confitted of only fourteen French acres, yet it fed a fufficient number of cows to give milk for upwards of two thouland children in the parih: it alfo contained conveniences for pigs and all kinds of poultry, which were fold for the benefit of the inititution; a bakeboufe, furnifhing more than a hundred thoufand pounds of bread monthly, which was diltributed among the poor of the parifh; fpiming-rooms, an excellent and well cultivated garden, a noble difpenfary, $\& c \mathrm{c}$. The management and regularity with which every department in this houfe was condueted, either for the inftruetion, employment, or fupport of fuch a number of perfons, were fo adsirable, and gave fo high an idea of the great directing hand, that Cardinal Fleury propofed that Languet fhould be appointed fuperintendant of all the horpitals in the kingdom; to whom he anfwered with a frile, "I have alway's faid, my lord, that the bounty of your eminence led me to the
hofpital." M. Languet's benevolent exertions were not confined to the objects already mentioned, but extended to the poor and wretched of every defcription. No perfon was ever more active and fucceffful than himfelf in obtaining large alms and confiderable legacies, which he diftributed with admirable prudence and difcretion. It is faid, on good authority, that he difburfed 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 houfhold furniture, his pictures, and curious and rare pieces of workmanfhip, and, in fhort, fcarcely left himfelf the bare neceffarics of life. He was among the firlt to be prefent at fires, or any other fcene of public calamity, where his prudence, felf-poffeffion, and univerfally refpected character, rendered his advice and exertions effentially ferviceable. He had a wonderful talent in difcovering the different difpofitions of mankind, and he knew how to employ every perfon according to his capacity. This excellent man declined the offers made of feveral bifhoprics ; his great ambition was to do good, and he had ample meeans for this as a parifh prieff. 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 amufing fociety. His younger brother, named John Jofeph, born at Dijon in 1667 , rofe to confiderable eminence in the church, and was 40 years archbifiop of Sens. He died in 1753. He took a very diftinguifhed part as a controverfialiit, in defence of the bull "Unigenitus," and difplayed much learning and acutenefs in his polemical pieces, which were tranfated into Latin, and printed in 1753, in two volumes folio. He was author of "A Tranflation of the Book of Pfalms," and of difcourfes publifhed in the collections of the French academy. Moreri.

Lixauet, Hubert, was born at Viteaux, in Burgundy, in 1518: after a preliminary courfe of inftruction 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 converfion to the Proteltant faith. After this he fpent feveral years in travelling over different countries in the north of Europe; in his tour he became acquainted with Guftavus, king of Sweden, who gave him a commiflion to invite perfons feilful in the arts and fciences from France to his dominions. In 1559, he accompanied Adolphus of Naflau, 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 ftates of Ang fourg in 1568 , and was employed by him in other important negociations. He was again fent to France in 15\%0, when he pronounced a bold and eloquent harangue in the name of the Protaftant princes of Germany before Charles IX. He refided at Paris during the bloody malfacre of St. Bartholomew, and expofed his oxn life to danger by his efforts in faving his hoft, Andrew Wechel, the famous printer, and his friend, Dupleffis Mornai. After accomplining various other miffions 10 the fatisfaction of his employers, he died at Antwerp in September, 158 I , at the age of 63 , greatly regretted by all who knew him. 'The prince of Orange, in whofe fervice 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 at many would wifh to appeat;

## L A N

he lived as good men would wifh to die．＂His works are ＂Collcetions of Latin I．etters to the Elector of Saxony，to Camerarius，Father and Son，and to Phulip Sidncy：＂＂A Relation of the Expedition of the EleCtor Auguftus againut the Revolters of Saxony ；with the Hiftory of the Proceed－ ings of the Emperor againft that Prince：＂＂Vindicix con－ tra Tyrannes，＂which is a fpirited 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 per－ fons，but has been afcertained to have been the production of Languet．Bayle．Moreri．

LANGUETTE，$F r$ ．the tongue of a jack in a harp－ fichord or fpinnet；the valve which opens and fluts the wind cheft in an organ to let the wind into the pipes，when a key is preffed down．

LANGUIDO and Languente，Ital．mufical terms for a languid or languifhing air．

LANGUOR，a faintnefs and indifpofition to exertion， commonly accompanied with a laffitude or wearinefs，and arifing from a feverifh flate，or from a general debility of the nervous and circulating fyftems．

LANGUR，in Geography，a mountain of Thibet； 40 miles E．of Tankia．－Alfo，a river of Mingrelia，anciently Afolphus，which runs into the Black fea，about two miles from Anarghia．

LANGUT，a town of Pruffia，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 leaft of the fouthern divifion， to which it gives name，and the ufual refidence 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 houfes of the prin－ cipal perfons are high，elegant，and richly ornamented； thofe of the lower people are mere huts．The priets alone have the privilege of building their houfes of brick or 化解． $\mathrm{N} . \operatorname{lat} .18^{\circ} 30^{\prime}$ ．E．long． $101^{\circ} 38^{\prime}$ ．

## 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 Italinn， who came into England early in the lait century ：there is a fine portrait of him at the Grange，in Hamphire，by Van－ dyke．It was the fight of this portrait that determined Charles I．to employ that excellent painter．Laniere pro－ feffionally practifed mufic，painting，and engraving；but his greateft excellence was in mulic．His own portrait， painted by himfelf，is in the mufic fchool 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．Hitt．of Engl．vol．i． p． 539 ．

It is recorded in the folio edition of Ben．Tonfon＇s works， printed 1640 ，that，in 1617，his whole mafque，which was performed at the houfe of lord Hay，for the entertainment of the French ambaffador，was fet to mufic after the Italian manner，filo recitativo，by Nic．Laniere，who was not only ordered to fet the mufic，but to paint the fcenes．

This fhort piece being swbolly in rhyme，though without variation in the meafure，to diltinguifh airs from recitation， as it was all in mufical declamation，may be fafely pro－ Vox．XX．

## I．A N

nounced the firft attempt at an opera in the Italian manner， after the invention of recitative．

But in the fame year，in the mafque，by the fame author， called＂The Vifion of Delight，＂prefented at court during Chriftmas，there is a manifett dittinction of air from re－ citative；in both which ftyles the whole piece，in verfes of different meafures，was performed．It is opened by De－ light，perfonified，who，fiilo recitatizo，＂（pake in fong．＂ Then Night，likewife perfonified，fung，＂Brak Fancy from thy cave of cloud，\＆c．＂This air ends in a chorus or quire．After which Fancy fake，in filo recitatizo． ＂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 mufic of this mafque is not to be found， yet of Laniere＇s＂Mufica narrativa＂we have feveral ex－ amples，printed by Playford in the collections of the time ； particularly the＂Ayres and Dialogues，＂ 1653 ，and the fecond part of the＂Mufical Companion，＂which appeared in $1667^{\circ}$ ；and in which his mufic to the dialogues is infinitely fuperior to the reft ：there is melody，meafure，and mean－ ing in it．His recitative is more like that of his country－ men at prefent，than any cotemporary Englifhman＇s．How－ ever，thefe dialogues were compofed before the laws and phrafeology of recitative were fettled，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 Lamuginous Trees，among Herbalijfs， are thofe trees that bear a woolly downy fubftance；as，the black，white，and trembling poplars，ofiers，and willows of all forts．
LANINA，in Geography，a town of Ruflia，in the go－ vernment of Irkutik，near the Baikal lake ； 80 miles N．E． of Irkut fk ．
LaNiNI，Bervardino，in Biography，an hiftorical painter，native of Vercelli，and a pupil of Gaudenzio Fer－ rari．He imitated the ftyle of that matter，in his firft works， to a degree of illufion．As he advanced in practice he calt a bolder eye on nature，and，by equal vigour of conception and execution，proved to the firit artitts 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 he－ roine anticipate the graces of Guido；the colour of the whole approaches the tones of＇liziano；the glory of the angels rivals Gaudenzio；$a_{\text {a lefs }}$ neglected ftyle of drapery would have left little to wih for．Among his copious works at Milano，and in its diffricts，the dome of Novara claims diftinguifhed notice．There he painted thofe Sybils， and that femblance of the eternal Father，fo much admired by lomazzo，and near then certain fubjects from the life of the Virgin，which even now in a ruined flate of colonr enchant by fpirit and evidence of defign．His verfatile talent indulged fometimes in imitations of Leonardo da Vinci；and at the Bafilica of St．Ambrogio，the figure of Chritt between two angels，in form，expreffion，and effect， fully proves with what felicity he penetrated the principles of that genius．Fufeli＇s Pilkington．

LANIS de crescentia Wrallis traduccnis abfoue cuffuma， SEG，an ancient writ that lies to the culfomer of a port，to O。
permit

## I. A N

permit one to pals wool without paying cuflom, he having paid it before in Wales.

LANISCHLE, in Geograpby, a town of Iftria; 16 miles S.E of Capo d'Ifria.

LANISTA, in Antiquity, is fometimes ufed to fignify an executioner, but more frequently for a mafler gladiator, who taught the ufe of arms, and had always people under them, ready to exhibit flows of that kind. For which purpofe they either purchafed gladiators, or educated children, that had been expofed in that art.

Laxista was alfo ufed to denote one who taught gamè cocks to fight.
LANIUS, in Ornithology, a genus of the rapacions tribe, having the bill rather Itraight, with a tooth, or notch, on each mandible near the end; the bafe naked; and the tongue jagged at the tip. To this character, uffigued by Gmelin after Linuæus, may be added, that the nottrils are generally round, and covered with ftiff briftes. Dr. Latham obferves ftill further, that the birds of this genus are not furnifhed with a cere at the bafe of the bill, and that the middle toe is connected to the next as far as the firt joint. Laftly, according to Scopoli, the fegments of the acins are feven in number.

Linnæus, in the various editions of his Syftema Nature and other works, has referred this genus of birds to feveral dif. tinct families, having fometimes placed it with the chatterers, fometimes with the titmice, and then again, from its habits of rapacits, with the accipitres, in which laft-mentioned order it ftands in the Gmelinian edition of that author's publication. Before the time of Linnæus, our countryman, Ray, had claffed this tribe among the flort-winged hawks: Buffon allo had arranged it after the falcons; but Brifion, on the contrary, includes them with the thrufhes and the chatterers, two analugous genera, which obvioufly belong to the order pafferes. Kramer introduces it unde- 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 picx, in a fublequent edition. Gmelin retains it ftill in the accipitrine order. In Latham's "Synopfis," and alfo in his "Index Ornithologicus," the example of Scopoli is followed; the flrikes are difpofed at the head of the order pič, and this arrangement has obtained the fanction of the French ornithologitis. We are far from wifhing to intrude a folitary fuggeition again!t eltablifhed opinions, and thofe too of acknowledged merit; yet, on a point in which fo much difference has prevailed, a fuggeltion may be allowed. The flrikes then appear to us, at leaft in a general view, lefs intimately conneted with the pies than the falcon tribe, though confeffedly allied to both; and in defining the precife line between, it is not impoffible that a future era will concur in the accuracy of Gmelin, who incorporates them with the accipitres; or, in reverting itill farther back to the example of Ray, our enlightened countryman, place them as the laft of the falcon tribe.

The birds of this genus are difperfed throughout moft parts of the globe: they are generally of a noify, reflefs, quarrelfome; and ferocious dilpefition; prey on all the fmaller kinds of birds as well as infects. The manner in which they de?roy ther prey is almoft, if not entirely, peculiar to themfelves, and evinces a degree of addrefs and cruelty that has not inaptly obtained them the name of butcherbirds. After youncing upon their deltined victim, which they ufually feize upon in a defencelefs fate, while young, and in the neft, they bear it away to fome thorny buif, and by the dint of dextrity force it upon one of the ftoutelt
and flarpelt fines ; 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 difperfing on different fines of the bufh fuch remmants of the flefh, after being for the prefent fatisficd, as are referved for futuremeals. In this maner, the fhrike tribe alfo treat the larger kinds of infects, as well as birds.

## Species.

Foretcatus. Tail forked; frontal creft erect ; body greenifh-black. Linn. Drongo, Buff. Gobe-nouché buppé; de Malabar, ibid. Fork-tailedjbrike.

Length ten inches; fize of a black-bird; tail long, and much furcated; crelt Cometimes wanting. Inhabits the Cape of Good Hope, Madagafcar, and China.

Czrulescens. "Tail forked; body blueifh-black; belly white. Linn. La pie-griefche a queue fourcbue de Bengale: Brift. Le fingah, Buff. Fork-dailed Indian butcher-bird, Edwards.

Inhahits Bengal, where it is called fingah: the Engtifh. fettlers call it alfo the king of the crows, from the holtiledifpofition they conftantly evince againft thofe birds. Its. length is feven inches and a half; the tail much forked, theouter feather fpotted with dirty white.

Malabaricus. Body blueih-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. Malabar /brike.
Length feventeen inches and a half. This fpecies inhabits; Malabar.
Castaneus. Tail cuneated; body above chefnut, beneath white; crown, nape, and hind-head cinereous. Latho. Lanius caftaneus, Gmel. Chefrut-backed /brike.

Country unknown. The bill, wings, and legs black; front black. Length ten inches.

Luctonensis. Tail cuneated; body reddifh-grey; tailfeathers banded with brown at the ends; a black fpot on the head, behind the eye. Lanius lucionenfis, Linn. La piegriefche de Luzon, Briff. Luzonian Jbrike.

Length reven inches and a half; bill and body above grey-brown ; beneath, and on the fides, reddifh, 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 illand of Luçonia, which it inhabits, call this bird cabegote.

Coristatus. Tail cuneated; head crefted; body reddifh, beneath waved with tawny and brown. Gmel. Bcngalenfis rufus, Briff. Crefled red, or rouffet-coloured butcherbird, Edwards Crefted red fbrike.

Canadensis. Tail cuneated; head crefted; body reddifh, beneath whitifh. Gmel. Lanius Canadenfis, Brifo. Pic-griecho bupé de Canuda, Buff. Crefled Jrike:

Length fix inches and a balf; the bill and claws black ;: creit reddifh; cheeks dufky, with white fpots; throat and brealt yellowifh-red; belly cinereous; wing-coverts black, edged with white; tail black, with white dots. This fpecies inhabits Canada.
Ludovicisnus. Tail cuneated and cinereous; body above cinercous, beneath whitifh. Gmel. Pie griefcbe de la Louifane, Buff. Louifiane Jarike.
Inhabits Louifiane. Length eight inches; under the eyes. a black band ; fix middle tail-feathers black, the reft white at the bafe and tip.
Nengeta. Tail cuncated, white at the tip; body cinereous, beneath whitifh. Limn. Cotinga cinerea, Briff.

Guirarts

Guiraru nheengeta, Ray. Guirarou, Buff. Grey pye of Brafl, Edw. Grey Jrike.

Inhabits northern Europe, Brafil, Surinam, and other parts of South America, frequenting marfhy places. Length nine inches. In this fpecies the wings and tail are blackifh; wing-coverts black, with the tips dull white; primary quill-feathers black, outer tail-feathers at the tip white.
Curvinostris. Tail cuncated; body white; back black; firft five quill-fuathers with a white fpot. Gmel. Collurio Madagafarion/is, Briff. Eecorcbeur de Madagafar, Buff. Vanga ou becarde a ventre blanc. Buff. Hook-billed Jurike.

Both mandibles reflected at the tips; hind-head greenifhblack; greater tail-coverts obliquely fpoited with white; rail-feathers in the middle, within cincreous, withoat black, tip whiee: legs lead colour, claws blackifh. A native of Madagafcar, where the inhabitants diftinguifi it by the name of vanga. It feeds on fruits, and is faid to whifle well.
Collaris. Tail cuneated; body black, beneath white; firt quill-feathers white at the bafe. Gmel. Pie oriefibe du Cap de Bonne Epherance, Buff. Collared florike.

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, Brift. Lanius cinereus major, Gefn. Cafrica palombina, Olin. Great cinereous Jbrike, Arct. Zool. Donov. Brit. Birds, \&c.
This fpecies inhabits many parts of North America and Europe, and is the largelt 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 thofe in the female are marked with fine femicircular brownifh lines. The female makes her nelt of heath and mofs, lined with wool and other foft fubftances. The fpecies chiefly inhabits woods: it feeds on infects and fmall birds, the latter of which it feizes by the throat, then fixes them on a fharp thorn, and tears them to pieces. When confined in a cage, it will often, if poffible, contrive to affix its food againft the wires, that in like manner it may pull it afunder with its claws and bill. In countries where thefe birds are abundant, the hufbandmen treat them with regard, being efpecially ufeful in the deftruction of rats, mice, and other vermin. There are fome diftinct varieties of this bird: in one the body is white, the legs yellowifh, and the bill and claws blackifh; and another in which the leffer wing-coverts and thoulders are reddifh.

Collurio. Tail fomewhat cuneated; back grey; four middle tail-feathers unicolour; bill lead colour. Linn. Fn. Suec. Lanius minor rufus, E̛c. Ray. Merula congener alia, Ray. Ecorcbeur, Buff. Lefler butcher bird, fiuber, Eic. Will. Red-backed /brike, 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 bafe; the outer web of the outer feather white; breaft, 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 fpecies is not very uncommon in Britain, where it is confidered as a bird of paflage. It lays fix white eggs, marked with a rufous brown circle towards the large end.

The neft is generally placed in a hedge or low buth, near which, it is afferted, no fmall birds have the temerity to build, as it not only feeds on iafects, but alfo on the young of other birds, which it feizes in the neft by the neek, and kills by piercing the fkull with its bill, the brain and eyes being the parts it firft devours. It is remarkably fund of grafshoppers and beetles, which it cats by morfels; and when fatisfied, translixes the remains on a thorn, to be caten at another opportunity. This, like the grey frike, has no note peculiar to itfelf: it is mercly an adept in the imitative art, as its note is varied to that of any other birds it wifhes to decoy within its power. Writers defcribe two or three varieties of this fpecies, the moft probable of which is the variegated thrike, l'Ecorcheur varie of Briffon. This is grey on the upper part of the body, and rufous-white beneath, the whole marked with tranfverfe brown flimations; the fcapulars rufous-white, bounded by a parallel black ftripe; the tail black, the three outer feathers rufous-white at the bafe and tips, the outer one wholly rufous-white on the outer edge. It is the leffer variegated butcher bird of Willughby, and is admitted as a varicty by Gmelin and Latham. Gmelin is, however, miftaken in placing the following bird as another variety of the fpecies collurio.

Retrus. Crown and nape rufous, furrounded with fufcous; front, fcapulars, fpot on the wing, and whole furface beneath whitifh. Donov. Br. Birds. Lanius rufur, Brif: Lanius rufus (y Collurio), Gmel. Lanius rufus, Lath. Lanius rutilus, Ind. Orn. Lavius pomeranes, Mufo Carlfc. Lanius minor cinerafeens, Ray. Lantius minor rutilus, Klein. Ampelis dorifo grifeo, \&c. Linn. Fn. Suiec. Pie-griefche rouffe, Buff. Bufferola, Zinnan. Wood-chat, Albin, \&c.
Extremely rare in Britain. Its fize is equal to that of the common or red-backed firike, and its manners, fo far as we are acquainted with the fecies, are nearly the fame, except that it never frequents woods, kecping conftantly on the elevations or among the low bufhes 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 defcribes 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 varjety of the following fpecies.
Senegalus. Grey, beneath whitifl; crown, band through the eyes, and tail-feathers black; the laft, except the two middle feathers, white at the tips. Lanius Sengalus, Linn. Lanius Senegalenfis cinereus, Brifl. Scnegal farikie.

Lenyth nine inches. Very common in Senegal.
Anticuanus. Tail long and cuneated; body above yellowifh rufous, beneath white, head, bill, wings, legs, and tail above black. Gmel. Pie-griefche d'Antigue, Sonnerat. Antiguan farike, Lath.

Inhabits the Philippines and Panay ifles.
Nıger. Black; tail fomewhat cuneated. Gmel. Blatk farike.

Native of Jamaica. Length feven inches.
Leverianus. Tail long, cuneated, black at the tip; bill, head, neck, middle of the breait, and legs black, the relt white. Gmel. Lanius picatus, Lath. Alagpie Jrike.

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 reft, the whole black with white tips.
Rupus. Rufous, beneath white; head greenilh-black. OO 2

Linn.

Linn. Lamius Madazafarienfis rufus, Briff. Schet-bé, Duff. Rufous Jorike.

Length eight inches, the bill, legs, and claws leadcolour.

Leucocepinaus. Greenih-black; head, neck, and body beneath white. Ginel. Sc. Lanius MIadagnfarienfis wajor viridis, Brif. Tiba-chert-hé, Buff. Whbite-headed frike.

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 blueih-alh. Merrem.

Native of Surinam. 'The length five inches; wings fhort; wing-coverts and fecondary quill-feathers edred with white; tail-feathers, except the two middle ones, tipped with white.

Pomeranes.` Body above black, beneath white, hind head and back of the nock dark rufty, furrounded with black; two fpots on each fide the wings and rump white. Sparmann.

Inhabits Pomerania; bill, legs, and wings black.
Tyrannes. Body cinereous, beneath white; crown black, with a longitudival tawny treak. Gmel. Mufcicapa tyrannus, Brif. Tyran, Buff. Tyrant Jorike.

Native of America. Length eight inches. Builds in hollow trees, is fierce and audacious, and will even attack the eagle, faltening upon its back, and continuixg to fcream 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 reddifh; tail longer than the body, and pointed. La grande pie-grieche, Sonnini.

Size of the black-bird, the plumage greyih-ath; bill citron-yellow; legs brownifh, claws black.

Africanus. Body above black, beneath white, and a band of the fame on the wings. La pie-grieche filencieuff, Sonnini.

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 conftracted 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 yellowih; front and wings black. Linn. Lanius a-faack, Otbeck: Cbinefe Jorike.

Native of China, in fize refembling the fecies tyrannus. Head and neck on the upper part grey; neck beneath dull reddifh-white; back and belly reddifh.

Pitangua. Body black, beneath yellow; crown with a tawny ftreak; band over the eyes white. Gmel. J.anius pitangua, Linn. Pitangua guaca, Ray. Tyramus Brafilienfis, Briff. Bentizeo, ou Cuiriri, Buff. Braftian Jbrike.

Length nine incles; bill thick, throat white; wings beneath yellow. Native of South America.

Barbirus. Black, beneath red; crown and thighs tawny. Gmel. Lanius Seneralen/is ruber, Briff. Gonolak, Buff. Pie-grivebe du Sencgal, ibid. Barbary forike.

Length nine inches; the bill, wings, tail, feet, and claws black, head, neck, vent, and lower wing-coverts yellow. Inhabits Barbary.

Sulphuratus. Fufcous, beneath yellow, head blackinh, furrounded by a whitih band. Gmel. 'Lanius Cayanenfis luteus, Briff. Pie-gritfche jaune de Cayemne, Buff. Becarde a zentre jaune, ibid. Tcllow-bellied /brike.

Native of Cayenne, the length nine inches; chin and throat white; legs grey; bill and claws blackinh; wings and tail brown, edged with rufous.

Cayanus. Cincrous ; head, tail, and primary quill-fet. thers black. Linn. Lanius Cayanenfis cincreus, Brilf. Piegrifche grife de Cayenne, Buff. Cayenne ßprike.
Size of a black-bird, the length eight inches and a half, bill at the bafe red, at the tip black; legs cinereous, claws black. Bufton defcribes a fuppofed variety, about the fame fize, that differs in having a longitudinal black ftreak down each feather. This is from Cayenne, as is likewife another variety of fmaller fize, with the front yellowif.

Madagascarensis. Cinereous, beneath whitifh; lores black; tail-feathers reddifh. Gmel. Lanius Madagafearienfis major, Briff. Cali-calic et Bruja, Buff. Madagafar plovike.

Length fcarcely five inches, and inhabits Madagafcar. In the male, the chin and throat is black; in the female, white mixed with rufous.
Auravrius. Tawny yellow; chin, throat, and brealt reddifh ; head, above the eyes, and nape black; wings and tail brown. Lath. Ind. Orn. Orange /Jsikic.
Native of Cayenne. Length feven inches.
Nootкa. T'ail rounded; body above black, beneath white ; crown black ; collar white. Gmel. Nookk /brike, 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 Bengalenfis fufcus, Briff. Mufcicapa emeria, Linn. Rouge queue, Buff, Bengal red fart, Albin. Beno gal flrike.

Length five inches and a half; the bill greyih-brown ; crown and hind head black; abdomen and upper tail-coverts red ; each fide the neck four black curved fpots. Native of Bengal.

Jocosus. Tail rounded; body grey; lower eye.lid purple; vent fanguineous red. Linn. Amocn. Acad. Merula Jimenfis crifata minor, Briff. Jocofe forike.

Size of a lark; length feren inches and a half, and inha* bits China, where it is called Kowkai-kon.

Bicolor. Blue, beneath white, frontlet black. Linn. Mant. I, oxia MIadagafcarina, Sylt. Nat. Pie-griefche blue de Madagafar. Blue farike.

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 bafe, outer tail-feathers, legs, and claws black; female beneath dirty white; tail flightly cuneated. Native of Madagarcar.
Levcoruxxcos. Body above blackifh, beneath whitifh ; bill, breaft, belly, and rump white. Gmel. Lazius Manillenfis, Briff. Pie-griefcbe de Madayafar, Buff. Longraien, ibid. I'bite-bellied firike.

Inhabits Manilla; length feven inches; wings, tail, legs, and claws black ; tail equal.

Ferrucinels. Body above black-brown; throat and brealt dirty-white; belly ferruginous. Gmel. Fcrruginous forike, Lath.
A native of the Cape of Good Hope; fize the fame as the cinereous fhrike; the bill lead colour; tail dunky brown; legs black.
Taducesis. Body above olive ; chin and breaft cinereous; belly yellewith-brown; tail and legs brown. Gmel. Tabuan forike.

Length eight inches; the bill brown; crown greenifh; wings black on the outer edge. Firft defcribed by Dr. La-
tham, from a fpecimen in the Leverian Mufeum, It inhabits the Friendly illes.
Pactricus. Black; head and neck approaching to grenill ; belly and tail more dukk. Gmel. Pacijo forike, Lath.
Defcribed from an example of the fpecies in the Dankfian collection, found in one of the iflands of the south feas. The bill is dufly ; feathers of the head and neck very narrow; tail three inches long, dunky and even at the end ; toes divided to the bafe, the middle one very long.
Septentrionalis. Bill black; legs lead colour ; body above brown; chin aud brealt cinereou3; belly and vent brownifh. Gmel. Nortbern forike, Lath.
Length eight inches; four middle tail-feathers brown, the reft within white at the tip, and each two inches long; legs flort ; claws flout and brown. Native of North America.
Pheatus. Head black and crelted; body cinereous; throat anci breaft black; wing-coverts barred with white; tail black at the tip. Lath. Ind. Orn. Black capped purike.

Native of Cayenne. Length fix inches. Female without creft; throat and breaft cinereous.

Viribis. Head, wings, and body above dufky green, beneath white; tail black. Gmel. Tcha-chert, Buff. Green Brike.

Size of the laft ; the wings long; two middle tail-feathers dufly-green, the reft black at the outer edge; legs and claws black.

Varius.' Body above cinereous brown; chin and breaft yellow-buff; belly, rump, and vent dirty brownifh-white; intericapulars white; tail and wings brown. Gmel. White Jouldered /brike, Lath.

Deicribed by Pennant as a native of Brafil ; the legs and bill are black ; front and cheeks with paler fpots.

Leucocephalos. White; body above greenifh-black; head, neck, and under parts of the body white. Lath. \&cc. Tcha-chert-bé, Buff, White-beaded Jorike.

Length eight inches. This fecies inhabits Madagafcar.
Dominicanus. Black; belly and rump white. Gmel. Pie-griefche Dominicaine, Sonnerat.

Inhabits the Philippine iflands; exceeds the fparrow in fize; flies fwift, is bold and troublefome to crows. Is by fome prefumed to be a variety of the preceding fpecies.

Panayensis. Bill and legs black; head, throat, breaft, and belly red; crown, wings, and tail brown. Gmel. Panay farike.

Seven inches in length, and inhabits the ifland Panay.
Albus. White ; bill, tail, legs, and greater part of the wings, black. Gmel. IWbite forike.

Inhabits fame place as the former.

- Nevius. Body above black; beneath cinereous; an oblong fpot of white on the wing-coverts. Gmel. Spotted Brike.

Native of Cayenne; the bill ard legs black; tail-feathers white at the tip.

Obscurus. Body above dufky-black, beneath white; over each eye a white line. Gmel. $D_{u j} / y /$ Brike, Lath.

Suppofed to inhabit America; in fize correfponds with L. nævius; the bill is horn-colour ; wings and tail more dufky than the body, and the legs brown.

Fuscus. Above brown, beneath white; lores, tips of the fecondary quill-feathers, and edges of the primary, yellowifh. Gmel. Brown /brike, Lath.

## Bill at the tip, and legs black.

Ruber. Red; wings and tail with ocellar fpots, black at the tips. Gmel. Red lanius, or butcher-bird of Surinam, Bancr. Red Jerik.

Native of Surinam.
Amemeasus. Black; fpot on the firt quill-feathere, checks, and chin white; breatt and belly cincreous. Gmel.

Inhabits North America.
Minor. Cinereous; chin white; breaft and belly rofy ; front, line over the eyes, and tail black. Gmel. Pic.griefche d'Italie, Buff.

Native of Italy, Spain, and Ruffia, and refembles the grey frike.

Melanocephalus. Bill, head, and chin black; body olive above, beneath paler; tail with a broad black band, at the tip yellow. -Gmel. Black-beaded Jorike, Lath.

Length fix inches, the legs dufky; and inhabits the South Sca iflands.
Brachyurus. Head above rufty grey; cye-brows white; a black band from between the eyes to the ears; body above cinereous, grey, beneath yellowifh-white; tail rounded. Pallas. Short-tailed Srike.

Size of the red-backed fhrike; wings blackih ; tail-feathers ten, brown-grey, and, except the middle ones, white at the tip. Native of Hungary.

Boulboul. Black; breaft and belly tinged with cinereous; wings brown, with two white bands. Lath. Ind. Orn. Boulboul Jbrike.

Size of the field-fare; bill and legs yellow. Inhabits India.

Picemicurus. Body above reddifh-grey, beneath yellow-ifh-white, tail long, rounded, and with the rump brighe red; orbits crofled by a black band. Pallas.

Inhabits rocky places on the river Onon; fize of the laft.

Doliatus. Tail rounded; body clofely varied with black and white lines. Linn. Pied fruike.

Native of Cayenne; the length fix inches and a half; bill dufky, claws and legs brown; feather on the hind head long, and when erected form a creit ; wings and tail with tranfverfe white fpots.

Faustus. Grey, beneath ferruginous; a white line between the eyes; tail rounded. Linn. Amœen. Acad.

Size of the field-fare; bill and legs pale; wings rounded; quill-feathers brownifh, grey at the edges, tail brown, and all marked with light brown decuffating lines.

LANKA, in Geography, a pofition of fome importance, referring both to the fcience and hiltory 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, anfwering to the fouthern extremity of the Maldevy iflands. "Indeed," the note continues, "there are many reafons for concluding Lanka to have been part of the Taprobane of the ancients, and that Taprobane, or more properly Tapobon, which in Sanfcrit means the wildernefs of prayer, was a very large ifland, including the whole, or the greater part, of the Maldevy iflands, which have fince been deftroyed by inundations. This agrees very well with Ptolemy's defcription, and his ifland of monkies feems to relate to thofe of the Ramayana." See Ramayana and Taprobana.
On this note it is obferved, in the Hindoo Pantheon, p. 328 , whence this article is chiefly taken, that therein is an avowed obfcurity, and an exifting error fomewhere; for that many arguments, if not proofs, may be adduced in fupport of the identity of Lanka and Ceylon, and perhaps Taprobane. Lanka was the theatre of Rama's exploits againft its tyrannical king Ravana, whofe name is indifferently pronounced Ravan, Raban, Rabon, \&c. nor can there be

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much doubt of the inand that we now call Cerion having formed a part, at any ratc, of that theatre, which might in former times have been of greater extent than that ifliand is at prefent.

It is daid, that in Sanfcrit books Ceylon is called T'apa Rawan; 'l'apa or Tay, in that language, meaning an inand, and it may be indifferently pronounced 'Taporaban, or indeed, in common difcourfe, 'Taproban, or 'Taprobane. Much Atrefs is not perhaps to be laid on cosjectural etymology, but it may be obferved, that many names of places and things on Ceylon, and in its neighbourhood, correfpond with the nomenclature of the Ramayan. In the fifth volume of the Afiatic Refearches is ant intercfling 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 ifland, may probably have received its ancient appellation of Taprobane (i.e. the ine of Raban) : here alfo is a place called Sita Koond, or the pool of Sita, where Rama is related to have left his wife Sita, on the occafion of the war with the ravifher Ravan." (See Sita.) In the poetical hyperbole of the Hindoos, the tears fhed by Sita, in her lamentation for her lord's abfence and her own captivity, are faid to form this koonda, or pool, lill called by her name.

Between Ceylon and the continent is 3 feries of rocks, fome of which appear above water, admitting a paffage only in fine weather to veffels of fmall burden. This in our maps is called Adam's bridge, the Romifh miffonaries 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 confipicuous part acted by thofe animals, in the wars of the Ramayan, reminds us ftrongly of Ptolemy's ifland of monkies, and offers another niark of identity. On the continent of India, Ceylon is to this day popularly believed to be inhabited principally by monkies, lions, and monters; one of its names, Singala dwipa, whence Seilan diva, Selendeb, Ceylon, \&c. means the country of lions. See Cexlon.

In Hamilton's account of the Eaft Indies (vol. i. p. If2.) a map of the peninfula has one of the Maldevy iflands marked Hunnamandow, evidently the fame with Hanuman devy, as it would be more correctly pronounced, meaning the ifland of Hanuman; and this name occurving confpicuoufly on thofe iflands 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 iflands in queftion; a knowledge that might be abundantly obtained by a permitted admiffion to the records at the India Houfe. 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 goddefs Ifa, or Devi, in her character of Kumari, or the Virgin. Thefe are names of Parijati, 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 Vifhnu, may perhaps originally have been dedicated to Rami, whatever rites may now obtain there: a point that we are uninformed on; and fhall offer no more thereon in this place than the remark that the rites of the virgin goddefs Kumari, (whofe magnificent temple under the name of Ramifwara, or Ramiferam, at the fouthern extremity of the promontory of India, is fill a much venerated fhrine, and of great refort by pilgrims, ) have a ftriking analogy with thofe' of the Taurican

Diana, a virgin goddefs alfo, whofe temple fimilarly occupied the fouthern promontory of the Taurican Cherfonefus. See Ramiand Ramisivara.

Thic firlt meridian of the Hindoo aftronomers paffed through Uja ini (Ogein, which fee) and Lanka; the latter cannot therefore 'o Ceylon if confined to its prefent extent, for Oojein lies in aboct 76, and the wefternmont part of Ceylon in $80^{\circ}$ caft of Greemich. This difficulty feems reconcileable only by allowing what is afferted in India, that Ceytion was formerly of greater extent than at prefent, and it is faid, that appearances between that ifland and the Maldevys, or Maldivas, as well as between it and the continent, juftify the belief of their having once joined. See Af. Ref. vol. ini. p. 44 , alfo Ceylon and Maldives in this work.

LANKAYT, a fmall ifland near the W. coaft of Celebes. S. lat. $+57^{\prime}$. E. long. $119^{\circ} 12^{\prime}$.

LANKE', a lake of Thibet, about 45 miles in circumference; 40 miles N. of Darmadijira.

LANMEUR, a town of France, in the department of Finitterre, and chief place of a canton, in the ditrict of Morlaix ; 6 miles N.E. of Morlaix. The place contains 2389 , and the canton 13,170 inhabitants, on a territory of $182 \frac{1}{2}$ 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 Englifh the lanner, and the male lannareto See Falco lanarius.

LANNAS, in Geography, a town of Sweden, in the province of Angermannland; 35 miles N.W. of Hernofand.

LANNIERS, or Laniards, in a Slip, are fmall ropes reeved into the dead-men's-eyes of all the fhrouds and chains. Their ufe is to flacken or fet taught the flrouds. The ftays alfo of all malts are fet taught by lanniers. That rope, which fattens the ftopper of the halliards to them, is called alfo a lannier: and the term is generally applied to any flhort piece of cord or line, faftened to feveral 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 Geografby, a town of France, and chief place of a diftrict, in the department of the Northern Coafts. The place contains 3132 , and the canton 14,988 inhabitants, on a territory of 105 kiliometres, in 9 conmunes. N. lat. $48^{\circ} 44^{\prime}$. W. long. $3^{\circ} 22^{\prime}$.
LANNOY, a town of France, in the department of the North, and chief place of a canton, in the diftrict of Lille ; 6 miles E.N.E. of Lille. The place contains 923, and the canton 13,033 inhabitants, on a territory of $97 \frac{1}{2}$ kiliometres, in 16 communes.
LANNSTROFF, a town of France, in the department of the Mofelle, and chief place of a canton, in the diftrict of Thionville. The place contains 338 , and the canton 13,615 inhabitants, on a territory of $307 \frac{1}{2}$ kiliometres, in 44 communes.

LANO, a lake of the ifland 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 diftrict of Nontron. The place contains $45^{8}$, and the canton 9581 inhabitants, on a territury of 235 kiliometres, in 10 communes.
LANPENCKEN, a town of Pruffia, in the palatinate of Culm; 14 miles N. of Strafburg.

LANSARD, a town of Perfia, in the province of Mazanideran,
zanderan, on the coaf of the Cafpian fea; romiles W . of Fehrabad.

LANSINBURG, New City, a town of America, in the townflip of Troy, county of Reuflalar, Now York, pleafantly fituated on the E. bank of Hudfon's river, oppofite to one of the mouths of the Mobawk; containing about 250 houfes, a brick church for the juint ufe of the Dutchand Pefbyterians, a court-houfe, grol, and an academy, incorporated in 1796. 'The library of this town was incorporated in $1775 ; 9$ miles N. of Albany. N. lat. $42^{\prime \prime}$ 46. W. long $73{ }^{\circ} 34^{\prime}$.

LANS-LE-BOURG, a town of France, in the department of Mont Blanc, and chief place of a canton, in the dif. trict of St. Jean-de-Maurienne. The place contains 874, and the canton 4675 inhabitants, on a territory of $742 \frac{1}{2}$ kiliometres, in 7 communes.

LANSMANS, a town of Norway; 116 miles $N$. of Bergen.
LANSPESSADE, in Military Afairs. See Avspessade.

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 diftrict of Villefranche; 9 miles E. of Touloufe. The place contains 1455 , and the canton 5669 inhabitants, on a territory of $115 \frac{1}{2}$ Isilismetres, in 16 communes.

LANTAB-LEPTEN, a fmall ifland on the coaft of China, near the harbour of Macao.
LANTANA, in Botany, luppofed to be derived from Lentus, flexible, was in that fenfe originally applied to the Pliant Mealy Tree, Viburnum Lantana. It is now ufed generically for a fet of plants, rather agreeing with that in general afpect, than in this peculiar quality--Linn. Gen. 316. Sclreb. 413 Willd. Sp. Pl. v. 3.315. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 2. 350 . Juff. rog. Lamarck Illuttr. t. 540. Gærtn. t. 5 5. (Camara; Plum. Gen. 31. t. 2.)-Clafs and order, Didynamia Angiofpermia. Nat. Ord. Perfonata, Linn. Vilices, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, very fhort, cohering, tubular, with four flight teeth. Cor. of one petal, nearly regular; tube cylindrical, flenfder, 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, flender, two of them a little above the relt; anthers roundifh. Pift. Germen fuperior, roundifh; ftyle thread-fhaped, fhort ; ftigma bent backward like a hook, pointed downswards, and attached obliquely, as it were, to the top of the ftyle. Peric. Drupa roundifh, of one celi. Secd. Nut roundifh, fomewhat pyramidal, of three cells, the lowermof of which is barren; kernels folitary, oblong.

Obf. Linnzus obferves that the effential character confits in the figure of the Atigma. His L. Africana is now feparated from the relt; and called Spielmannia. In the genuine Lantans there is a many-leaved involucrum, according to Linnæus, (rather to be termed a number of bracteas,) and the common receptacle of the fructification is oblong, bearing many crowded feffile flowers, moftly very unequal.

Eff. Ch. Calyx obfcurely four-toothed. Limb of the corolla unequally four-cleft, flat, with an open mouth. Stigma bent back like ahook. Drupa with a fmooth nut of two cells.

The fpecies in Willdenow are 15, but profeffor Martyn reckons up 19. Some uncertainty attends a few, even of thofe defined by Linnrus, at lealt he fufpected his trifolia might not be diftinct from annua, but in this he feems to lave been miftaken. Medicus, indeed, who took fome pains
with this genm, anpears to lave diefuiberl antra for trif la, which Reichard eorr cted. 'The L. falovifolian of Limaima is properly referred in !'ort. Kew, to Buddiala.

Good examples of the genas are,
L. aculeata. Prickly-flalked Lantana,-Lim. Sp. PI. 874. Curt. Mag. t. 96.-Leaves ovate, fomewhat hisart. maped, downy underneath. Stem prickiy. Hencteas hanceolate, with a broad bafe.-Native of the Wett Indies, where it is vulgulariy called Wild Suge. It is one of the mott commonly cultiatied in our thoves, being really propacated by cuttings, and flowerny alm alt all the year. The Jenz is fhrubby, more or lefs rough, with projecting prickl.o. Leaves Italked, ferrated, pointed, rou-him, atrout two inches long. Flowers bright yellow at firlt, then orange, nuticrous, in flattencd heads, on limple, folitary, axillary ttalks.
L. Camara. Various-coloured Lantana.-Linn. Sp. Pl. 874. (Camara melifix-folio, flore variabili; Dill. Elth. 65 . t. j6. f. 65.)-Leaves ovate, rough on both fides. Stem unarmed. Bracteas ovate, fmall, downy.-Native of South America; an old inhabitant of our floves. The fozeers arc changeable in colour, being, at firt opening, yellow, then orange, finally fcarlet; which becomes duil or brownih as they fade, not purple, as in fome other fuccies.-Several of this genus are defcribed under the Brafilian name of Camara, in Pifo and Marcgrave. The word is now adopted by the Portuguefe, as it feems, in a medical fenfi, fuggeted 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 Weft India iflands, as well as of the Spanifh Main; rarely preferved long in our ftoves, to which it has from time to time been introduced, becaufe the feeds do not ripen well here, and the plant, though flrubby in habit, is properly aunual. The leages are broad, almon heart-fhaped. Flowers in oblong, ftalked, axillary fpikes, very beautiful. When cultivated in an airy light \{ove, being bright reddifhpurple, or pink, with a white ring and yellow eye.
L. trifolia of Linnaus differs from the laft very widely in appearance, and has the liaves growing three or four together, ovate, much more finely crenate; the heads of flowers rounder; brateas larger, and mare obtufe.-Plumier's Icones, t. 70, quoted for this, is not at all like the Linnæan fpecimen, but appears to be merely a three-leaved variety of the annua.
L. nivea. Venten. Malmaif. t. S, appears to us a whiteflowered variety of L. aculeata; at lealt we can difcover no fpecific diftinction, unlefs the flower-ftalks, growing in pairs at each leaf, fhould prove to be fuch. This is a native of the Weft Indies, and was fent to the garden of Malmaifon by Meffrs. 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 fpecies in his Hortus. Schoenbrunenfis; amongft others
L. luvandulacea, t. 361 . Willd. n. 1 I.. White fmall. flowered Lantana-Leaves elliptic-lanceolate, ferrated, downy beneath. Stem roundifh. Heads of flowers cylin. drical, fhorter than the leaves. Bracteas nearly orbicular. -Willdenow, who firft defcribed this, and Jacquin, had it in their gardens, without knowing whence it came. We have a native fpecimen, gathered by Dombey, in moift fituations at Lima. It is $\beta$ brubby, with round, flender, roughih branches. Leaves oppofite, ftalked, an inch long or more, rugofe; rough above ; downy, with numerous, branching, prominent ribs and veins beneath; the margin fharply ferrated. Flower-falks axillary, various in length, but always.

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much morter than the leaves. Spikes oblong, with broad, roundifh, pointed bradcas; the flowors white, unequally five-lobed, turning reddifh-brown in decay. The dried leaves are aromatic, with fomewhat of the flavour of fage. -This fecies is properly placed nest to L. odorata.

Lastiks, in Gardening, comprehends plants of the flububy, exotic, green-houfe, and fove kinds, of which the fpecies cultivated are the various-flowered lantana, L. milta; 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-Thefe plants are capable of being raifed by feeds and cuttings of the young branches.

With regard to the feeds, they fhould be fown in pots of light mould in the carly fpring, plunging them in a bark hot-bed. When the plants have attained fome inches growth, they fhould be removed into feparate pots of a fmall fize, and be replunged in the bark-bed, due fhade and air being given. The plants fhould afterwards, when they have acquired frength, be removed into an airy glafs-cafe, or dry Atove, where they may have a large thare of air in warm weather, but be protected from the cold. This is neceflary for the young plants, which flould not the firlt year be expofed to the open air, but afterwards they may be placed abroad in the warmelt part of the fummer, and in winter be placed upon ftands in the dry flove, where they will continue long in flower, and many of the forts ripen their fceds. In winter they fhould be fearingly watered, as much moilture rots their roots.

And the cuttings fhould be planted in pots in the fpring and fummer months, as in May and July, and be plunged in a moderate hot-bed, due fhade being given. They foon take root, and fhould afterwards be removed into feparate pots filleci with light carth, and managed in the fame manner as thofe raifed from feed.

Thefe plants afford ornament and variety among collections of fove and green-houfe plants.

LANTARGUR, in Geograpby, a town of Lamjungh ; $4^{2}$ miles N. of Gorkah. N. lat. $295^{\prime} \cdot$ E. long. $S_{4}{ }^{\prime}$ I $S^{\prime}$.

Lantchang. See Lanjan.
LANTER-LOO, or Loo, is the name of a common -game at cards.

LANTERN, or LANThors, a cover for a luminary, made of fome traniparent matter; ferving to tranfinit the light, and, at the fame time, to fkreen it from the wind and rain.

The word is derived from the French lanterne; and that from the Latin laterna, of lateo, I am bidden; co quod butcen balet interius claufam, becaufe the light is hidden within, fay Ifidore and Lambin. But according to Pezron, latirna comes from the Celtic latern, and according to Salmafius lantern comes from lato, of firo, becaufe it bears a Iamp or a light.

Epictetus's lantern is faid to have been fold for three thoufand drachmas; that of Diogencs was hield in great veneration among the ancients; and that of Judas is ftill preferved in the treafury of St. Denys, as a very carious piece of antiquity.

Lanterns are made of glafs, horn, paper, \&c. Formerly they were made of the horn of a wild bull, called urus; which, when cut into thin laminx, Pliny tells us, was very tranfparent. Thofe of horn were firit introduced into England by king Alfred, about the year 887 , in order to preferve his candle time-meafurers from the wind. See Lens. And Hift. Com. vol. i. p. 45 .

Lasterx, Dark, is a lantern with only one opening or

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light, which, too, may be clofed up when the light is to be entirely hid: and may be prefented to the perfon 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 traniparent. Cafaubon, who gives us the defcription, took it from a manufrript of Julius Frontinus. There were principally ufed in their armies, when they were to march privately off from their enemies in the night-time.

Lanterns are ufed at fieges in the night-time, upon the batteries; but thefe mult be blind or dark lanterns. There is always great provifion of them in all ftore-houfes.

Lanterns for fhips are made of tin and glafs, to light thofe parts of a fhip where naked candles would be dangerous, fuch as for lighting the magazine and ftore rooms. Thofe ufed at the ftern are called poop-lanterns, and thofe aloft toplanterns.

Lanteras, Fcaft of, in China, is a celebrated fealt held on the fifteenth day of the firft month; and is fo called from the great number of lanterns hung out of the houfes and in the flreets; infomuch that it rather appears a fit of madnefs than of feafting. On this day are expofed lanterns of all prices, fome of which are faid to coft two thoufand crowns. Some of their grandees retrench fomewhat every day out of their table, out of their drefs, equipage, \&c. to appear the more magnificent in lanterns. They are adorned wish gilding, fculpture, painting, japanning, \&c. and as to their lize, it is extravagant; fome are from twentyfive to thirty feet diameter; they reprefent halls and chambers, and two or three fuch machines together would make handfome houfes; fo that in China they are able to eat, lodge, receive vifits, have balls, and act plays, in a lantern.

To illumine them, they fhould have bonfires; but as that would be inconvenient, they content themfelves with lighting up in them a great number of torches or lamps, which at a diftance have a beautiful effect. In thefe they exhibit various kinds of fhows to divert the people.

Befides thefe enormous lanterns, there is a multitude of other fmaller : thefe ufually confit of fix faces or lights, each about four feet high and one and a half broad, framed in wood finely gilt and adorned; over thefe they ftretch a fine tranfparent filk, curioufly 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 Arcbitecture, a turret raifed above the roof with windows rourd the fides, in order to light the apartment below. Lanterns are much more convenient than fkylights; as the furface of the glafs ftands vertical, they are not fo liable to be broken, nor fo fubject to the rattling noife of heavy rains and hail.

LhNTERN is alfo ufed for a fquare cage of timber, with glafs in it, placed over the ridge of a corridor, or a gallery between two rows of fhops to illuminate them.

Lantern, Magic, in Optics, the name of a machine, which, in the dark, reprefents various images and fpectres on a wall, or other white furface, fo odd and furprizing, that thofe who are not in the fecret think them the effect of magic. See Magic.

Linters-Fijb, in Ichthyology, the Englifh name of a fifh of the foal-kind, but fmaller and fmoother to the touch, called in Latin amog lof Jus .

Lantern-Fly, in Natural Hifory, the name of a very fingular kind of infect produced in the Weft Indies, and
carrying a ftrong light with it in the night. The Arueture of the trunk in this infect is of the fame kind with that of the cicada; and it wants the power of making the noife for which the cicada is fo famous; it belongs, according to M. Reaumur's diltinctions, to that fpecies of infect called the procizale, or procicida.

The glow-worm and the luminous beetles, with all the other luminous infects we are acquainted with in this part of the world, diffufe their light from a part which is near the extremity of the body, and under the belly, but the lanternAy gives it from its head. It differs alfo greatly in the degree of light; for this, in all the infects we are acquainted with, is wery feeble; whereas in this fly it is fo ftrong, that Mrs. Merian, who is the firt that well defcribed it, fays fhe could read a fmall print in a dark night by the light that one of them gave. The head of this creature, ftrictly fpeaking, is very flort, not exceeding the length of one of the rings of the body, if it be meafured from its joining with the corcelet to its joining with the lantern, but if that part be acecounted 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 reddifl 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. Thefe are all reddifh, and thofe neareft 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 fmaller eyes: and if fo, the animal is fupplied with the organs of vifion 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 tranfparent, they are dotted with white in fome places, and are variegated near their origin with feveral blackifh fpots. The under pair are more tranfparent than the upper; they are much fhorter, and are broader than the others: thefe have each a large and beautiful reund fpot near the extremity, refembling that on the wing of the peacockbutterfly. The colours of the circles of thefe eyes are brown and olive ; the laft colour very bright and clear, the other very dufky and oblcure. The fpots are fo large, that they appear very beautiful. Reaumur's Hilt. Inf. vol. ix. p. 247 .

LANTERNISTS, a name aflumed by the academicians of Thouloufe.

LANTHONY, in Geography, a hamlet in the parih of Cwmyoy, and hundred of Abergavenny, county of Monmouth, England, is noted for the fine and picturefque ruins of its abbey-church. Thefe are feated in a narrow, deep valley, called "The Vale of Euras." The furrounding hills, called Hatteral, are lofty and grand, and from their fteep acclivities are almoft impaffable for travellers. In a fequeftered dale among thefe hills or mountains, Hugh Lacy founded a priory of canons-regular of the order of St . Auguftine, about the year 1108 . A very particular hiftory and defcription of this abbey, and the furrounding country, with feveral prints, are to be found in Coxe's "Hiftorical Tour in Monmouthhire," 4to. 1801.
LANTIGNANO, a town of Etruria ; 13 miles S. of Pifa.
I.ANTO, a fmall ifland in the Baltic, between the ifland of Aland and the coaft of Finland, N. lat. $10^{\circ} 25^{\prime \prime}$. E. long. $20^{\circ} 36^{\prime}$.

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LANTOOR, or BANDA, the chief ifland amang thole called loanda illands in the Ealt Indian fea. See Basiba.

LAN-T'SAN, a river of Alia, which rifes in the N. part of the Chinefe province of Yun-nan, on the borders of Thiibet, traverfes the province from N . to S ., changing its name to Koll-long ; enters the kingdom of Laos, affuming the name of Mecon, and afterwards difeharges itfelf into the Ealt Indian fea.

LANUGinOUS. See Lanigerous.
LANUGO, in Botany, down; that foft, hairy woolly covering, which grows on leaves, ftalks, or fruits, of divers plants.

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 Coalts, and chief place of a canton, in the diftrict of St. Brieuc ; II miles N.IV. of St. Brieuc. The place contains 1123 , and the canton 15,296 inhabitants, on a territory of $147 \frac{1}{2}$ kiliometres, in 12 communes.

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, worfhipped under the three names of Sofpita, Moneta, and Regina.

LANYARDS, or Laniards, on Ship-board. Sce Lanniers.

LANZA, in Geography, a town of Spain, in Navarre; 5 miles N. of Pamplona.

LANZETTI, in Biography, an eminent performer on the violoncello, during the early part of the laft century. He was in England about the year 1740; but returned to Bologna, the place of his nativity, where he ended his days.
LANZO, in Geography, a town of France, in the department of the Po, on the Stura; II miles N.W. of Turin.

LANZONI, Josepir, in Biography, a phyfician, was born at Ferrara on the 26th of OCtober 1663. From his early childhood he exhibited a ftrong inclination for litera~ ture, which his parents indulged, by obtaining for him the beft mafters. He diftinguifhed himfelf particularly in the fchools of philofophy and of medicine, and graduated in both thefe fciences in the year 1683. In the following year, at the age of 21, he was appointed ordinary profeffor, and difplayed talents which did honour to the univerfity of Ferrara, during the long period in which he filled that office. He died in February $\mathbf{1}_{73}$, at the age of 66.
Lanzoni acquired a high reputation by the fuccefs of his practice, and obtained the confidence and efteem of many illuttrious perfonages. His attachment to ftudy increafed with his years; and every moment, in which he was not em. ployed in the duties of his profeflion, was devoted to literature, philofophy, or antiquarian refearch. His character as a phyfician and philofopher, indeed, ranked fo high, that if any queftion upon thefe fubjects was agitated in Italy, the decifion was commonly referred to him. He was diftin. guifhed likewife 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 publifhed and in manufcript, in the execution of which he has been reproached with careleffnefs and incorreanefs. It will be fufficient to ftate, that a collection of his works, as well of thofe publifhed by himfelf as of his manufcripts, wa3
printed at Laufanne, in 1738 , in 3 volso 4 to., with an account of his life, under the title of "Jofephit Lanzoni, Philofophix et Medicine Doctoris, in Patria Univerfitate Lectoris primarii, \&cc. Opera omnia Medico-phylica et Philologica." Eloy. Diet. Hift.

LAO, in Geography, a town of the inland of Cuba; 25 miles W. of Havanna.
LAOCOON, in the Hifory of the Aris, is a celebrated monument of Greek fculpture, executed in marble by Polydorus, Athenodorus, and Agefander, the three fanous artifts 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 fince depofited in the Farnefe palace. Laocoon, the prieft of Apollo and Neptune, is here reprefented with his two fons, with two hideous ferpents clinging round his body, gnawing it, and injecting their poifon. Virgil has given us the following defcription of the fact :

> "Serpens amplexus uterque
> Implicat \& miferos norfu depafcitur artus: Corripiunt, firifque lizant ingentibus, \& jam Bic medium amplexit, bis collo fquamea circum Terga dati, fuperant capite, \& cervicibus altis."

This ftatue exhibits the moft aftonifhing dignity and tranquillity of mind, in the midat of the mok excruciating torments. Pliny fays of it, that it is "opus omnibus, picture \& Ratuarix artis, preferendum " Lib. xxxvi. c. 5 .

LAODICEA, in Ancient Geography, a town of Alia, in Caria, called "Laodicea ad Lycum," not that it was near this river, which paffed to the weft of it, and received, to the north of Laodicea, the river Caprus, which traverfed the town, arid the Afopus, which was eaft of it. A litle to the fouth of Laodicea was Hierapolis. This town was more anciently called Diofpolis, and afterwards Rhaas. It was reeeftablifhed by Antiochus, who gave it the name of his wife; and it became one of the molt confiderable and rich zowns of Afia Minor.
Laonicea Cabiofa, a town of Afia, in Syria, fituated eaftward near mountains, weft of Emefa and the river Orontes. It was favoured by the emperor Severus, on account of its attachment to the interelts of the empire. By way of diftinction, it was called "Laodicea ad Libanum."

Laonicea ad Mare, Latikea, a maritime town of Syria, fituated on an eminence, near the fea-coaft. Strabo fays, that its environs furnifhed abundance of wine. In its prefent ruins may be feen columns of porphyry and granite, an aqueduct, and a triumphal arch, fupported by columns of the Corinthian order. About a fladium welt of this town are the ruins of a fine port, artificially conftructed in the form of an amphitheatre, and capable of containing a confiderable fleet.

Latodicea Combufla, a town of Afia, in Lycaonia, ealt of Philomelium; fuppofed 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.-Aifo, a town of the Pcloponnefus, in the Megrapolitide, according to Polybius and Thucydides; the fame with the Ladoncte of Paufanias.

LAO-KUN-TIM, in Geggraphy, a town of Clinefe Tartary ; 50 miles S.W. of Ning-yuen-tcheou.

LAON, a town of France, and chief place of a diftrict, in the department of the Aifne; and before the revolution, the eapital of a fmall country called Laonnois, and the fee
of a bifhop, who was a duke, and the fecond peer of France, The place contains 6691 , and the canton 14.958 inhabitants, on a territory of 215 kiliometres, in 27 communes. N. lat. $49^{\prime} 34^{\prime}$. E. long. $3^{\prime} 42^{\prime}$.

LAOS, in Ancient Geography, a town of Italy, in Lucania, weft of Brutium, and near it. It was fituated on a fmall gulf, diftant 400 ftadia 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 Chincle province of Yun-nan, on the eaft by I'onquin, on the fouth by Cambodia, and on the welt by Siam and Ava. Kxempfer reprefents it as a powerful ftate, furrounded by forefts and deferts, and of difficult accefs by water, becaufe the river is full of rocks and cataracts. The foil is reprefented as fertile in rice, and the merchants of Cambodia were furnifhed from hence with the beft benjoin and lacca. Exquifite mulk is alfo obtained from Laos, with fome gold and rubies; and the rivers fupply the frefh water mya, which yields pearls. The religion and manners of the people refemble thofe of Siam; but in perfonal appearance they are like the fouthern Chinefe. In Kæmpfer's time, the chief towns were Landjan, or Lantchang, and Tfiamaja, whence the people take the name of Landjanefe, 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 Chinefe. (See Mo-ilang-Lavg.) 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, (perlaps cinnabar or realgar,) cotton, tea, and fapan or Drafil wood. The chief river is denominated Meinam Kong, which paffes through Cambodia; and its different branches bear different appellations. This grand ftream, in Mr. Dalrymple's map of exterior India, is called the Kion-Long, or MaykaungMr. Arrowfmith derives it from the Tibetian Alps, where it is called the Satchou, and by D'Anville the Lantiankiang. Of this country Turpin, cited by Pinkerton, (Geog. vol. ii.) has given the moft recent account. The name Laos, he fays, deriotes 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 fome inftances, to the age of 100 years The flat part of the country refembles Siam, but the foil on the eaft bank of the river is more fertile than that on the welt. The rice is preferred to that of other oriental countries. The ivory is beautiful, but the horn of the rhinoceros is particularly efteemed from a fuperflitious notion, that the poffeflor, who keeps it, infures 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. Mufk, fays this author, is not a product of the country. Before the irruption of the Tartars, the Chinefe 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 furnifhes rubies ard beautiful emeralds, one of which, in the royak treafury, is faid to be as large as a common orange. The inhabitants of this kingdom are celebrated for their honelty and fidelity; and fo anxious are they to maintain their reputation in this refpect, that if a traveller be robbed, the neareft town or village is obliged to indemnify him. At the
fame
fame time, they are indolent and luxurious, and addicted to the itudy and practice of magic. The army of Laos is eltimated by 'T'urpin at 500,000 combatants; but he adds a circumftance which fomewhat affects his credrbility, that a numerous army might be raifed of men who have lived a century. The people of this country are not very diftinguifhed for their fobriety and temperance, as they eat daily tour repaits of rice, fifh, and the flefh of the buffalo; the buffalo and venifon being common in their markets. Marriages are eafly contracted, and no lefs cafily diffolved; and the rich entertain many concubines. A funeral refembles a feftival; and a fum of money is depofited in the tomb, which is circulated, after a certain period, by the priets. 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 boalt that the Siamefe 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 worfhip of thefe people is faid to have been directed to one God, the creator of all, who was only to be pleafed by the exercife of virtue, and not by facrifices, ceremonies, and the obfervance of certain days. But the purity of their faith has been corrupted by their intercourfe with the Chinefe. They helieve in regular renovations of the univerfe; and that our earth has attained the age of 28,00p years. Polygamy is one of the promifed joys of paradife, and the women are affured, that if they lead a virtuous life, they thall be changed into men. The priefts take comfort, under the privations of celibacy, from a perfuafion which they indulge, that in another world they fhall be able, by the privilege of their order, to create females at their pleafure. Some of their ceremonies, like thofe of Thibet, feem to have been derived from the Neftorian Chriftians. To the rich they fell difpenfations and pardons; while the poor alone are condemned to perpetual mifery.

The king of Laos is faid to be an abfolute, independent prince, and to acknowledge no fuperior, either in temporal or fpiritual concerns. In him is vefted the whole property of lands, and he difpofes at pleafure the effects of his fubjects; nor can any family in the kingdom inherit or poffefs any thing left them by will.
L.AOUR, a town of Hindooftan, in Bengal ; 40 miles N.W. of Silhet. N. lat. $25^{\circ} 7^{\prime}$. E. long. $9 \mathrm{I}^{\prime} 20^{\prime}$.

LAPA, one of the Sooloo iflands. N. lat. $5^{2} 25^{\prime}$. E. long. $120^{\circ} 42^{\prime}$ - Alfo, a town of Circaffia, on the Cuban. N. lat. $44^{\circ} 50^{\prime}$. E. long. $58^{\circ} 34^{\prime}$.

LAPACTICS, from $\lambda x \pi \alpha \zeta_{\omega}$, I evacuate, a term ufed by the old writers in medicine to exprefs fuch things as purged by ftool, or at leaft gently loofened the belly. It was fometimes applied to the cathartic medicines, and fometimes to thofe foods which were of this tendency.

LA PALISSE, in Geography. See La Palisse.
LAPAROCELE, (from lapara, the flanks, and $x, \lambda n$, a tumour, ) a term, in Surgery, denoting a fwelling, or hernia, at the fide of the belly.

LAPARY, in Geography, a town of Hindooftan, in Allahabad; 7 miles $N$. of Jiobpour.

LAPA'TA, a chain of mountains in Africa, called the "Backbone of the World," extending from N. to S. about 600 miles. S. lat. $12^{\circ} 30^{\prime}$ to $20^{\circ}$. E. long. $27^{\circ}$ to $33^{\circ}$.

LAPATHIOS, in Ancient Geograply, a town of the ifland of Crete, on the northern coalt.

LAPATHUM, in Botany, $2 . s$ _ntoy of the Greeks, from $\lambda 2 \pi x S^{3}$, or $2 x \pi x i x$, to evacuate, alluding to its medical
qualitics; a general name for various plants, moftly of the Dock kiud, belonging to the Rumex, Rheum, Chenopodiun, or Spinachian of Sammus.

LAPATHUS, Lapito, in Ancicne Geograploy, a town on the $N$. coalt of the ifland of Cyprus, at the bottom of a fimall gulf, formed to the N. WV. by the promontory called Cron mon. It was founded by the Licedxmonians as a place of arms, and a port.

La PAZ, in Gcography. See La Paz.
1.AP-DOG, called alio melitaus, or fotor, and by Dr. Caius, in his Syftem of Britifh Dogs, the fpaniel gentle or comforter, is a fpecies of the mott generous kiud of dogs. Sce 1)og.

Mr. Pennant obferves, that the Maltefe little dogs were as much efteemed by the finc ladies of paft times as thole of Bologna are among the moderns. Old Hollinghed is ridiculoully fevere on the fair of his days for their excelive paffion for thefe little anmals; which is fefficient to prove it was in his time, viz. in the rejgn of queen Elizabeth, a novelty.

LAPEYROUSIA, in Botany, received its name from the Abbe Pourret of Narbonne, in honour of M. Picot Lapeyroufe, author of a fplendid botanical book on the genus Saxifraga, and who has paid great attention to the natural hitory of the Pyrenées. Thunberg bas applied the fame name to a Cape plant, Ofmites calycina, Limn. Suppl. 380 , which he feparates in his Prodromus, p. 163 , from Of. mites, faying the receptacle is naked, and the corolla difcoid. In this Willdenow follows him, Sp. Pl. v. 3. 2260. On examining the original Limmean fpecimen, marked as communicated by Thunberg himfelf, we find ourfelves obliged to declare that peither of thefe characters holds good. The lanceolate fcales of the receptacle are numeroufly apparent between the florets of the difk, and the ligulate florets of the radius are no lefs vifible within the calyx; though indeed the large membranous inner fcales of the latter equal them in length. The habit of the fhrub, too, is fufficiently like other fpecies of Ofmifes. Such being the thate of the cafe, and the right of priority moreover in favour of Pourret, we adopt his Lapeyroufia in preference.-Ker (Gawler) in Curt. Mag. v. 16. 595, and vo 3. 1246. Ann. of Bot. vo $\mathbf{I}_{0}$ 237. Dryandr. in Ait. Hort. Kew. ed. 2. v. 1. $110 .-\mathrm{Clafe}$ and order, Triandria Monogynia. Nat. Ord. Enfati, Linn. Irides, Juff.

Gen. Ch. Cal. Spatha inferior, fhorter than the corolla, of two, rarely but one, folded valves. Cor of one petal, fuperior, falver-fhaped, nearly or quite equal ; tube long, flender, triangular, its throat a little enlarged; limb in fik deep fegments, fhorter than the tube, either quite equal and regular, or lightly irregular, in the former cafe horizontal, in the latter inclining. Stam. Filaments three, inferted into the mouth of the tube, rather fhorter than the limb, various in direction; authers oblong, incumbent. Pijf. Germen inferior, roundifh; ftyle capillary, as long as the Itamens; figmas three, linear, deeply divided, fpreading and recurved, downy. Peric. Capfule membranous, three-lobed, or with three compreffed dilated angles, of three cells and three valyes, with very fhort partitions. Secds numerous, in two rows, nearly globofe, or nightly angular from preffure.

Eff. Ch. Spatha of one or two folded valves. Corolla fal-ver-fhaped; limb in fix deep fegments, fhorter than the tube. Stigmas three, deeply divided. Capfule membranous, triangular, with many globular feeds.

The moft correct enumeration of the fpecies of this genus, previoufly, by other writers, confounded with Ixia, Gladiolus, or Galazia, is given by Mr. Ker, in Curt. Mag. v. 31. above quoted as follows.

## L A P

1. L. corymbofa, Level-topped Lapeyroufia. Curt. Mag. t. 595. (Ixia corymbofa; Linn. Sp. Pl. 5r. Willd. Sp. Pl. v. I. 199. Jacq. Ic. Rar.t. 288. I. crifpifolia; Andr. Repof. t. 35.)-Flowers regular, corymbofe; tube fcarcely 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-houfe in May and $J$ June, and requires to be kept dry when out of bloffom. The bulb is conical, with a broad bafe. Stent about a foot ligh, zig-zag, fomewhat branched, leafy, corymbofe. Leaves verrical, clafping the ftem with their broad fheathing bafe. Flowers numcrous, not an inch wide, blue, generally with a white ftarry central mark, bordered with darker blue, not very unlike another beautiful Cape plant, Roclla ciliata, however different in botanical affinity. Sometimes they vary to white.

Mr. Ker is now convinced that Ixia fofigiata, Lamarck. Dist. v. $3.33 \%$, is not fpecifically diltinct from the above.
2. L. fakicha. Falcate Lapeyroufia. - (Gladiotus falcatus; Thuib. Gladiol, n. 4. t. 1. f. 3.) -Flowers nightly irregular, racernofe; tube twice as long as the limb. Stem comprefed. Leaves nearly radical, falcate, obovato-lanceolate. From the fame country; difcovered by Thunberg. The $f_{l} m$ is but five or fix inches high. Leaves one or two. Flowers five or fix, blue. Sputha of two valves.
3. L. faficulata. Fafciculate Lapeyroufia.- (Ixia heterophylla, Vahl. Enum. vo 2, 57. Galaxia plicata; Jacq. Ic. Rar, t. 292.)-Radical leaves fword-haped, erect ; Hloral ones crowded, recurved, undulated, obtufe, longer than the cluftered flowers. Corolla regular; tube above twice as long as the limb. Spatha of one valve.-Native of the Cape of Good Hope. The fem is very fhort. The flowers are cluftered at its fummit, white, with narrow equal fegments, and remarkable for beiag encompaffed with crowded floral leaves, which are longer than themfelves, recurved, undulated and obtufe. The foliage is glaucous. Radical leaves few, long, erect, fword-fhaped and acute.

Vahl and Ker appear to have adopted this fpecies from Jacquin, and they both cite his t. 291, and inftead of 292, apparently after Willdenow in Sp. Pl. v. I. 199; quoted by Ker 159: Thus erroneous references accumulate, for want of turning to the original authorities.
4. L. Fiffolia. Split-leaved Lapeyronfia.- (Gladiolus Efififolius; Jacq. Ic. Rar. t. 268. Vahl. Enum. v. 2. 107.) -Leaves dceply fiplit, and clafping the ftem at their bafe; with a thort fword-fhaped point; floral ones rounded. Spike Icafy. Corolla fomewhat irregular, drooping; tube thrice as long as the limb. - Received from the Cape of Good Hope by Meflrs. 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 $\int$ pike is peculiar, as well as the long deep fiffure of the flem-leaves. The flowers are purplifh, fragrant, varying in the fize and colours of their limb.
5. L. anccps. Sword-leaved Laneyroufia.-(Gladiolus anceps ; Linn. Suppl. 94. Jacq. Ic. Rar. t. 269.)- Leaves f:vord-faped, decurrent, toothed at the outer edge. Stem corymbofe, fpreading. Ccrolla irregular ; tube thrice as long as the limb.-Native of the Cape. . This appears to be the original fpecies on which Pourret founded the genus, in the Memoirs of the Society of Thouloufe, vol. 3. It differs from the laft in its branching corymbofe flem, winged with the narrow, decurrent, toothed bafes of the perfectly fword-ihaped and vertical leques. 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 fmall and nearly fmooth or cven.
6. L. filenoides. Campion-flowered Lapeyroufia,-(Gladiolus filenoides ; Jacq. Ic. Rar. t. 270. Vahl. Enum. v. 2. 106. Willd, n. 33.)-Leaves linear-fword-flaped, entire; floral ones as long as the reft. Corolla irregular ; tube five tiines 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 afpect of the flower, which is red, with a fpot of yellow at the bafe of three of the fegments, all on one fide. The fcm is about a fpan high, branched from the bottom, and clothed with linear, glaucous, graffy leaver, from feveral of the uppermolt of which the flowers proceed, and their white tube is about as long as the correfponding leaf, ftraight and rather tumid in its upper part.

Two other fpecies are indicated as doubtful by Mr. Ker, Gladiolus brateutus and G. Fabricii of Thunberg and Vahl, which are fufpected to be pollibly not diftinct from L. fiflefolia, or from anceps.
LAPFIORD, in Gcograpby, a town of Sweden, in a bay of the gulf of Bothnia ; eight miles S. of Chriftianiladt.

LAPHAO, a town on the N. coaft of the ifland of Timor, inhabited by Portuguefe or their defcendants, fituated at the bottom of a bay, and containing a church and about 60 houfes; the inhabitants are of a copper colour, with black hair; they carry on fome trade with Batavia; and this port is vifited by fome Chinefe junks and veffels from Goa, but the port is fafe only from March till Auguft; at other times the hurricanes render it infecure.

LAPHIATI, in Zoology, the name by which the people of Lemnos call a fpecies of ferpent, fuppofed by Bellonius to be the fame with the elaps, or elaphis, of the ancients.

LAPHYSTIUS, in Ancient Gcography, a mountain of Beootia, 20 ftadia from Coronna. It had a certain diftrict confecrated to Jupiter Laphyftius, in which there was a marble ftatue of this deity. Hercules Charops kad alfo a temple at a little diltance from it. Paufanius, l. ix. Bceotic. c. 34 .

LAPIDARY, Lapidarius, an artificer, who cuts precious ftones. See Gems.

The art of cutting precious ftones is very ancient; but, like other arts, itsoriginal was very imperfect. The French have fucceeded in it the belt; and the lapidaries of Paris; who have been a corporation fince the year 1200 , have carried it, efpecially in cutting of diamonds called brilliants, to a very great perfection, but not fuperior to that of the Englifh.

There are various machines ufed in the cutting of precious ftones, 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 fteel, turned by a kind of mill, with diamond duft tempered in oil of olives; and this fefes to polilh them as we!l as to cut them.

Oriental rubies, fapphires, and topazes, are cut and formed on a copper wheel, with oil of olives, and diamond duft : they are afterwards polifhed on another copper wheel with tripoli and water.
Emeralds, hyacinths, amethylts, garnets, agates, and other ftones lefs hard, are cat on a leaden wheel, with fmalt and water, and polifhed on a tin wheel with tripoli.

Turquois, of the old and new rock, lapis girafol, and opal, are cut and polifhed on a wooden wheel with tripoli.

Lapidary is alfo ufed for a virtuofo Akilled in the nature, kinds, \&c. of precious ftenes; or a merchant who dials in them. See Gexs.

Lafro

Lapidary Style, denotes the fyle proper for monumental orother infcriptions.

This is a kind of medium between profe and verfe; the jejune and the brilliant are here equally to be avoided. Ciccro has preferibed the rules of it: "Accelat oportet oratio varia, vehemens, plena fpiritus. Omvium fententiarum gravitate, omnium verborum ponderib:s, celt utendum."
The lapidary ftyle, which was loft with the ancient monnments, has been retrieved, at the begimning of this agr, by count Emanuel Teforo: it is now ufed varisus ways at the beginning of boolss; and even epitles dedicatory are cumpoled in it, of which we have no example among the an. cients.
LAPIDES Picri, in Nafural Hifory, a termufed by Langins, to exprefs fuch flones as are found with the delineations of fifles, trees, and thells, as well as leaves of ferns and other plants, very perfectly reprefenting the things themfelves, but fcarcely at all ftanding out above the furface of the flone, and having in themfelves fcarcely any thicknefs. It is very evident, that the bodies reprefented are not here, in reality, but the whole configuration is owing to the natural reins of the ftome, and the coalefcence of the feveral finall maffes of which each large fone is compofed, and to the vapours from within the carth, getting into the natural fine cracks in the flones, and tinging their fides with blacknefs.
LA $H$ IDESCENT, any thing which has the faculty of petrifying, or turning bodies to a flony nature.
Naturalits fpeak of a lapidefcent principle, a lapidefcent fpirit, a lapidefcent juice, \&c
Lapidescent Waters, or Springs, are fuch as, having flony particles diffolved and fwimming in them, do depofit the fame on wood, leaves, and other bodes immerged therein ; which, being incrufted herewith, are commonly mittaken for petrifactions.
LAPIDIFICATION, in Chemiffry, an operation whereby any fubfance is converted into a fort of tuene.
Lapidification is practifed in metals, fixed falts, and falts of plants.
The termis alfo ufed for the making of artificial fones.
LAPIN, in Zoology, the Rabbit. See Lepus Cunisulus.

LAPIS, in the general fenfe. See Stose.
Laprs Arabicus, in the Natural Hiflory of the Ancients, the name of a ftone of a fine white colour, refembling the pureft ivory ; and which, though naturally of a firm, folid, and compact texture, yet, when burnt, became light, porous, and fpungy, and aftumed the figure and appearance of a pumice; and was ufed like it in the compofitions of the ancient phyficians for cleaning the teeth.
Lapis IErofus, in Natural Hifory, a name given to feveral forts of Itones, and other foffils, which had laie in the neighbourhood of copper-mines, and been impregnated with particles of copper, though not in a fufficient degree to be thought worthy the name of copper ores. See Pyrites.
The fame fort of fones were alfo fometimes called chalcities, which made fome confufion, as it gave occafion to confound them with the true chalcitis.
Lapis Abbefos. See Asbestos.
Lapis A.tites. See 压tites.
Lapis Armenus. See Armentan Stome:
Lapis Alfius, in the Natural Hifory of the Ancients, the name of a itone, called alfo farcophagus, from its power of confuming flefh.

It was a ftone much ufed among the Greeks in their fepulchres, and is recorded to have always perfectly confumed the flefh of human bodies, buried in it, in forty days. This property it was much famed for, and att the ancient natu-
ralifts mention it. There was another very fingular quality alfo in it, but whether in all, or only in fume pecular picces in it, is not known; that is, its turning imto thone any thing that was put into veffels made of it. Thas is recorded only be Mutianus and Theophrafus, except that Pliny has copied it from thefe authors; and fome of the later writers on thele fubjects from him.
This effect might probably be a kind of incrufation, formed on fubtarices inclofed in veffels made of this itone, by water paffing through its pores, diflodging from the commen mals of the ftone, and carrying with it particles of fuch fpar at: it contaired; and afterwards falling in repeated drops on whatever lay in its way, it might gain depofit them in fuch fubtances, in form of sncruitations.

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 Bot informs us, that in that country, and in fonse parts of the Eatt, there are alfo ltones of this kind, which, if tied to the bodies of living perfons, would, in the fame manacr, confume their fleth. Hili's Nows on 'Theophraltus, p. If.
Laipis Alomantarius, the co cor-fone. See Proites.
Lapis Bezourdicus. See Beconh.
Lapis Bononienfis, the Bolonianflone, a peculiar fpecies of fone found in Bolonia. Se: Bowosins fone.

Lapis Culaminaris. See Calamine and Zisc.
Lapis Calcarius. See Lime and Lime-stone.
Lapis Caude careri, in Natural Hifory, a name given by Gefner, and fome other writers, to the fofilil thells, froce called tubuli marini concamerati, and by fome pulythalamii and ortho-ceratite. See Tubuit concıamerui.

Lapis Ceratifis. Sce Unicorsu folfo..
Larisicolizus. See Coliciftone.
Lapis Corneus, born-forne, a name given by many of the German authars to fint, which fome of them have alfo very improperly called pyrites, or the fire-flone, becaufe it is ufed to Atrike fire with. See Horvstein and Petrosilex.

Iapis Divinus. See Nepiritic fone.
Lapis Hamaties. See Hzimatites, and Ores of Iron.
Lapis Hecpaticus, livirfone, or liberjlein, a fpectes of the barytic genus of earths or ftenes, colour grey, greyith, or yellow-grey, or brown, or greyih-black ; luftre, 2.1; tranfparency, I ; fracture, foliated and partly friated; hardnefs, from five to fix; fp. grav. $2.666_{i}$ emitting a fmell of liver of fulphur when rubbed or heated to rednefs; not effervefsing with acids. According to the analy fis of Bergman, a fecimen from Andraran in Scania contains 0.38 of barofelerite, 0.33 of filex, 0.22 of alum, 0.07 of gypfum and 0.5 of mineral oil. Kirwan.

Lapis Hilernicus. See Iri/b Slate.
Lapis Hysiuius. See Hyexius lapis.
Lapis Infornalis. See Lunar Caustic.
Lapis Iflebeianus. See Islebelanus lapis.
Lapis Judaicus. See Judacus.
Lapis Lazulio. See Lazvolite.
Lapis Lucis, the fone of ligbt, in the MTateria Medica of the Arabs, a name given to the braffy marcaife or pyrites. The Arabians have adopted this. Avicenna fuppofes this fubtance to be called fo, becaufe it was ufed, after calcination;, for difeafes of the eyes. It is very probable, that where vitriolic medicines take place, the caput mortuum of this foffil, which is only a colcothar of vitriol, may be of ufe. But its virties in this refpect can never be fuppofed fo 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 fref broken, or from its giving large fyarks of fire, when flruck agaiuf a

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feel. It was from this quality that it obtained the name of tyrifes, or fire-ttone, it giving fire on the collifion with fteel nuch better than flint does.

Lapis Iydius. See Linius hapis.
Lapis AIarmoreus, a marble flone about twelve feet long and three feet broad, placed at the upper end of Weftminfteio hail ; where was likewife a marble chair erected on the micdle thereof, in which our kings anciently fat at their coronation dinner, and at other times the lord-chancellor. Over this marble table are now ereeted the courts of chancery, and king's-bench. Orig. Juridical. 37.

Lapis Meliikes. See Melitites.
Laprs Morochthus, or French chalk. See Monochtnes.
Lapis Medicamentofus, or the medicinal ttone, is a compolition of rock alum, litharge, colcothar of vitriol, Armenian bole, and vinegar, boiled to the confiltence of a hard fone. It was ufed to falten the teeth, preferve the gums, heal and dry up ulcers and wounds; and alfo ininjections, and in compofitions for fore eyes.

LapIs MIuficalis, the mufic-fone, in Natural Hiffory, a name given hy Mr. Sivers to a fone found in Pruffia, carrying naturally on it all the mufical characters found on the thell, commonly called the mufic-flecl. He defcribes the ftone, which feems to have been a fingle fpecimen, and as this author is the only one who ever met with it, it is much to be fufpected that either fraud or fancy has had a great thare in the matter.

Lapis Nephriticus. See Nepuritic fone
Lapis Ollaris, See Potstone.
Laris Specularis. See Specelars.
Lapis Thyites. See Thytes.
LAPITHA, in Ancient Geograply, a town of Cyprus, on a river of the fame name; 24 miles W.N.W. of Nicofia. 23 lat. $35^{\circ} 23^{\prime}$. E. long. $32^{\circ} 33^{\prime}$. See Lapatius.

LAPITHEUM, a mountain of Laconia. Steph. Byz. Paufaniat (1, iiii. c. 20.) mentions a town of this name in the Peloponnefus, on mount Taygetus, in the fame canton.

LAPLAND, in Geography, the moft northerly country in Europe, extending from the North-Cape, latitude $71 \frac{1_{2}^{\circ}}{}$ N., to the White fea, under the Arctic circle, is inhabited by the fame people though the country is fubject to different powers. When the name Lapland was firlt given to the country, and that of Laplanders to the people, is uncertain. . Saxo Grammaticus, in his commentaries; Adam of Bremen, in his account of the Danes; and Sturlefton of Iceland have been cited on this fubject, as having named the people in queftion "Scrittfianar,"" "Scricfinnar," or "Finnar ;" and at prefent they are generally called Finns by the Norwegians. The name of Laplanders has been fuppofed to originate from their attachment to forcery: lapp, in their language, fignifying a uizard.

Lapland is bounded on the north by the North fea and Frozen ocean ; on the ealt by the White fea; on the fouth by Sweden and the gulf of Bothnia; and on the weft by Norvay. On the northernmoft fide, are what have been denominated the Frozen Alps, or Alps of Snow, which compofe that chain of mountains called Severnoi, the declivity of which, towards the eaft and fouth, confifts of lower - mountains, deferts, forefts, fens, and lakes. The furface is fuppofed to contain from feventy to eighty thoufand fquare miles, but its population cannot be afcertained with any degree of precifion.

Lapland is divided into three parts, viz. Io That v :hich is fubject to Denmark, and is called Norwegian Lapland; this part lies between the Nurthern fea, the river Pais, and the lake Enarak. 2. Swedifh Lapland, which includes all the conntry from the Baltic to the mountains that feparate

Norexay from Sweden. It is divided into fix diftricts, de. nominated marcks, or territorics, which are diftinguifhed by the names of rivers, as Aungnerland, Elma, Peta, Lula, 'Torna, and Kimi. 3. The eaftern part is fubject to the crar of Mufcovy, lituated between the lake Enarak and the White fea: this part of Lapland is divided into three prefectures; namely, that of the fea-coaft to the north, called " Mourmankoi L.cporic !" that upon the coaft of the White fea, denominated "Jerfkui Leporic :" and the inland part, known by the name of "Bellamorefkoi Leporic." In Swedih Lapland, the provinces or marcks are fubdivided into fmaller difriets 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 ftupendous mountains, interfperfed, however, with many pleafant vallies, watered by an infinite number of rivulets that fall into the rivers and lakes, which difcharge themfelves 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, \&cc. Some of them are faid to extend 60 leagues in length, and contain a great number of iflands. Stor-avan is computed to contain 365 ; and Enara contains fo many, that it has been affirmed, that no Laplander has lived long enough to vifit each particular ifland. For the hiftory of this country, we mult refer to that of thofe countries to which it is fubject, and alfo to the article Finsss. The climate is exceedingly cold during the winter months; the lakes and rivers are at that feafon completely frozen over, and to a great thicknefs: the whole face of the country is covered with fnow to the depth of four or five feet. While this continues loofe, it is impoffible to travel, but if a partial thaw takes place, the furface of the fnow is formed by a fucceeding frot into a hard impenetrable cruft, over which the inhabitants, by means of their rein-deer, travel with the utmoft 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 almoft as intolerable in Lapland as the cold of winter. In the more northerly parts of the country, the fun never fets for three months jn 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 tifh and hunt, and to proceed with their ordinary occupations. During the fummer feafon nothing can be more enchanting in many parts, than the valt profpects of mountains, forelts, lakes, and rivers. At this feafon, notwithitanding the clinate, the rofes are feen in full fiower on the banks of the lakes and rivers, with all the beauties of colour which appear in thofe cultivated in our gardens. In the intervals between the mountains, great part of the country is flat, covered with brown dufky forefls of fir and pine trees, and thefe are often fkirted by wide extended moraffes, the flagnating waters of which in fummer produce myriads of mifchievous infects, 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 fome diftricts the land will bear large crops of rye; there are many varieties of berries, as currants, Norwegian mulberries, that grow on a creeping plant; rafpberries, cranberries, juniper berries, and bilberries. There are very fiue woods of birch, pine, and fir, in feveral inftances difpofed by mature, as if they had been planted in regular ropes by the hand of art. The fervice-tree, the willow, the poplar, the elder, and the cornel are found here. Among plants, the angelica

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angelica is mofe cultivated, and highly efleemed : the forrel is ufed as an antifcorbutic. They have likewife other kinds of herbs, different fpecies of grafs, heath, fern and mofs, but the vegetable which is in the greatelt plenty is the lichen. This mofs covers the whole ground; its colour is a pale yellow, which when dry changes to white ; the regularity of its flape, and the uniform manner in which the furface of the ground is decked with it, appears fingular and firiking; it has the femblance of a beautiful carpet. Thefe plants grow in a fhape nearly octagonal, and approaching to a cirele, 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 fufter 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 neighhouring birches and firs appear to vegetate with difficulty, as if deprived of their nourifhment by the mofs: in fhort, fays the writer, "this moifs appeared to be a royal plant, which ruled abfolute over the vegetable kingdom of the country, and diltributed its bounty and influence among a particular race of men and animals." With refpect to the mineralogy of the country; filver and lead have been difcovered 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 cryltals of a very large fize, and fo hard and fine, that when polifhed they refemble real diamonds. In fome parts amethyfts and topazes are found: alfo curious ftones too hard to be worked by the common tools of the mafon. In a few of their rivers they filh for pearls, which are generally pale; but fome of them are as bright as the oriental pearls, though larger and more round. Lapland is infefted with a great number of grey wolves and bears, with which the natives are perpetually at war. The country likewrife abounds with elks, beavers, and otters, which live here unmolefted, and find plenty of fifh for their fubfitence. The forelts of this country furnifh haunts to a great number of beautiful martens and fquirrels, which change their colour every winter from brown to grey. Here are alfo ermines, weafels, hares, large black cats which attend the Laplanders in hunting, and little dogs trained to the purfuit of game. But the moft remarkable animal of Lapland is the rein-deer. The woods, mountains, and rivers, are well ltocked 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 niagnitude. The infects are extremely numerous; they often obfcure the face of day; and are fo venomous that the reindeer, to avoid them, fly to the tops of the liighelt mountains for fhelter, and the inhabitants betake themfelves to the feafide, which is lefs infefted than other parts by thefe peffilent vermin.

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 fifh to Bothnia and White Ruflia. They trade with the neighbouring countries of Norway, Sweden, Mufcovy, and Finland, by the fale of rein-deer, fine furs, bafkets, toys of their own manufacture, and cheefe made of the reindecr's milk. They receive in return rix-dollars, woollen cloths, linen, copper, tin, flour, oil, hides, cutlery, £pirits, and tobacco. The Laplanders march in caravans to the
fairs in Finland and Norway; thefe are compofed of a lons Atring of 30 or to rein-decr tied to one another, the foremof being led by a Laplander who walks in front. At night, when they have fixed upon a fpot to relt on, they form a large circle of their rein-dect and pulkas or fedges, ready yoked, and the animals lying down quietly on the fnow, are fed with mofs by their matters. The people kindle great fires, areund which they fit and fup, and fmoke and fleep. The revenue arifing from this country is not of much confequence; it is partly paid in rix-dollars, but chiefly in furs, and the tribute from the poorer clafles is taken in dried fifh. 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 ufe no kind of linen; the men wear a fort of pantaloons reaching to their fhoes, and their doublet is made to fit the fhape; over this is a clofe coat with narrow fleeves, which is faftened round them with a leathern girdle. To the girdle are attached their knives, their pipes, and their inftruments for friking 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 fufpended chains of filver, which pafs twice or thrice round the neck. They are much addicted to finery, and to the ufe of embroidery manufactured from brals wire. They change their habitations according to the feafon, living in houfes in the winter, and in fummer they make ufe of tents. Their houfhold furniture confifls of iron or copper kettles, wooden cups, bowls, fpoons, and fometimes tin or even filver bafons, to which matt be added the implements of fifhing and hunting. The inhabitants are chiefly divided into fifhers and mountaineers. The former build their habitations near fome lake, from which they derive their fubliftence. The others feek their fupport on the mountains, poffefing herds of rein-deer more or lefs nu. merous; thefe are very rich in comparifon of the fifhermen. It is ufual to affign to every child at its birth a number of thefe animals, which, with their produce and increafe are to belong to it, fo that when he arrives at man's eftate, he finds himfelf mafter of feveral hundred rein-deer. The following defcription 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 trufled up in a kind of cradle, refembling, in fhape, a fiddle cafe, 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 mofs, over which was fpread the fkin of a young rein-deer- The cradle was fwung on a rope, which was faftened to the top of the hut." The Laplanders are averfe from war, and will forfake their homes, to which they are much attached, rather than engage in it. Their manners and habits are fincly defribed by Thomfon, who, in comparing them with the martial hordes of the north, fays,
"Not fuch the fons of Lapland: wifely they
Defpife th' infenfate barbarous trade of war :
They afk no more than fimple nature gives;
They love their mountains, and enjoy their forms.
No falfe defires, no pridc-created wants
Difturb the peaceful current of their time ;
And through the rettleis ever-tortured maze Of pleafure or ambition bid it rage.
Their rein-deer form their riches. Thefe 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

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form the minds of the Laplanders on the fubject of religion, but the majority of them continue to practife fupertitions and idolatics, as grofs as any that are to be met with among the moit uninftructed Pagans. They rely on augury and witchcraft, and have been confidered by many of our counfrymen, who have vifited thofe parts, as 』ilful in magic and divination. Their magicians make ufe of what they call a drum, an inftrument like the tambourine. On this, thofe who profefs to be Chriftians draw the figures of their own gods, as well as thofe of Jefus Chrilt, the apollles, the fun, moon, flars, rivers, \&c. : on different parts of this inftrument and its ornaments are placed fmail brafs rings, which, when the drum is beaten with a little hammer, dance over the ligures, and according to their progrefs the forcerer prognofticates. They retain the worfhip of many Teutonic gods, and have among them confiderable remains of Druidical inftitutions. They believe in the tranfmigration of the foul, and have feftivals fet apart for the worfhip of certain genii, who, they imagine, inhabit the air, and have the direction and fuperintendence of human actions. A black cat is reckoned one of the moll valuable appendages in each houfe: they talk to it as to a rational creature, and in their hunting and fiflaing parties it is their ufual attendant. To this animal the Danifh Laplanders communicate their fecrets; they confult it on all important occafions; and among the Swedifl Laplanders, the drum is kept in every family for the purpofe of confulting the devil.

The account given by M. Maupertuis of the rigour of this climate, when he went to the polar circle to afcertain the real figure of the earth, deferves to be noticed in this article. He obferves, that in the month of December fpirits froze within their houfes; and if the door of a warm room were opened only for a moment, the external air inftantly 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 houfes were built, continually warn them by its contraction of an increafe of cold. In fpeaking of the atmofpheric appearances, and of the heavenly bodies; he fays, the brightnefs of the moonlight, the twinkling of the ftars, and the effulgent corrufcations of the aurora borealis, afford a light fufficient for moft of the occafions of life. No fwoner, fays he, are the fhort days clofed, than fires of a thoufand figures and colours light the fky, as if intended to make up for the abfence of the fun. Thefe lights are perpetually variable. Sometimes they begin in the form of a great fcarf of bright light, with its extrenities upon the horizon, which, with the motion refembling that of a fifhing-net, glides foftly up the Ney, preferving a direction nearly perpendicular to the meridian, and commonly after thefe 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 thefe meteors affume, and the various motions with which they are agitated. Their motion is moft 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 ftreamers of changeable filk. "I faw," fays the philofopher, "a phenomenon of this kind, that in the midit of all the wonders to which I was now every day accuftomed, excited my admiration. To the fouth a great fpace of 1 ky appeared tinged with fo lively a red, that the conftellation of Orion looked as if it had been dipped in blood. This light, which was at firft fixed, foon moved, and changing into other colours, violet and blue, fettled into a dome, the top of which ttood a little to the fouth-weft of the zenith. In this country, where there are lights of fo many different colours, I never faw
but two that were red, and fucli are always taken for prefages of fome great misfortune. It is not at all furprifing, if people, with an unphilofophic eye, difcover in thefe phenomena armies engaged, fiery chariots, and a thoufand other prodigies. To the enlightened and rational philofopher, Lapland every where prelents fubjects of reffection and contemplation: no arts flourihh here; we no where meet with temples, houfes, wrecks of columns, or of other monuments, but a fine opportunity is afforded of Itudying among the wandering tribes the firlt elemeats of focial life; of foriety in its moft ancient form." Acerbi's Travels into Sweden, Lapland, \&cc. Confett's Tour to Lapland.

## la PLATA. See La Plata.

LAPMARK. See Finmark.
LAPOUTI, a mountain of Afia, between Caflgar and Little Thibet.

LAPPA, in Botany, the Latin name for any kind of Lur, or feed that fticks to the coats of animals. See Arc* tium, Aparine, and Xanthium.

LAPPAGO, a name for the Galium Aparine, or Goofe-grafs, alluding to the bur-like nature of its feeds. (See Lappa.) It is now appropriated by Schreber to a particular genus of graffes; fee the next article.

Lappago, fo named by Schreber, on account of the bur-like afpect of the feed invefted with its muricated hunks. —Schreb. 55. Willd. Sp. Pl. v. 1. 484. Mart. Mill. Diet. v. 3. Sm. Prodr. Fl. Grac. Sibth. v. 1. 76. Ait. Hort. Kew. ed. 2. V. 1. 182. (Tragus; Hall. Hirt. vo 2. 203. Desfont. Atlant. v. 2. 386.)-Clafs and order, Triandria Digynia. Nat. Ord. Graminá, Linn.

Gcu. 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, feffile. Cor. of two valves, fmaller than the calyx, awnlefs, fmooth, membranous and whitifh; its glumes lan. ceolate, acute, concave; the outermolt oppofite to the calyx, ribbed, inner more delicate and but half the fize of the outer, embraced by the calyx. Nectary of two lanceo. late acute leaflets. Stam. Filaments three, capillary, the length of the glumes; anthers fhort, deeply divided. Pj/. Germen fuperior, ovate; ftyles two, capillary, rather hort; ftigmas cylindrical, feathery. Peric. none, except the per: manent corolla. Seed unconnected, elliptic-oblong, with a longitudinal furrow.

Eff. Ch. Calyx muricated, of one valve, fingle-fowered, ageregate. Corolla of two valves, awniefs.

The only known fpecies is
I. L. racemoft. Branching Bur-grafs.-Sm. Fl. Grec. Sibth. v. 2. t. 1or. Hoft. Gram. Auftr, v. 1. 28. t. 36. (Cenchrus racemofus; Linn. Sp. Pl. 1487. Schreb. Gram. v. I. 45. t. 4. Gramen caninum maritimum afperum ; Bauh. Prodr. 2. Theatr. 16.)-Native' of the fandy fea-fhores of the fouth of Europe, as well as of Arabia and India. It is a hardy annual with us, flowering in the warmeft part of the fummer. The root confifts of downy fibres. Stems numerous, a fpan high, jointed, unbranched, leafy, round, fmooth, decumbent and taking root at the bottom. Leares fpreading, lanceolate, very acute, flat, ftriated, fmooth, except the edge, which is fringed as well as toothed; the bafe is heart-haped ; the upper leaves are very fhort: fheaths rather fwelling, ftriated, fmooth, the upper ones longeft. Stipula fhort, fringed. Spikes terminal, folitary, two or three inches long, erect, cylindrical, obtufe, many -flowered, generally purpliitho and of an unufual afpect on account of the prickly hufks. Their common falk i6 hairy. Flowers three or four on cach little zig-zag partial ftalk, alternate, rather
rether difant, erect, the uppermof generally abortive. 'The lower part of the fpike is thin and flraggling.

LAPPANO, in Geography, a town of Naples, in Calabria Citra; four miles N. of Cofenza.

1. APPO, a fmall illand in the Baltic, between the coaft of Finland and the ifland of Aland. N. lat. $60^{2} 20^{\prime}$. E. long. $20^{\circ}+8^{\prime}$.-Alfo, a town of Sweden, in the government of Abo; 23 miles S. of Abo,-Alfo, a town of Sweden, in Eaft Bothnia, and government of Wafa; 37 miles E.N.E. of Wafa.

Iappo Jerfoi, a town of Sweden, in Eaft Bothnia; 60 miles S.E. of Wafa.

LAPPOJOCK, \& river of Eaft Bothnia, which runs into the fea, five miles below Ny-Karleby.

LAPPOREN, a fmall inand on the E. fide of the gulf of Bothnia. N. lat. $63^{\circ} 23^{\prime}$. E. long. $20^{\circ} .59^{\prime}$.

LAPPTRASK, a town of Sweden, in the province of Nyland; 21 miles N.E. of Bargo. N. lat. $60^{\circ} 37^{\prime}$. E. long. $26^{3} 12^{\prime}$.

LAPPULA, in Botany, a name given by fome to the great caucalis, or rough-fruited ftone-parfley, or baftard parnley.

LAPSANA, by fome written Lampfana, an old Latin name, ufually derived from $\lambda x m \%_{\text {c }}$, to purge or evacuate, on account of a fuppofed quality in the plant. Ambrofinus deduces it, by antiphrafis, from $\alpha \lambda \alpha j \mu \pi=$, defitute of fplendour, becaufe of the mean appearance of the herb.-Linn. Gen. 407. Schreb. 534. Willd. Sp. Pl. v. 3. 1622. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 842. Juff. 168. Tourn. t. 272. Lamarck. Illultr. t. 655. Grern. t. 157. (Rhagadiolus; Cæ\{alp. 51 r. Schreb. 534 . Willd. Sp. Pl. v. 3. 1625. Mart. Mill. Diet. v. 4. Juff. 168 . Tourn. t. 272. Lamarck. Illuftr. t. 655. Gærtn. t. 157. Koelpinia; Pallas. It. v. 3. 755.) -Clafs and order, Syrgenefia Polygamia-equalis. Nat. Ord. Compofice Semiflofculofe, Linn. Cichoracea, Juff.

Gen. Ch. Common Calyx ovate, fomewhat cylindrical, angular, of about eight equal, linear, keeled, channelled. acute fcales, with a few fmall imbricated ones at the bafe, all per. manent. 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 fhort ; anthers united into a cylindrical tube. $P \mathrm{i} / \mathrm{t}$. Germen rather oblong; ftyle thread-fhaped, as long as the ftamers; ftigma cloven, reflexed. Peric. none, except the permanent fcales of the calyx. Seeds folitary, oblong, angular, contracted at the top, upright or fpreading, dettitute of wing or down. Recept. naked.

Eff. Ch. Receptacle naked. Caly $x$ with fcales at the bafe, its inner fcales equal, channelled. Seeds without down, contracted at the top.

1. L. communis. Common Nipple-wort.-Linn. Sp. Pl. IT4I. Engl. Bot. t. 874. Curt. Lond. fafc. r. t. 59. Fl. Dan. t. 500.-Calyx of the fruit cloled, unchanged, fmonth. Seeds loufe. Stem panicled. - Frequent in wate or cultivated ground throughout molt parts of Europe, flowering in fummer. The ront is annual. Stem erect, two or three feet high, roundith, nearly fmooth, much branched in a panicled manmer, 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 ftalks. Seeds nearly flraight and erect, angrular and Ariated, furrounded by the dried, fmooth, permanent, fcarcely changed calyx, but unconnected with it, and at length falling out, leaving it empty. 'This plant is faid to be called Papillaris, in Pruffia, a name fynonymous with. Nipple-wort; becaufe it is faid to cure ulcerated breafts.

A varicty of this, with the margins of its leaves curlett. and more deeply as well as unequally touthed, is L. crijpa of Willdenow, laid by him to contimue conftant from feed. Linneus confidered it a variety, nor do we find reafon tor fwerve from that opinion.
2. L. Mellata. Starry Nipplcowort-Linu. Sp. P1. 14 11. Gaertn. v. 2. 354. (L.n. 3; Gerard. Gallopr. 175. Kagadiolus itcllatus; Willd. n. ィ. Ragadiolus altera; Celalo. 511. Hicracium ftellatum; Bauh. Hif. v. 2. borq. II. narbonenfe falcatum ; Lub. Ic. 2q0. H. falcatum Loobelii; Ger. em. 298.) -Seeds awl-fhaped, fpreading, fomewhat incurved, embraced by the muricated calyx-fuales. Stem widely fpreading. Radical leaves obovate, fomewhat runcinate. - Native of the fouth of Europe. Reab annmal. Stoms feveral, widely fpreading or decumbent, branched. Leaves thin and nearly finooth, except a little roughnefy about the edge; the lower ones obovate, rather acute; taperings and nearly entire at the bafe; more or lefs rancinate about the middle, with numerous Gharp teeth, each tipped with a little pale callous point: the upper leaves are linear-lanecolate, undivided and nearly entire. Flozvers fmall, yellow, (w) long fpreading ftalks. Calyx rough with minute afcending brittles or prickles. Perfect feeds generally cight, $\frac{3}{4}$ of an inch long, widely fpreading in the form of a ftar, awl-fhaped. flender, fmooth, each embraced by one fcale of the calys, which rather exceeds it in length, and is externally rough with little prominent prickles, efpecially towards the point. About two or three very much incurved, fmaller, apparently abortive feeds are found in the centre, each in like manner invelted with its rough calyx-fcale. All the feeds, as well a: the calyx, ale firmly united together to the tumid receptacle, which they entirely cover, till they are loofened by time or accident.

We unite, without the leaft fcruple, the L. Jellata and L. Rbagadilus of Linnæus as one fpecies, on the authority of his own fpecimens, as well as that of his and our learned friend Gerard. They differ only in having more or lefg tonthed radical leaves. Every other part precifely accords. Whether the two following be ciftinct from this now defcribed may admit of fome doubt, but we are perfuaded they are fo.
3. L. Rbagadiolus. 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. ${ }^{2} 6$ ? Rh. alter: Tourn. Inft. 480. t. 272 . Rh. fig. I. Lamarck Illultr. t. 655. Ragadiolus; Cxfalp. 5 II.)—Secds few, awl-fhaped, widely fpreading, fomewhat recurved, embraced by the fmooth calyx-fcales. Stem fpreading. Ra, dic 1 leaves deeply runcinate, with rounded lobes.- Native of the fouth of Europe. We have garden fpecimens, named L. flellata, from Mr. Davall. The radical leaves are decply and regularly pinnatifid in a lyrate manner, with two or three pair of oppolite lobes, all rounded and blunt like the terminal one, but each tipped neverthelefs, as in the former, with a little callous or glandular point. The calyx is perfectly imooth, beth in flower and fruit. Perfect feeds ge. nerally but four, fhorter and thicker than in the laft, coloured, recurved, or, as Scopoli obferves, deflexed, well compared by Cxfalpinus to a bird's foot, from which de. fcription and Tournefort's figure there can be no doubt of this being the plant both thefe authors meant, though Tournefort appears to have reverfed the two fpecies of Cæfalpinus; and hence perhaps arofe the almolt inextricable confufion among following authors. Linnæus could not correct this, as he never faw but one fpecies. We believe the two to be truly diftinct. The refemblance of the radical leaves of the prefent to $I_{\text {. }}$ communis, makes us retain the

[^1]Q 4
fynonym
fynonym of Tournefort's Corolla, though with a mark of doubt.
4. L. Koelpinia. Lincar-leaved Nipple-wort.-Linn. Suppl. 348. (Kotlpinia linearis; Pallas It. v. 3. 755. t. L, 1, f. 2. Kbagadiolus Koclpinia; Willd. n. 3.)Seeds numerous, awl-haped, fpre:ding, incurved, enbraced by the muricated calyx-fca'es. Leaves all linear-lanceolate, entire. - Found by Pallas in only one moilt valley, by mount Bogden, in the defert of Altrachan. We have a wild fpecimen from Alcppo, given by fir Jofeph Banks. It flowers in the middle of May, ripening feed by the end of the month. The yellow blofloms open to the morning fun, and clofe at noin. This is a very flender plant, with a fmall annual root. The fensis are from ten to cighteen inches long, fcarcely branched, loofely fpreading, fnooth; fquare and furrowed towards the top. Leares diftant, all linear lanceolate, acute, entire, pliable, fmooth, obfcurely three-ribbed. Flowers folitary, on thort fcattered ftalls, from the very root to the extremity of cach ftem. Calyx clothed with incurved prickles. Ripe feeds numerous, about twelve or fourteen, fpreading from their bafe, but ftrongly incurved, each invelted with one of the calys-fcales, whofe numerous, incurved, hooked prickles are much more remarkable than in either of the two laft, fome of them forming a recurved ftar at the top of each feed. This fpecies is more akin to L. Acelloda perhaps than any other, but the characters given above feem fufficient to keep them ditinct. Pallas fuggefted the propriety of feparateng the three laft-defrribed fpecies from Lapfana, by the name of Koclpinia; fee that article. - Whether they ought to form a genus, is, to us at leait, doubtful. Schreber has agreed with Pallas if this point, only properly preferring the name of Rbagadiolus for the genus, as given by Ceffalpinus and Tournefort, and correetly derived from jayss iacalos, a cleft or fiffure, whether it alludes to the reputed virtues of thefe plants in healing cracks of the fkin , or to the cut (or flar-like) afpect of the feeds. In habit they fufficiently accord with the original Lapfana, and the difference in the pofition of the ripering feeds is their only difitinction. We ought rather perhaps to admire the fagacity of Linnous in perceiving their agreement, than the ingenuity of thofe who have diftinguifled then. Pallas himfelf, with great modefty, merely fubmits his opinion to the decifion of thofe who take the lead in botany. In the fame uncertainty we wifh now to leave it.L. Zacyntha feems to be feparated from the relt with more propriety, as its feeds have a feathery crown, and the nature of the torofe calyx is more like that of Crepis. Juffieu includes it under his genus Hedypnois; fee that article.

Three much more dillimilar plants are ranged under Lapfana by Willdenow. Thefe are Hyoferis factida and minima of Linnæus, with L. virgata of Desfontaines, Fl. Atlant. v. 2. t. 215.-The firlt is on the awthority of Haller and Scopoli, who fay the feeds are without down. We have never feen them, but the ftemlefs 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 overfet by its admiffion.-Hyoferis minima, Gxrtner's Arnoferis, t. 157, is indeed lefs unlike in habit, though temleis; but the feeds have an elevated border, and do not agree with Lat fana.

The third, virgata, has fo great a number of florets as to take off an importan: part of its generic affinity, and its habit is more like an Hedypnois. "Having feen no fpecimen, we can decide nothing as to this fpecies. It is neceffary 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
a crown, and contracted at the fummit, as in the true fpecies of Jajfana. S.
LapSARII. Sce Infralapsarit, Sublapsami, and Suphalapsamid.

LAPSE, in Lazt, a flip or omiffion of a patron to prefent a clerk to a bencfice within fix months of its teing void: in which cafc, the bencfice is faid to be in lapfe, or lapfed, and the right of prefentation devolved to the ordinary.

And if the ordinary recglect 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 lapfo was firt eflablifhed in the reign of Henry II., when the bifhops firit began to exercife univerfally the right of inflitution to churches (Bract. 1. 4. tr. 2. c. 3.) : and therefore, when there is no right of intitution, there is no right of lapfe; fo that no donative can laple to the ordinary, unlefs it hath been augmented by the king's bounty (it. I Geo. I. It. 2. c. 10.); but no right of lapfe can accrue when the original prefentation is in the crown. (St. I7 Edw. II. c. 8. $2 \operatorname{Int} .273$.) In cafe 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 cafe of a vacancy by relignation, or canonical deprivation, or if a clerk prefented be refufed for infufficiency, thefe being natters of which the bilhop alone is prefumed to be cognizant, here the law requires him to give notice thereof to the patron; otherwife he can take no advantage by way of lapfe. (4 Rep. 75. 2 Inlt. $6 \mathbf{3}_{2}$.) Neither fhall any lapfe accrue thereby to the metropolitan or the king. If the bifhop refufe or neglect to examine and admit the patron's clerk, without good reafon afligned or notice given, he fhall have no title to prefent by lapfe (2 Roll. Abr. 639 .) ; and if the right of prefentation be litigious or contelted, and an action be brought againft the bifhop to try the title, no lapfe fhall occur till the queftion of right be decided. (Co. Litt. 3+4.) If the bifhop be both patron and ordinary, he fhall not have a double time allowed him to collate in (Gibf. Cod. 769.) ; and if the bithop 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 bihop is bound to intitute the patron's clerk. (2 Inft. 273.) If the bifhop fuffer the prefentation to lapfe to the metropolitan, the patren alfo has the fame advantage if he prefents before the archbithop has filled up the benefice: yet the ordinary cannot after lapfe to the metropolitan, collate his own clerk to the prejudice of the archbifhop. (2 Roll Abr. 368.) But if the prefentation lapfes to the king, the patron fhall never recover his right, till the king has fatisfied his turn by prefentation; for nullum tempus occurrit regi. But to prevent the inconvenience of the church's continuing void for ever, unlefs the king fhall be pleafed to prefent, 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 prefent, the pation himfelf prefents, 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 firt prefentation. 7 Rep. 28. Cro. Eliz. 44. Blacklt. Com. vol. ii.

## Lapsed Legacy. See Legacy.

LAP-SIDED, in Ser Language, denotes the fate of a mip, which is built in fuch a manner as to have one fide heavier than the other, and confequently to retain a conftant

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heek or tendency toward the heaver fide, unlefs when flue is brought upright by placing a greater quantity of the cargo or ballatt on the other fide.

LAPLANA, in Geograghe, a town of Prufia, in the province of Samland; 10 miles N. of Koniglberg.

LAPTCHOUT-HOTUN, a town of Alia, in the country of Hami ; 30 miles W. of Hami-Hotun. N. lat. $43^{\circ}$. E. long. $92^{\circ} 48^{\circ}$.

LAPUSZNA, a town of European Turkey, in Moldavia, near a river of the fame name; 50 miles E.S.E. of Jelfi.

LAPWING, Capmlla, in Ornithology, the blackbrealted tringa, with a hanging creft, or Tringa vanellus of linnæus, commonly known in England by the name of lap. wing or baftard plover, and called by fonse, in Latin, vanellus. See Tringa.

Were the lapwing lefs common, it would be highly efteemed for its beauty. It is very frequent in our femy countries, and in the wet places of molt other parts of Europe.

I: lays four eggs, of an olive caft, fpotted with black, in a night 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 condiderable dittance from their neft, to elude purfuers, and to become more clamorons when moft remote from it. The eggs are much valued for their delicacy, and are fold by the London poulterers for three fhillings per dozen. In winter, lapwings join in large flocks, and are very wild; their flefh is very good, their food being infects and worms. During Octaber 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 Pennant.

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 antagonit, and in the vther a poignard to itab him.

LAQUER. See Lacquer.
LAQQUEUS, in Surgery, a noofe or frare; or a kind of ligature, fo contrived, that when ttretched, by any weight, or the like, it draws up clofe.

It is ufed to extend broken or disjointed bones, to keep them in their places, when they are fet, and to bind the parts clofe together.

LAQUILO, in Geography, a fmall inland in the Mediterranean, near the coalt of Murcia, about 3 miles S.E. of Almaçaran.
-LAR, or Latar, a city of Perfia, and capital of Lariftan, fituated on a fandy foil, amidf barren mountains; but the gardens, of which each houfe has one, abound with dates, an excellent fruit, which particularly profpers in this part of Perfia. The houfes are low, and in the time of Chardin were about 200. The city alfo contains bazars, mofques, 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 diftance from the city, is found the fubltance called "Mummy ;" I20 miles W. of Ormus. N. lat. $27^{\circ} 20^{\prime}$. E. long. $54^{\circ} 10^{\prime}$.

LARA, a town of Spain, in Old Caftile, on the Arlenza; 33 miles S.S.E. of Burgos.

LARACHA, or Larsche, a fea-port town of Africa, in the empire of Morocco, on the river Luccos, near the Atlaatic

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ocean. 'I'he environs are interfected by woods and marffen. A fort, built by the Spaniards, on the land fide, flill remains, and the cattle on the fide of the road is defended by batteries, which lie clofe to the water's edge. The river is of good depth; and fome commerce was formerly carried on in this place by the Europeans; but in the year 1780, the emperor complled the merchants to retire. The large veffels of the emperor ufually winter here; but there are no docks for fhip-building. The road of this harbour is infecure in winter, but it is free fron danger between the beginning of April and the end of September; 33 miles S. of Tangiers. N. lat. 34 ' $58^{\prime}$. W. long. 6 2. Cherier's Murucco, vol. i.

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 diftrict of Gap; 9 miles S.S.E. of Serres. The place contains 664 , and the canton 3673 inhabitants, on a territory of $192 \frac{\mathrm{r}}{2}$ 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 authors it is united with Pifidia and Ifauria.

LARASSA, a town of Afia, in Media, not far from Ecbatana. Ptol.

LARBOARD, in Sea Language, the left-hand fide of the fhip, looking forward from the fern.

LARBORUM, in Ancient Geography, an epifcopal town of Afia, in Caria.

Larceny, or Larciny, in Lazu, is a theft of perfonal goods or chattels, in the owner's abfence. See Theft.

The word comes from the French larcin; and that from the Latin latrocinium, theft.

Larceny is dittinguifhed by the law into two forts; the one called fimple larceny, or plain theft, unaccompanied with any other atrocious circumftance; and mixed or compound larceny, which includes in it the aggravation of taking from one's houfe or perfon.

In refpect of the things itolen, fimple larceny is either great or fraall.

Larceny, Great, Grand, is when the things Itolen, though feverally, exceed the value of 12 d .

Larceny, Pefty, or Peftit, is when the goods folen exceed not the value of $12 d$.

Simple larceny is defined the felonious taking, and carrying away, the perfonal goods of another: fo that in order to conflitute this crime, there mult be a tuking, which implies the confent of the owner to be wanting; and therefore no delivery of the goods from the owner to the offender, upon truit, 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 trult : but by flatute 21 Hen. VIII. c. 7. if any fervant embezzles his mafter's goods to the value of 40 s. it is made felony, except in an apprentice and fervants under eighteen years old. But. if he had not the poffeffion, but only the care and overfight of the goods, as the butler of plate, the fhepherd of fhcep, 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 mafters againit embezzlements by their clerks or fervants," it is enacted and declared, that if any fervant or clerk, or any perfon employed for the purpofe in the capacity of a fervant or clerk, to any perfon or perfons whomfoever, ce to any body corporate or politic, fall, by virtue of fuch em-
ployment, reccive or take iuto his poffeffion 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 thall fraudulently embezzle, fecrete, or make nuay with the faune, or any pare theriof; every fuch offender fhall be deemed to have felonioully Itolen the fame; although fuch money, goods, dxe, was or were not otherwife received into the polfefion of fuch maller or matters, \&cc. than by the actual poffeffion of his or their fervant, clerk, or other perfon fo employed. And every fuch offender, his advifer, procurer, aider, or abettor, bcing thereby lawfully convicted or attainted, thall be liable to be tranfported to fuch parts \$cc. for any term not exceeding fourteen years, in the difcretion of the court befure whom he fhall be convicted or adjudged. Several ftatutes have alfo, at various times, paffed to protect public companies from depredations by their officers and fervants; as 15 Geo. II. c. 13. f. 12. with refpect to thofe of the bank of England, rendering cmbezalement a capital felony; 35 Geo. 111. c. 66. f. 6. and 37 Geo . III. c. $4^{6}$. touching certain annuities payable at the baik of England, and contaming the fame provifions as the. 15 Geo. II. c. 13. f. 12 . The 24 Geo. II. c. II. f. 3. contains the fame provifions refpecting the officers and fervants of the South Sea houfe. So if a gueft robs his inn or tavern of a piece of plate, it is larceny (i Hawk. P. C. go.); and fo it is declared to be by 3 \& 4 W. \& M. c. g. if a lodger runs away with the goods from his ready furnifhed lodgings. There muft alfo be a carrying azway; and a bare removal from the place in which be fomind the goods, though the thief does not quite make off with them, is fufficient. But this mult be felonious, i. e. done animo furandi, or, as the civil law exprelles it, lucri coula. (Inlt. 4. f. 1.) The ordinary difcovery of a felonions intent, is where the party doth it clandeftincly, or, being charged with the fact, denies it: befides which, there are other circumftances that evince a felonious intent, which are left to the confideration of the court and jury. Moreover, this felonious taking and carrying away mult be of the perfonal goods of another. Of things that adhere to a freehold, as corn, grafs, trees, and the like, or lead upon a honfe, no larceny could be committed by common law ; but the feverance of them was, and in many things is atill, merely a trefpafs: however, if the thief fevers them at one time, whereby the trefpafs is completed, and they are converted into perfonal chattels, in the conAtructive poffeffion of him on whofe foil they are left or laid, ald 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 Intt. 109. I Hal. P. C. 5 10.) And by 4 Geo. 1I..c. 32. to Ateal, or fever with intent to fteal any lead or iron fixed to a dwelling-houfe, or out-houfe, or in any court or garden belonging to it, is made felony, liable to tranfportation for feven years. And by 21 Geo. III. c. 68. he who fhall fteal, rip, cut, break, or remove, with intent to fteal any copper, brafe, 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, \&cc. and alio his aiders and abettors, and all who fhall knowingly buy or receive the fame, fhall be guilty of felony, and tranfported for fevens years, or detained in prifon and kept to hard labour, not exceeding three years, nor lefs than one, and within that time, if the court fhall think fit, fhall be once or oftener, but not more than thrice, publicly whipped. Moreover, to fteal 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. \%. 15 Car. II, c. 2o $3^{1}$ Geo. II. c. 25. 6 (yeo. IIl. c. $4^{8 .}$. 2 Geo. III. c. 4 r. ${ }_{13}$ Geo. 111. c. 32. punifhable criminally by whipping, fmall fines, inprifitonment, and fatisfaction to the party wronged, according to the mature of the offence. Moreover, the ftealing by night of any trees, roots, fhrubs, or plants; to the value of 5 s. is by 6 Geo . III. c. 36 . made felony in the principals, aiders, and abettors, and in the purchafers knowing the fame to be folen: and by 6 Gco . III. c. 48 . and 13 Geo. III. c. 13. the flealing of any timbertrees, as oak, beech, chefnut, walnut, afh, clm, cedar, fir, afp, lime, fycamore, birch, poplar, alder, larch, maple, and hornbeam, and of any root, fhrub, or plant, by day or night, is liable to pecuniary penalties for the firlt two offences, and for the third is conflituted a felony, liable to tranfporsation for feven years. Stealing ore out of mines is no larceny, except the ftealing ore out of mines of black lead, which is felony without benefit of the cler ry by 25 Geo. II. c. 10. Stealing of writings relating to a real ellate is no felony, but a trefpais (s 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 fame footing with refpect to larcenies, as the money they were defigned to fecure. And by 7 Geo . III. c. $5^{\circ}$. if any officer or fervant of the pot-office fhall fecrete, embezzle, or deftroy any letter or packet, containing any bank-note, or other valuable paper, fpecified in the act; or fhall fteal the fame out of any letter or packet, he fhall be guilty of felony without benefit of clergy. Or if he fhall deftroy any letter or packet with which he has received money for the poitage, or advance the rate of poitage, and fecrete the money, he flall be guilty of fingle felony. By 26 Geo. II. c. 19. plundering or ttealing from any fhip in diftrefs, whether wreck or no wreck, is felony, without benefit of clergy. For the laws relating to firh and game, fee Slealing of Fish and Game.
Of all valuable domettic animals, as horfes, and of all aninals, domita nature, which ferve for food, as fwine, fheep, poultry, and the like, larceny may be committed; and alió of the Hefh of fuch as are firce 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 unkrown, provided there be a property, it is larceny to fteal it; and an indictment will lie, for the goods of a perfon unknown. (I Hal P.C. 512.) This is the cafe of flealing a flroud out of a grave; which is the property of thofe, whocver they were, that buried the deceafer, but ltealing the corpfe itfelf, which has no owner, (though a matter of great indecency, ) is no felony, unlefs fome of the grave clothes be ftolen with it.

By the Roman law, the penalty of fimple and fecret larceny was the returning it two-fold; and of manifef larceny four-fold: manifell larceny was, where the crimimal was taken in the fact ; fimple, where he was not. The Lacedxmonians ncver punifhed larceny provided the perfon was not caught in the fact, but, on the contrary, it was applauded as a mark of dexterity and addrefs. See Lactdismonians.

The laws of Draco at Athens, which are faid to be written in blood, punifhed it with death; but Solon afterwards changed the penalty into a pecuniary mulct: and fo the Attic laws in general continued. By the Jewifh law, theft was only punifhed with a pecuniary fine, and fatisfaction to the party injured. (Exod. chap. xxii.) From thefe examples, as well as the reafon of the thing, many learned and icrupulous men have queftioned the propriety, if not law.
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fulnefs, of inflicting capital puninment for fimple theft; and propofed either a pecuniary or a corporal punithment. Sir Thomas More in his Utopia, p. $4^{2}$. and more lately the marquis Becearia, Efr on Crimes and Punihments, chap. axii. have propofed that kind of corporal punifherent, which approaches neare? to a pecuniary fatisfaction, viz. a temporary imprifonment, with an ohligation to lalyour, firlt for the party rubbed, and afterwards for the public, in works of the mo!t flavih kind: neverthelefs the pummment of theft Atill continues, through the greatelt part of Europe, to be capital. Puffendorf (Law of Nat. 1. 8. c. 3.) and fir Matthew Hale (I Hal. P. C. I3.) are of opinion, that this mult be always referred to the prudence of the legifisture; yet both writers agree, that fuch pumifhment hould be cautioufly inflicted, and never wi:hout the utmolt neceffity. It is obferved, that our ancient Saxon laws nominally punithed theft with death, if above the value of I2d. but the criminal was permitted to redeem his life by a pecuniary ranfom: as, a:nong their anceftors the Germans, by a thated number of cattle. (Tacit. de Mor. Gerin. c. I2.) But in the ninth year of Heary I. this power of redemption was taken away, and perfons guilty of great larceny directed to be hanged, which law continues in force to this day. (i Hal. P. C. iz. 3 Init. 53.) See Felony. Pefif larceny hy common law is only punifhable by whipping or imprifonment. (3 Inlt. arso) Or, by 4 Geo. I. c. 1r. the punifment may be extended to tranfportation for feven years; but the punithment of grand larceny, or ttealing above the value of 12d. which fun was the Itandard in the time of king Athelftan, eight hundred years ago, is, at common lax, regularly death : upon which fir Henry Spelman obferved, above a century fince, when money was at twice its prefent rate, that while every thing elfe was rifen in its nominal value, and become dearer, the life of man had continually grown cheaper. And though the jury may exercile a kind of unwarrantable clemency, by bringing in larceny under the value of 12 d . and the benefit of clergy is allowed for the firl offence; yet in many cales of fimple larceny this is taken away by the ftatute: as from horic-llcaling (i Edw. VI. c. 12. 2 \& 3 Edw. VI. c. 33. 31 Eliz. c. 12. ), taking wool-len-cloth from of the tenters (ttat. 22 Car. II. c. 5.), or linen, fultians, calicoes, or cotton goods from the place of manufacture ( 18 Geo. II. c. 27 .), itealing theep or other cattle fpecified in the acts (I4 Geo. II c. 6. I5 Geo. II. c. 34 ), thefts on navigable rivers above the value of fos. ( 24 Geo. II. c. 45.), plundering veftels in difzefs, or that have fuffered fhipwreck (I2 Ann. ftat. 2. c. 18. 26 Gco . II. c. 19), Tealing letters fent by the poit ( $7 \mathrm{Gco}. \mathrm{III}. \mathrm{c}. \mathrm{50),}$. and Healing deer, hares, and conies under the circumitances recited in the Waltham Black act, ftat. 9 Geo. I. c. 22.

The Circaffians are faid to honour theft at this day ; infomuch that at their public fealts, their youth are not fuffered 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 difcovering a perfon that had committed larceny-

Compound or mixed larceny is that, which, befides all the properties of the former, has the aggravation of taking from one's houfe or perfon. With refpect to larceny from the houfe, fee Burglary and House-breaking.

It may be here obferved, that the benefit of clergy is denied: 1. In all larcenies above the value of $12 \%$. from a church, or from a dwelling-houfe, or both, any perfon being therein. 2. In all larcenics to the value of 5 s . committed by breaking the dwelling houre, though no perfon be thersin. 3. In all larcenies to the value of 40 . from a dwelling-houfe, or its out-houfes, without breaking in, and
whether any perfon be therein or no. 4. In all larecries to the value of $\bar{j}^{5}$. from any fhop, warehoufe, coach-houte, or ftable, whether the fame be broke open or not, and whether any perfon be thercin or no: whether thefe offences are committed by day or by night.
Larceny from the perfon is citlier by privately nealing; or by open and violent alldult, ufually called rolbery. The offence of privately Healing from a man's perfon above the value of $12 d$. as by privately picking his pocket or the like, without his knowled de, was debarred of clergy, fo early a ; by the flatute \& Fliz. c. I4. For the other kind of larceny foom the perfon, fee Rorbery. See alfo Felony.

Perluns who buy or recetive any ftolen goods, knowing the fame to be ftolen, fhall be deemed acceffaries after the fact: 3 W. c. 9 ; and by 4 Geo. c. nt they may be tranfo ported for fourteen years: and by 5 Ame, c. 3 t . fuch perfuns, and thofe who conceal any felons or thieves, fhall be deemed acceffary to the felont, and beng convicted on the tellimony of one witnefs thall fuffer death as a felon convict: but within clergy. If the principal felon cannot be taken, fo as to be profecuted and consicted, yet the buyer and receiver of tholen goods may be profecuted for a mildeme fnor. and punifhed by ine and imprifonment, or other fuch corpo: ral punilhment as the court flall think fit; which fhall exempt him from being punifhed as acceffary, if the principa? Thail be afterwards tuken and convicted. Receivers of atolens lead, iron, copper, brafs, bell-metal, and folder, fixed to or being in any houfes, out-houfes, mills, \&c. fhall, on conviction by due courfe of law, although the principal hath not been convicted, be tranfported for fourteen years. Sufpected places may be fearched, and fufpected perfons may be apprehended, and carried before two juftices, and if the perfon from whom the goods were received be not produced, or fome credible wituels do not depofe upon oath the fale or delivery of them, or roo fatisfactory account of them be given, they fhall be adjudgred guilty of a mifdemefnor. Every perion, to whom fuch geods fhall be offered for fake, or to be pawned, fhall apprehend the perfon offering them: and if it fhall appear, to the fatisfaction of two jultices, that fuch perfon did not apprehend, \&ec. the perfon who brought or offered the fame, then he fhall be acjudged guilty of a mifdemefor. And perfons for the two former mildemefnors, in having or carrying any of the faid goods, fhall forfict for the firit offence yos., for the fecond $4 \%$, and for ciery fubfequent offence $61 \%$; and for rot carrying a fuipectel perfua before a jultice, he fhali forfeit for the firt offence 20s., for the fecond 405., and for every fubfequent effence 4\%. ( 29 Geo. II. c. 30 ) By 21 Geo. ©I1. c. 69, every perfon who Shall buy or receive any pewter put or other vellel, or any pewter, knowing the fame to be ftolen os unlawfully come br, or thall privately buy or receive any tholen pewter, he thall, though the principal perfon be not convicted, be tranfported not exceeding: feven years, or detained in prifon and kept to hard labour not more than three years nor lefs than one; and within that time be once or oftener, but not more than thrice, publicly whipped. Perfons offering for pawn or fale goods fufpected to be itoler, may be feized and conveyed by a conilable or other peace officer before a juftice, who may commit them for any tirse not excceding fix days for examination, and afterwards, if the goods were itolen or clandefo tinely obtained, to the common gaol or houfe of correation. ( 30 Geo. II. c. 24.) Perfons advertiling a reward for helping to folen goods, and alfo the printer and publiher of fuch advertifement, fhall refpectively forfeit 50 . with colts ( 25 Geo. II. c. 36.). And by 4 Geo. c. 110 thofe who receise fuch reward, without apprehending the felso and bringing

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him to trial, flall be guilty of felony in the fame manner as if they had tolen the fame. The charges of profecution and conviction, in refpect of any grand or petir larceny, may, by order of court, and at the prayer of the profecutor, be paid by the county treafurer, with a reafonable allowance for his time and trouble.. ( 25 Geo. II. c. $3^{66}$.) And by 18 Geo. III. c. 19, the fame charges fhall be allowed to the profecuter, whether the perfon tried be convicted or acquitted, provided that in this latter cafe it fhall appear to the court that there was reafonable ground of profecution, and that the profecutor had bond fide profecuted. And by ${ }_{27} \mathrm{Geo}$. II. c. 3. 18 Geo. 11I. c. 19. reafonable charges may be allowed and paid in the fame mamer, to a poor perfon who is required to give evidence: in Middlefex thefe charges fhall be paid by the overfeers of the poor where the perfon was apprehended. It is provided by flatute, that every perfon who thall apprehend any one guilty of houfebreaking or private ftealing, to the value of $5 s$. and profecute him to conviction, and all the executors or adminiftrators of a perfon flain in endeavouring to apprehend a houfebreaker or felon, fhall have a certificate without fee, under the hand of the judge, certifying fuch conviction, \&cc. which certificate fhall 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 affignee of the fame, thall be difcharged from all parihh and ward offices, within the parifh or ward where the felony was committed. (Io \& 11 W. c. 23.) Every fuch perfon, and alfo the executors and adminiltrators of a perfon killed as before, fhall alfo have another certificate, which, on being tendered to the fheriff, and demand made, fhall entitle him to the fum of 401 . without fee, in one month after the tender and demand; on pain of forfeiting double with treble colts. ( 5 Anne, c. 31.) See Discoveri of Accomplices.
'The fheriff, 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 flall be repaid out of the treafury, on certificate from the clerk of the pipe; or he ray immediately apply to the commiffioners of the treafury, who fhall pay the fame without fee. 3 Geo. c. 15 .

LARCH-Tree, Lariz, 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 iittle knots or tubercles, in the form of a painter's pencil; the cones are produced at remote diftances from the male Howers on the fame tree; the flowers are very like friall cones at their firlt appearance, but afterwards ftretched out in length. Thefe trees are propagated by feeds, which fhould be fown in the beginning of March, upon a bed of light foil, expofed 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 expofed to it. The feed fhould be covered about half an inch thick with fine light earth, and in very dry weather fhould be gently refrefhed with water. In about fix weeks, if the feeds be good, the plants will come up, at which time they fhould be carefully guarded againft rapacious birds, which would otherwife pull off the heads of the plants, as they thrult themfelyes out of the ground with their covers on them; and refrefh them with water in dry weather, efpecially if they are fown in pots or boses; alfo keep them clear from weeds, which, if fuffered to grow among the young plants, will foon deftroy them. In October, if they are in boxes or pots, remove them into a fituation where they may be defended from fharp winds,
which are fometimes hurtful to them, while young ; but afterwards they will endure the fevereft weather of our climate. Thefe trees are very proper for the fides of barren hills, where few other forts will thrive fo well; nor are they very delicate in regard to foil, but will grow much better on poor, ftrong, forny land, than in rich ground; during the fummer, they appear very beautiful; but in autumn they calt their leaves, and are not evergreen like the fir.

It has been obferved in the fifth volume of the Annals of Agriculture, that "larix wood is poffeffed of fo many valuable qualities, that to enumerate the whole would appear an extravagant hyperbole. It is known to refint water, without rotting, almoft for ever. The piles of larix timber on which the houfes of Venice were built many hundred years ago, when examined, are ftill found as frefh as when firlt put in. And he has been told, ftakes of it have been tried in the decoys of Lincolnfhire, which, between wind and water, have already out-worn two or three fets of oak fakes, and do not yet difcover any fymptoms of decay. It is alfo known to poffefs the valuable quality of neither fhrinking 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 ftill perfectly entire, fufficiently prove. Experiments have not yet afcertained whether it will refilt the fea-worm in tropical climates, like the Bermuda cedar; but there is reafon to think it would, as, in many of its other properties, it refembles that wood very much. Along with thefe valuable properties, it is known to be one of the quickent 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 fpread over a great extent of mountains, if fufficiently bare of herbage, at sext to no expence, by the natural fhedding of its feeds, like birch or fir in foils that favour them, merely by leeping out cattle from thofe fields in which fmall clumps of this kind of wood had been planted fome years before. In this way very extenfive tracts in the condition juit defcribed might be entirely filled with this valuable timber. The ufes to which it might be applied are innumerable. It would be valuable not only for fhip-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-ttaves it would be inimitable, ond would enable us to furnihh that article as cheap as any other nation whatever; and in building it would anfiver all the purpofes to which fir is now applied, being much itronger and more durable than that wood. And wher it is alfo adverted to, that it is nest to incomburtible, the reader will not think it ftrange that he in this manner fo ftrongly recommends it to the attention of his countrymen, particularly thofe in the moft rugged and barren diftrits; for, in fuch fituations, it would be eafy to fhew, that, at a very trifing charge, they might, in a fhort period of years, bring their eftates 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 adurit of proportionable improvement. See Planting.

The common cone-bearing larch-tree grows naturally upon the Alps and Apemnines, and has been lately much propagated in England. Thofe trees raifed from feeds thrive beft in the worlt foil and fituation. There are two varieties of this tree, one of which is a native of America,

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and the other of Siberia; neither of which thrive well in this climate. In Switzerland the wood of the commen larch-tree is ufed for building and covering the houfes; and in other countries, where it abounds, it is preferred for every purpofe to all the kinds of fir. In many places there are thips built of this wood, which are faid to be durable; and, therefore, this may be a very proper tree for planting upon fome of the cold barren hills in many parts of Eng. land, which, befides the profit they would yicld to their proprietors, would allo conduce to national benefit. The Venice turpentine is extratted from the larch-tree. Sce TurwENTIVE.

LARCHE, in Geography, a town of France, in the department of Correze, and chief place of a canton, in the diftrict of Brives. The place contains 569 , and the canton $66_{79}$ iuhabitants, on a territory of 135 kiliometres, in nine commumes.
LARCIANO, a town of Eitruria : five miles S. of Piloia.
LARDNER, NAThaNicl, in Biography, was' born at Hawkherti, in the county of Kent, on the Gth of June, 168 \%. He probably received his grammatical learning at Deal, which was his father's refidence, and where he was pattor of a congregation of Proteftant Diffenters; and from fchool he was removed to a diffenting academy in London, under the care of the Rev. Dr. Johua Oldfield ; but after flaying here a fhort time, he was fent, in the ycar 1699, and when he was only in his fixteenth year, to profecute his fludies at Utrecht, under profeffors D'Uries, Grevius, and Burman. In his journey he was accompanied by Mr. Martin Tomkins, and on their arrival they found there Mr. Daniel Neal. After fpending fomewhat more than three years at Utrecht, Mr. Lardner removed to Leyden, where he ftudicd about fix months. In 1703, he returned to England, and from this time to $1 \% 09$, we have no memorials concerning him. In the laft mentioned year he preached, for the firlt time, at Stoke Newington, from the words of the Aportle Paul, "For I am not athamed of the gofpel of Chritt," \&c. "There could not," fays his biographer, the excellent Dr. Kippis, "have been a more proper text, for a man who was deflined, in the order of divine providence, to be one of the ableft advocates for the authenticity and truth of the Chriftian revelation that ever exifted." In I7 $_{7} 3$, Mr. Lardner undertook the tuition of Mr . Brindley Treby, fon of fir George Treby, knt. late lord chief juftice of the common-pleas. Having conducted the ftudies of the young man, about three years, in lady Treby's houfe, where he was domeftic chaplain, he accompanied him in an excurfion into France, the Autrian 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, lafted, but he continued to refide in the houfe till the died, in 1721. In 1723, Mr. Lardner was engared with a number of minitters, in carrying on a courfe of lectures, on a Tuefday evening, at the Old Jewry. The gentlemen who conducted the fe lectures preached a courfe of fermons on the evidences of natural and revealed religion. The pronf of the credibility of the gofpel hiltory 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 firlt part of the Credibility. In 1727, he publifhed, in two volumes octavo, the firlt part of "The Credibility of the Gofpel Hiftory ; or the facts occafionally mentioned in the New Teftament, confirmed by paffages of ancient authors who were contemporary with our Saviour, or his Apoftles, or lived near their time." This has been efteemed by perfons of all parties an invaluable performance, that has rendered the molt eflential fervice to the caufe of

Chriftanity. It has paffed through feveral editions. $I_{12}$ the ycar ${ }^{17} 2 \mathrm{~S}$, Mr. Lardner's life was long defpaired of, by the attack of a violent fever, from the offects of which lie flowly recovercd. With all his great merit, Mr. Lardncr, defirous of a fettlement as a diffenting minifler, did not receive an invitation for this purpofe till he was 45 ycars of age. It was in $x 729$ he became affillant to Dr. Harris, minither at Crutchedor Crouched Friars. About this period he publifhed "A Vindication of three of our bleffed Saviour's Miracles ; viz. The Railing of Jairus's Daughter, The Widow of Nairn's Son, and Lazarus," in anfwer to Mr. Woollton's attack on the fcripture account of Chrill's miracles. In 1733 , appeared the firft volume of the fecond part of "This Credibility of the Gofpel Hiftory ;" this volume comes down to the year 178 , and is prefaced by an introduction, giving a clear and very luminous hiftory of the New Tellament. It was immediately tranflated into the Low I)atch and Latin languages. The fecond volume was publifhed in 9735 , and concludes the author's remarks out of Chrittran 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 $1 / 3 \mathrm{~S}$, Mr. Lareser publifhed the third volume of the fecond part of "The Credibility," ending with the year 233 ; in $15 \neq 0$, the fourth volume, which comes dorn to the year 248 ; and, in 1743 , he publifhed the fifth volume, which concludes with the year 306. About the fanie period he fent into the world another performance, entitled "The Circumitances of the Jewith People, an Argument for the Truth of the Chrifian Religion, in three Difcourfes." 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, compriing a hiftory of the apofles and evancelins, with remarks and obfervations upon every book of the New Teftament. 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 retigned the office of preacher at Crutched Friars, having, during the preceding year, publifhed a volume of Scrmons, 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 alfo publifhed many other fmaller pieces which were well received by the public; fuch was a fermon entitled "The Counfels of Prudence, for the Ufe of young People," for which he was thanked by Dr. Secker, at that time bithop of Oxford. The difcourfe has been very frequently printed, and has at the prefent moment a large fale. Lardner had alfo publifhed "A Differtation upon the two Epiftles afrribed to Clement of Rome, \&c.;", "An Effay on the Mofaic Account of the Creation and Fall of Man ;" "The Cafe of the Demuniacs, mentioned in the New Teitament ;" "A Letter to Jonas Hanway, Efq." to fhew that Mary Magdalen was not the linner mentioned in the feventh chapter of St. Luke's gofpel, but a woman of diftinction and excellent character, who for a while laboured under bodily indifyofition, which our Lord miraculoufly healed: and that, therefore, houfes intended for the reception of penitent prottitutes, ought not to be denominated Magdalen houfes. in $\mathrm{I}_{7} \mathrm{~h}_{2}$, he publifhed "Renarks on the late Dr . Ward's Differtations on feveral Pafliages of the facred Scriptures;" to which fucceeded, in 1764, "Obfervation:s upon Dr. Macknight's Harmony, fo far as related to our Saviour's Fiefurrection." Amidit thele varions productions of a fmaller nature, $\mathrm{Dr}_{\text {r }}$. Lardner continued the profecution of his grand object, and in the laft mentioned year he gave the world the firit volume of "A large Collection of ancient Jewih and Heathen

Teflimonies
'Tentimonies to the 'Iruth of the Chriftian Religion," comprifing the Jewith and Heathen authors of the firit century. The remaining three volumes were publifhed in intervals between this and the clofe of the year $176 \%$, and in them the biblical itudent is prelented with a noble trafure of curions and valuable information, and of able and judicious criticifin, for which the Chrittian woild is deeply indebed to the author. They complete the graad defign which had occupied 2 large portion of forty-threc years of Dr. Lardner's valual te life; and by them, though far from prolitable, he has raifed a monument to his fame, which can never perifl. Dr. Larduce lived to a very advanced age, and, with the exception of his hearing, retained the ufe of his faculties to the latt, in a remarkably perfect degree. In the ycar 1768 , he fell into a gradual decline, which carred him off in a few weeks, at Hawkhert, his native place, at the age of eighty-five. He had, previoully to his latt illnefs, parted with the copy-right of his great work for the niferable fum of 15 ol. but he hoped if the bookfellers had the whole interelt of his labours, they would then do their utmolt to promote the fale of a work that could nut fail to be ufeful in promoting the interelts of his fellow creatures, by promulgating the great truths of Cbrittianity on a rational foundation. After the death of Dr. Lardner, fome of his pofthumous pieces made their appearance ; of thefe the firit confitt of eight fermons, and brief memoirs of the author. In 1776 , was publifhed a fhort letter, which the doctor had writien in 1762, "Upon the Perfonality of the Spirit." It was part of his defign, with regard to "The Credibility of the Gofpel Hiltory," to give an account of the herctics of the finft two centuries. In 1780, Mr. Hogg of Exeter publithed another of Dr. Lardner's pieces, upon which he had beftowed much labour, though it was not left in a perfect fate; this was "The Hiltory of the Heretics of the firt two Centuries after Chrilt, containing an Account of their Time, Opinions, and Teftimonies to the Books of the New Teflament; to which are prefixed General Obfervations concerning Heretics." The lalt of Dr. Lardner's pieces was given to the world by the late Rev. Mr. Wiche, then of Maidllone in Kent, and is entitled "Two Schemes of a Trinity confidered, and the Divine Unity afferted;" it conlifts of four difcourfes; the firft reprefents the commonly received opinion of the Trinity ; the fecond defcribes the Arian fcheme; the third treats of the Nazarene doctrine; and the fourth explains the text according to that doctrinc. This work may perhaps be regarded as fupplementary to a piece which he wrote in early life, and which he publifhed in the year 759, without his name, entitled "A Letter written in the Year 1730 , concerning the Quction, Whether the Logos fupplied the Place of the FIuman Soul in the Perfon of Jefus Chritt;" in this piece his aim was to prove that Jefus Chritt 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 nany teftimonies given of Dr. Lardner's charaEter, the reader mult be referred to Kippis's life, pretixed to a complete cuition of his works, publifhed in 1788 , in eleven very large volumes, by the late J. Johnfon. One or two only fhall be quoted in this place. "The name of Lardner is well known in the literary world. No writer, from the very exiftence of Chriltianity, ever conferred fo effential fervice upon true religion, or contributed more to clear up its evidence and elucidate its antiquities. Accordingly, there is no country, where the Chriftian religion is profeffed, in which his name is not held in the greatelt efteem. Every church would have been proud to boalt .of him as their member, and his voluminous productions
have been tranfated into almoft all the languages of Eltrope."
"Dr. Lardner," fays his mott excellent biographer, "may be held out, in particular, as a line example to thofe of his own profeflion. As the Diffenters had the honour of producing Dr. Lardner, he will naturally be the object of emnation to the diffenting clergy. They will fo far took up to him as their pattern, as to endeavour to qualify themifelves for appearing, when occafions call for it, in the great departments of literature, and efpecially in the caufe of religious truth and liberty, and in defence of the facred writings."

The piety of 1)r. 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 manifeftly in all his works; and no one ever feems to lave preferved a greater impartiality in his enquiries, or to have been more free from any undue bias. He foliowed truth wherever it led him ; and for the attainment of it he was admirably qualified, both by the turn of his difpofition and his underltanding. The candour and moderation with which he maintained his own fentiments, conflituted 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 dittrefs he was ever willing to contribute, to the higheft degree which his fortune would admit. His manners were polite, gentle, and obliging ; and he was attentive in every refpect to the laws of decorum.

We may obferve, that to Dr. Lardner's great works we are usqueltionably indebted for Dr. Paley's "View of the Evidences of Chriftianity ;" nor is it too much to fay that if the former had not been publifhed, the latter, probably, would never have appeared; and jultice requires us to add, that fufficient acknowledgments were not made for the affitance which was derived from the labours of the excellent Lardner. It mult, however, be admitted, that the deficiencies of the aimable Paley have been fupplicd by his biographer Mr. Meadky; who, in fpeaking of his "View of the Evidences of Chriltianity," which appeared in 1794 , in three volumes, $12 m 0$. but which have in all fubfequent editions been printed in two volumes, 8vo. Mr. Meadley fays, "the direct hittorical teltimony for the authenticity of the Chriltian revelation, alrcady adduced by the indefatigable Larduer, is admirably felected and arranged in this important work: and the general argument drawn up with great clearnefs and felicity. The moit itriking of thofe collateral proofs of the credibility of the golpel hiltory, produced by the fame writer, are alfo here again prefented, in a novel and impreffive manner, and eftablifhed by auxiliaries of a different kind." Of Dr. Paley's works, a : id 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 lealt, abridged or analyfed: one of thefe abridgments was publifhed at Cambridge in ${ }^{5} 795$, and another in London in 1810 . Lardner's Works, and Life by Kippis; Meadley's Life of Dr. Paley ; and private information.

LARE, in Geograpby, a town of the principality of Georgia, in the province of Carduel ; 80 miles S. of Teffis;

Lare Point, a cape on the E. coalt of Madagafcar. S. lat. $16^{2} \mathrm{AO}^{\prime}$.

LAREDO, a fea-port town of Spain, in the province of Bifcay, with a good harbour, in a gulf of the fame name; 20 miles E. of Santander. N. lat. $43^{\prime} 25^{\prime}$. W. long. $3^{\circ} 21^{\prime}$.

## LAR

LAREK, or Laredsir, a fmall ifland in the Perfian gulf; the foil of which is bad and the water brackifh. The Perfians have prevented the attempts of the Dutch for fettling a factory in this ifland ; 12 miles S.S.E. of Gambron. N. lat. $26^{\circ} 50^{\prime}$. E. long. $56^{\circ} 3^{8^{\prime} .}$

LARENDEBA, a town of Afiatic T'urkey, in Caramania; 40 miles S.S.E. of Cogni.

LARENSIS, in Ancient Geography, an cpifcopal fee of Africa, in the Proconfular province.

LARENTINALIA, in Antiquily, a feaft held among the Romans on the 23d day of December, but ordered to be obferved twice a year by Auguftus; by fome fuppofed 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 Gegrapby. 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, worhhipped in houfes, and efteemed the guardians and protectors of families; fuppofed to refide more immediately in the chimney corner.

The Lares were diftinguifhed from the Penates, as the former were fuppofed to prefide over houfe-keeping, the fervants in families, and domeftic affairs; and the latter were the , protectors of the mafters of families, their wives and children: accordingly, the Lares were dreffed in fhort fuccinct habits, to fhew their readinefs to ferve, and they held a fort of cornucopia in their hands, as a fignal of hofpitality and good houfe-keeping. According to Ovid there were generally two of them, who were fometimes reprefented with a dog at their feet. Falt. 5. v. 146 .

Plutarch diftinguifhes good and evil Lares, as he had before done good and evil Genii.

There were alfo fome public, others private Lares.
Apuleius tells us the domeftic Lares were no more than the fouls of departed perfons, who had lived well, and difchargrd the duties of their flation; whereas, thofe who had done otherwife, were vagabonds, wandering about, and frightening people, called Larve and Lemures; which fee.

The Lares were alfo called Penates, and were worfhipped under the figures of little marmoufets, or images of wax, filver, or earthen-ware.

The public Lares were alfo called Compitales, from compitum, a crofs-way; and Viales, from viat, a way, or public road; as being placed at the meetings of roads, and in the highways, and efteemed the patrons and protectors of travellers.
Their private Lares took care of particular houfes and families: thefe they alfo called Prafites, from preffo?
"Quod preftant oculis omnia tuta fuis." Ovid. Faft.
They gave the name Urbani, i.e. Lares of cities, to thofe who had cities under their care; and Hofiliz, to thofe who were to keep their enemies off. There were alfo Lares of the country, called Rurales, as appears by feveral antique infcriptions.

The Lares were alfo genial gods, and were fuppofed 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 Necelfity, called Prafitits, fome 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 Praftites of the

## LAR

Egyptians. However, the learned Mr. Bryant affirns 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 Lactantius and Aufonius call Larunda; Apuleius affures us they were the pollerity of the Lemures; Nigridius, according to $\Lambda$ rnobius, made them fometimes the guardians and protcctors of houfcs. and fometimes the fame with the Curties of Samothracia, which the Greeks call Idai daisyli. Nor was Varro more confiftent in his opinion of thefe gods; fometimes making them the names of heroes, and fometimes gods of the air.
T. Tatius, king of the Sabines, was the firft who bailt a temple to the Lares. The chimney and fine-place in the houfe were particularly confecrated to then.
Tertullian tells us the cuflom of worhipping the Lares arofe from this, that they anciently interred their dead in their houfes; whence the credulous people took occafion to imagine their fouls continued there alfo, and proceeded to pay them divine honours. To this it may be added, that the cultom being afterwards introduced of burying in the highways, they might hence take occafion 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, hiconte, a crown of wool, and a little of what was left at the tab e. They alfo crowned them with flowers, particularly the violet, myrtle, and rofemary. Their fynibol was a dug, which was ufually reprefented by their fide, on account of its fidelity, and the fervice it does to man, in watching his houfe. They were fometimes alfo reprefented as clothed in a dog's kin.

See farther on the Lares, in Arnobius, Laetantius, Augultine 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 fuppofes that the Lares and Manes were the fame domeltic deities under different names; and that by thefe terms the Etrurians and Latins denoted the dii arkita, who were no other than the arkite anceftors, or the perfons preferved in the laren or ark; the genius of which was Ifis, therreputed parent of the world. He obferves farther, that they are defcribed as dxmons and genii, who once lived on earth, and were gifted with immortality. Arnobius, hib. iii. P. 124. fty!es them Lares quoflam genios \&o fundorum animas; and he fays, that according to Varro de Ling. Latin. lib. viii. p. 113 , they were the children of Mania. Huetius Demonft. Prop. 4. p. I39. adds, that Mania had alfo the name of Larunda; and fhe is ftyled the mother of the dxmons. By fome the is called Lara, and was fuppofed to prefide over families; and children were offered at her altar in order to procure her favour. Macrob. Sat. lib. i. c. 7. P. ${ }^{154}$. In lien of thefe they in aftertimes offered the heads of poppies, and pods of garlick. Anal; of Ancient Mythol. vol, ii. P. 449, \&sc.

The pantheons. or images reprefenting feveral gods at once, were allo called Lares. Harpocrates was one of thefe.
Lares, or Laris, in Ancient Georraphy, a town of Africa Propria, according to Ptolemy, who places it in the territory of Cirtha.
LARG, in Geography, a fmall ifland sear the W. coaft of Sumatra. S. lat. $3^{\circ} 30^{\prime}$. E. long. $100^{\circ} 3^{\prime}$.

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## LAR

Lare Fod, a mountain of scotand, in the county of Kircudbripht; 13 miles W. of New Galloway.
Large Kirk, a town of Scotland, in the comey of Sutherland; is miles N.W. of Dornock.

LARGA, a fmall iland in the Spanifh Man, near the cont of South America. N. lat. $10^{\circ} 1^{\prime}$. W. long. $76^{\circ} 6^{\prime}$.

IARGE, a Sea Tirm, applied to the wind, when it erofies the line of a flip's courfe in a favourable direction, particalarly on the bean or guarter. Thas, if a flip flecr welt, then the wind has any point of the compafs to the caltward of the fouth or north, may be called large, unlefs When it is diresty calt, and then it is faid to be right aft. Siziling lorge, is, therefore, advancing with a larere wind, fo as that the fheets are flackened and flowing, and the bowlines entively difufect. 'This phrafe is gencrally oppofed to fisiing clofe-hated.

Lirea, in the Mincge. A horfe is faid to go latge, or wide, when he gains or takes in more ground in groing wider fron the centre of the volt, and deferibing a ereater recumference. To make à horfe go large, jou mult give han the aid of your inuce heel. See Escancig.

Laror, fynonymous with mavina, the lumsen note i:s the fret time table, cqual to two lougs, four lrases, and eight fonibicies. Its form is an oblong fquare, wilh a tail on the
right fide, thus See Cilaracter.
Large River, in Grooresthy, a river of Louifiana, which runs into the Mimbippi, N. lat. $3^{\prime} 5^{\prime} 25^{\prime}$. W. long. $95^{\circ} 7^{\prime}$.

LARGENTIERE, a town of Fance, in the departmeat of the Higher Alps, and chius place of a canton, in the ditrict of l3riançon. The place contains 973 , and the canton 5071 inhabitaste, on a territory of $462 \frac{1}{2}$ kilionetres, in 7 communes.

L'Abgectiere, a tomof France, and chicf place of a diarici, and feat of a tribunal, in the department: of the Irdeche; is miles W. of Privas. The place contains 1906, and the canton $95+3$ inhabitants, on a territury of $177 \frac{1}{2}$ kiliemetres, in $1+$ communes. N. lat. $44^{n} 32^{\prime}$. E. long $44^{2}$.
D. AGGHET ro, Pal, the diminutive of largo.

LIRGO, in the Iathin MThic, a flow moverent, one degrue quicker than adario, and two than grave. Sce Thme.
Roarena makes kargo flow in the firll degrec; but we think erroneomfy. Aidayio is the flowett time in Corelli, onl all the old maters; grave the ficond; and largo the third. In adacrios and largos, the time is ufually counted ly quavers, and in grave by crutchets.

Larao Guff, in Grography, a bay on the coalt of Iftia, near Param.

LARI, a toven of Etruria; 10 miles E. of Leghorn.
LARIBUS Cotcosta, in Aucizat Georraphy, Lurbufs, a Roman colory in $\vdots$ frica, fituated on an eminence, five leagues N E. from Sicca.

LARICAX S, a rroviuce of South America, in the gevorment of Burnos Ayres, about 240 n ícs from E. to W., and 55 from T, to S . Its climate varies in different parts, and its products are the fame with thofe of Carabaya, which terminazes it northward. It abounds in gold mines, the metal buing 23 cirats and 3 grains five. The celcbrated mountain of Suai huli in this province, about half a century ago, yielded old in great quantity of this Atandard, but its nine was overllowed, a: a no labciar could recover it.
1.ARICE, in Incient Gcorvors'oy, the name given by Pitleny to the province of India, nuw called Conzerat.

L : KICOT, F $A$ an acute Itop in the organs of Erance, a 31 ahove the major 17 th, and an citave above the 12 th in our organs, which would be a igth above the diapafon.

## LAR

LARIK, in Geograply, a town of A fatic Turkey, in the government of Sivas; eight miles N.N.E. of A mafieh.
LARINO, a town of Naples, in the Molife; the fee of a bifhop, fuffragan of Eenevento; 25 miles N.E. of Molife. N. lat. $41^{\circ} 47^{\prime}$. E. long. $14^{\circ} 50^{\prime}$.

LARINUM, in Ancient Grography, Larinn, a.town of Italy, in Samium, towards the fouth; it had the title of municipal.

LARIO, in Geography, a department of Italy, occupying the whole of the W. coaft of the lake of Cofmo, anciently "Larius lacus." Its population amounts to 137,264 perfons, who elect 12 deputies. The capital is Como,

LARIOZO, a town of the ifland of Cuba; 4.8 miles I. 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 Pcieus, 44 miles from Demetrias, and 24 from Dium. Acrifus, king of Argos, retied to this town, in order to avoid the death wlich the oracle had menaced; but taking a part in the grames which were celebrated in this place, he was killed by a ftroke of the difcus of Perfeus, Larifia always maintaincd a diftinguifned rank among the towns of Theifaly y but it declined from the time of Lucan. However, it thill fublilts under the fame name in European Turkey, near the celebrated mome Olympus, and is inhabited by Chriftians, I urks, and Jews; the former having an archbifhop and favcral churches; and the Turks having feveral mofques. The number of inhabitants is eftimated at about 25,000 . Its fituation, on an eminence, is pleafant. By the Turks it is called Genifakar or Jungifchabit. N. lat. 39'4 45'. E. longe $22^{\circ} 29^{\prime}$ - Alio, a town of Aolia, in Afia Minur, fituated E. of Phocra and S.E. of Cyme, forming with thefe two towns the vertex of a triangle. Xenophon calls it the Egyption Larilla, becaufe it was one of the towns whicli Cyus, the firlt king of Perfia, gave to the Igyptians, Alfo, a town of Affa, on the banks of the Tigris. Xenophon fays, that it had been large, but deferted, and that it had ancicntly been under the dominion of the Medcs.- Alf, a town of 'riphylin, in the noxthorn part, upen the river Larifus, near the fronticrs of Arcadia. - Alfo, a town of Crete, according to Strabo.-Allo, a town furnamed Ciremofle, according to Strabo; who fays, that it was called Pelargia, though fituated out of the Pelafgin terrioory, Livy places it on the fea-coalt, between Echinus and Antron. Eullathius and Porphyrogenitus fay, that it lad 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 Dionyfius Halicarnallus.

LARISTAN, a Emall province of lerfia, formerly a kingdom conquered by Abbas the Great, in 1612 ; bo:mpded on the N. and E. by Kcrman, on the S. by the Perlian guir, and on the W. by Farlitan or Pars, of which fome have regarded it as a part. The fubdivition feems not to have been known in ancient times, though the long riage of mountains on the S. of Fars, and grm rally about 60 Britifh miles from the Perfian guif, natural y y indicates a maritime. province; which, if the ancient Perfians hid been addicted to commerce, would have been the feat of great weal:h by intercourfe with Arabia, Africa, and India. But the Per: fians were high-fpirited horfemen and warriors, totally averfe from maritime enterprize, cither of war or trade, from a contempt of the Arabian fifh-eaters on their coall, or more probably, from particular precepto of Zorvaller, the founder of their faith, which rendered an maritime life incompatible with the pratice of their religion. The air of this provinen

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is infatubrious, and waries frequently from extrente ficat to exireme cold; water fit for ufe is fearce; that which is drank being found, as it is faid, to breed worms in the legs and thighs of thofe who ufe it. Camels are the principal articles of trade. The capital is Laz, which fece

LARIX, in Botany, an ancient Latin mame, the Larch. See Pinus. The older botanifts dillinguifhed Larix as a genus by its fafciculated leaves, but ub difference is difcoverable in the fructification, at leatt between it and Ab:s, which all Limuxan botanitts refer to Pinus. Juflieu keeps the two latter diftinct, and hines at feparating Lariz.

LARK, in Ormilholggy. See Alauma.
Lark, Sea. See Chamanzius Hiatichlo
Labres Point, in Geograbhy, a cape on the coaft of Camada, on the river St. Laurence, at the month of the Saguenay river.
I.ARKENTING, a town of Thibet; 55 miles E.N.E. of Thehiatam.

LARKSPUR, in Botary. Sce Detpriciuys.
LARMIER, Fro in Architedure, the fame as Corona; which fee.

LARNE, in Gegrapt,y, a fea-port and poit-town of Ireland, in the county of Antrim. It is fituated on the north-weltern 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, limellone, and fome provitions. It is 97 miles N. by E. from Dublin. N. lat. $54^{\circ} 51^{\prime}$. W. long. $544^{\prime}$.

Larne Lsugh, a bay on the eaft coaft of this countr of Antrim, Ireland, called Oldheet haven by Boate, and Tíolderfrith in the enumeration of the havens by Stanihurft. It is formed by the peninfula called Ifland Magee, and is faid by M•Kenzie to be a fmall but fafe harbour, where veffels that draw not above ten feet water may ride on clean goodholding ground. It is about fix miles long and one wide.

LARNIC, or Lariica, a fca-port town on the coalt of the illand of Cyprus, the fee of a Greek bihop, and the refidence of feveral European conful;. The Turks have a nofque, and the Greeks have three churches. It is now a poor place, though the road-ftead is good; 30 miles S.W. of Fainagofta.

LARNTUKA, or Lariruntuks, a fea-port town on the S. fide of Ende, one of the Molucca inlands, with a good harbour. S. lat. $\mathrm{S}^{\circ} 15^{\prime}$. E. long. $123^{\circ} 57^{\prime}$.

LAROAH, a town of Hindooftan, in Guzerat ; io 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 diltrict of Marche. The place contains 1006, and the canton 6167 inhabitants, on a territory of 250 kiliometres, in 20 communes.
LAROS, a town of Turkifh Armenia, on the coant of the Black fea; i8 miles S.W. of Gonieh.
LAROTAVA, a town of the illand of Teneriffe.
LAROW, a town of Hindoottan, in Bahar; 10 miles S. of Gayah.

LARRAGA, a town of Spain, in Navarre; in miles E. of Eftella.

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 Saragoffa, a liberal encourager of chemiftry, botany, and agriculture. 'The author had, in his fourth volume of Iconcs, p. 63, fuppreffed this name, given by his countryman Cr-: eega to another genus, and had changed it to Hofrmarl fegix,

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being then, as if feems, not fo fenfible of the dean of Saragoffi's botanical merits at he afterwards becance. -Cavan. 1 : v. 6. 39. - Clafs and order, Decandria Almaisyriaz. Nat. Ord, Graimales, Limn. Rulacee, Juff.

Gen. Ch. Cal. I'erianth inferior, of five ovate, concave. rather unequal, decidunus leave: Cor. P'etals five, equal, ovate, with claws. Stam. Filaments ten, rather fhorter than the corolia, awl-fhaped, equal, each furnified at its bafe, on the infide, with a cloven feale, applied clofe to the germen ; anthers heart-fhaped, erect, fimple: 12if. Germen fuperior, globofe, with live decp furrows; Ityle awl-thaped, with five angles, nearly equal to the ftamens; ftigma fimple. Peric. Drupas five, dry, cohering by their acue inner margin, externally convex, of one cell. Nuts folitary, ovateoblong.

OUf. There are the radiments of feveral feeds in the young fruit, though only one of them comes to perfection in each nut. The genus comes near Zyrob/yiluma and Fogonia.

Efr. Ch. Calyx of five leaves. Pecats five. Nectary of five cloven leaves, covering the germen. Drupas five, finglufacued.
i. L. nilida. Shining-leaved Larrea.--Cavan. Ic. t. $55 \%$ Leaves pinnate. Fruit fmooth.-Gathered at Buenos Ayres by Louis Née, flowering in April. It has been railed with good fuccefs in the garden of Madrid, and we lave fpecimens from Cavanilles himfelf. The fent is frubby, nine feet high in its mative country, hayd, knotty, very, much branched, the branches round, rather zig-zag, repeatedly fubdivided, fpreáding, two-ranked, leafy, rough, vilcid. Leaves oppolite, feffile, twice as long as broad, about half an inch in lengeth, Maining, glutinous, fmouthint, minutely dotted, each compofed of about feven ur eight pair of crowded, two-ranked, oblique, feffile, obiong, ubw tufe, entire leaflets, of which the two uppernort are unequal and very finall, looking as if there were an odd one at the evd. Stipulas oppofite, triangular, acute, reddifh. Filowers axillary, Lolitary, alternate, deep yellow, on roughin Railse, thorter than the leaves. The germen is hairy, though tive fruit is naked, or only clothed with fine fhort down. Its outer coat is coriaceous and rugged. Nh:'s withont, ralver or futures.-The whole plant exudes a corions glatinous refin, of a flrong feent, fill sery powerful in the dised feccimens, and intolerably fo on their beins moi!encd with proct fpirit, whichextrats from them abuaduce of a yeilow fetid folution.
2. L. ditarichti. Spreadiog lobed Iarrea-Cavan. Ir.
 Fruit hairy. Fourd wth the fomer, flowering at the fame feafon. The fora is fhrubby, fix feet high, with much of the habit of the foregoing; but the learies are fimple, very deeply cloven into two fpreadiug acute lobes. The forers are yellow, larger than thofe of $\mathcal{L}$. nitida, with obtufe petals; and the fruit is befet externally with long prominent hairs.
3. L. cuadifoita. Wedge-Inaved Larrea, - Cavan. Ic. t. 560.f. 2.-Leaves wedge-?naped, cloven at the end, with an intermediate briftle- This appears to differ in foliage only from the lafk, along with which it was fourd.
Thefe plants promife to be not unworthy of attention for their dyeing qualities. Cavanilles fays, ten leaves of the divaricafa, boiled in a quart of water, with the litele brancli on which they grew, tinged the whole liquid of a deep faffron colour.

LARREY, Isacic de, in Biogra, b;, born of a noble French family in 1638, was brought up to the profeffion of the law. It sece! fome time as an sdvocate in his na-

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tive province, but having been educated in the reformed religion, he was obliged to quit his country at the repeal of the ediet of Nantes. He went from France to Holland, and obtained the office of hiftoriographer 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 "Hittoire d'Angleterre," 4 volso: "Hiltoire de Louis XIV." 3 vols. quarto ; "Hittoire d'Augufte "" "Hiftoire des Sept Sages," 2 vols. 1713 . Of thefe his Hiftory of England is moft efteemed, and was in high reputation on the continent till that of Rapin was publifhed. Larrey was a man of great integrity, zcalous for his religion, and warm both in praife and cenfure, Moreri.

LARRISOUN, in Geograpby, a town of Perlia, in the province of Mazanderan ; $6 ;$ miles S.W. of Fehrabad.

LARROQUE, MATTHEw De, in Biography, an eminent French Protellant divine in the 17 th century, was born at Leirac, a fmall city of Guienne, near Agen, in the year 1619. He was educated with a view to the church, and applied himelf, in early life, with great diligence to the fudy of the belles-lettres, philofophy, and theology. Having made great progrefs in all the various branches of ufefuil knowledge, he was admisted a minifter with great applaufe in the province of Guienne. He was afterwards appointed, by the duchefs de la Tremouille, miniter of the church of Vitrè, in Brittany. Here he officiated nearly thirty years, during which time he applied himfelf mott earneftly to the Itudy of the fathers, and Chrittian antiquities. He was tiext invited to become both minifter and profeffor of divivity at Saumur : he readily accapted the former office, but $i$ icclined the latter, not thinking it to be confifent with the courfe of ftudy in church-hifory, to which he had a preva$b_{c}{ }^{6}$ inclination. Before he could take poffeffion of his office, he received a prohibition from the intendant of the province, forbidding him to enter upon its duties. He therefore continued at Vitrè, and emplojed his time very ufefully in compofing works of merit. In a fhort time he received three invitations at once, from three of the moft confiderable churches in the kingdom, viz. thofe 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 paftor in the church; and in the world an honelt man. Mureri.

LARRY-BUNDER, in Geography, a fea-port of Hindooftan, in the prorince of Sindy, on a branch of the Indus, called the Pitti, about 20 miles from the fea. It has a good road for fhipping, and the river is navigable for frall veffels. The town contains about 100 houfes, and is defended by a fort; $4^{8}$ miles W.S.W. of Tatta. N. lat. $24^{\circ} 45^{\prime}$. E. long. $66^{\circ} 42^{\prime}$.
Larry-bunder is alfo the name of a branch of the Indus; which fee.
LARS, a town of Ruffia, in the government of Caucafus ; 56 miles S.E. of Ekaterinograd.

LARSMO, a fmall inand on the E. fide of the gulf of Bothnia. N. lat. $63^{\circ} 4^{6^{\prime}}$. E. long. $22^{\circ} 39^{\prime}$.

LARV $A$, in Natural Hifory, a name given by Linoxus to infects in that ftate, called by other writers eruca or eaterpillar. See Entomology and Insects.
 her or lars, fignifying prince or lord, denoted the ghofts of the deceafed, confidered as vicked and mifchievous. Hence is formed the term larvatus, i. e. larva indutus, or demoniac.

The ingenious Mr. Farmer urges the etymology and ufe of this term to prove, that the heathen demons were deified human ghofts. The term lar was applied not only to their domeffic, but alfo to their celffial gods, the dii majorum gentium, who were all natives of this lower world; and anfwers to the word Daspayo Quos Greci dxppevas, noltri, opinor, lares. Cicer. in Timæo. 3. (See Lares.) The larve were cqufidered as mifchievous fpirits : and this author fays, that the larvati were demoniacs; but the larve, with which they were poffefed, were human ghofts; fuch alfo as demons were. Eff. on the Demoniacs, p. 27, \&c.

The larve were alfo called lemures.
LARUCACHI, in Geograpby, a town of Peru, in the diocefe of La Paz; 110 miles N. of Chucuito.

LARVIGEN, or LAUkwig, a fea-port town of Norway, in the diocefe of Chriltiania, 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 moft valuable in Norway ; 56 miles S.S.W. of Chriftiania. N. lat. $59^{\circ} 3^{\prime}$. E. long. $10^{\prime} 15^{\prime}$.

LARUNS, a town of France, in the department of the Lower P'yrenées, and chief place of a canton, in the diftrict of Oleron'; 18 miles S . of Pau. The place contains 3607 , and the canton 3855 inhabitants, on a territory of 445 ki liometres, in S communes.
LARUS, in Ornithology, a genus of the order Anferes. In this tribe the bill is ftraight, acute at the edges, hooked at the tip, and deflitute of tecth; the lower mandible gibbous below the point; noftrils linear, broader on the fore part, and placed in the middle of the bill. Thefe are the gulls of Englifh writers; a race of birds very widely diffufed throughout the globe, fome of the fpecies inhabiting Afia, $f_{1}$ frica, and Europe, others Europe, Afia, and America, but the far greater number of fpecies are natives only of the northern regions of America and Europe, as Hudfon's bay, Iceland, Greenland, and the north of the European continent, beyond which, towards the fouthward, their number materially diminifhes. Many of the fpecies found in northern latitudes inhabit the Britifh ifles, refiding on our fhores the whole year; others are extremely rare with us, or at lealt can be confidered only as accidental vilitors driven from more northern countries in fevere winters. The haunts of the gull tribe are the borders of the fea, and marthes immediately in its vicinity, or in the depth of winter they fometimes retire inland, but only into fuch parts as are abundantly firpplied with water, their food confifting principally of fifh 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 caft up the indigefed food they have lately fwallowed. The fpecies of this genus are not very clearly difcriminated, owing to the variations that prevail in the colours of the plumage in different ftates of growth, till the birds have attained thcir third year. This genus is divided into two fections, in the firlt of which the nolfrils are without a cere, and in the other are covered by one.

$$
\begin{gathered}
\text { Species. } \\
\text { * Nofrils swithout a Cere. }
\end{gathered}
$$

Ictuyztus. Snowy; head entirely, and neck to the middle, deep black; eyelids white. Pallas. Larus albus, \&c. Oedm. Die grofe Lacbrocve, Gmel. Great blackkeadedgull.

A natire of the borders of the Cafpian fea. The fize that

## LARUS.

of the bernacle goofe, or larger. The bill is fcarlet, with yellow bafe, the tip yellow with a brown fpot; the inlide of the mouth red; tail white, even at the end, and reddiif brown. This fpecies 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 llight it utters a hoarfe cry like that of a raven.

Rissa. Whitifh; back hoary; quill-feathers white : pofterior toe unarmed. Larus rific, Limn. Gmel, \&c. Larus tridactylus, Lath. Kittizwake Penn. Donov. Br. Birds, \&c.

Length fourteen inches; the bill yellowifl; mouth faffron withn; head, neck, belly, and tail fnowy; wings hoary, the outer edge of the firlt and tips of the four or five feathers next fucceeding white; legs dufly; pofterior toe refembling a wart. It varies in fometimes having behind the ear a dullky fpot.
This kind of gull inhabits the cliffs on the north coatts of Wales and Scotland, from whence it extends as far as Greenland, Spitzbergen, and Iceland, the aretic coatt of Aha, and Kamtfchatka. The leetanders call it Riffa. Fabricius, in his Faun. Groen. detcribes this as the adult Itate of tha Tarrock, an affirmation contradicted by fonte authors and admitted by others, while again fume few are of opinion they may be the two fexes of the fame fpecies.

Tridactylus. Whitifh, back hoary; tips of the tailfeathers, except the outer one, black; feet three-toed. Linn.

Larus tridactileusf, Lath. Kuu/se-gef, Klein. Tarrock, Will. Donov. Br. Birds, \&c.
Frequents the fane rocky coants of the fea as the former. The eggs, two in number, are greenifh-ah, fpotted wih brown; they are noify, fwim well, and remain on the wing for a confiderable time. The flefl andeggs are efteemed by the natives of Greenland, and their fkins ufed as garments. Length fourteen inches; bill and legs dully; ; head, neek, and body beneath white; wings varied black and white; tail black at the tip.

In the Bankfian collettion is a fuppofed 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 entierly white. This inhabits Kamtfchatka.

Minutus. Snowy; head, and beginning of the neck black; back and wings ruffet; bill brown-red ; legs fcarlet. Pallas. Gmel. La plus petite des mouettes, Vieill. Little gull, Lath.

Size of a thrufh ; irides blueifh ; tail equal and white ; in'habits near rivers in Siberia and Ruffia.

Eburneus. Entirely white; bill and legs lead colour. Gmel. Phipps, \&c. Larus niveus, Act. Holm. Larus candidus, Fabr. Fis. Gr. La mouette blanche, Buff. RathJeer, or Ratzher, Ray. Ivory gull, Arct. Zool.

The length of the fpecies is fixteen inches, the breadth thirty-feven; the bill paler at the tip; wings much longer than the tail; Iegs lead colour, the claws black. This bird inhabits the Frozen fea between Afia and America. From its ftately gait when walking on the ice, and the ftrength of its voice, it is faid to have obtained the name of Ratzher, or Senator. The flefh of the morfe conltitutes its favourite food; befides which it fublints on worms and fiftes. During the fummer, it vifits the little ines and lakes in the interior, where it forms a neft compofed of dried herbage, and lays four eggs of a white colour. The young are fpotted with black principally on the back and wings, and the beak is of the fame colour.

Candus. White; back hoary; primary quill-feathers
black at the ends, the fourth and fifth with a black fyot at the tip, the outer one black without. Lath.-Larrus Canus, White, back hoary. Linn. Fn. Suec. Larus cinercus minur. Common fea-merv or mall, Ray. IV bile web-footed gull, Albin. Common gull, Arct. Zool. Donov. Brit. Birds, \&c.
Common on the coalt of Britain, and in various parts of Europe and America. The length feventeen inches; bill yellow; legs greenifl-white, or fometimes reddifh. It forms a neet chicfly 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 Rufian lakes, and occurs alfo on the borders of the Cafpian fea, the various fhores of the Mcditerrancan, and thofe of Greece. Its breeding places are the hollows in rocks and cliffs near the fea.

Hybernus. Cincreous; bencath fnowy; head white. varied with fufcous fpots; neck above fufcous; wings varied; tail-feathers white, with a black band.-Larus Hybernus, Gmel. Larus canus B, Lath. Gavia byberna, Briff. Larus machlatus, Brunn. Mouctle d'byver, Buff. Guaca-guacu, Ray. Winter mesu, coddy modity, Wi.1. Donov. Brit. Birds. Whinter gull, Lath. Synop.
Feeds on reptiles and fmall fifhes. This kind is very common in England, and is obferved to iwhabit further inland than any other of the gull tribe. In Ind. Orn, of Larham it is defcribed as the young of the foregoing fpecies. Length feventeen inches.

Runibuxdus. White; head blackifh; bill and legs red. Ed. Nov. Act. Stockh. Larries rudibundus, Linn. Larus albus erytbroceptblis, Klein. Brozin-beadral gull, Albin. Donov, Brit. Birds, \&c.
Length fourteen to fifteen inches; the eye-lids the fame colour as the bill and legs; firlt, ten quill-feathers white, with the edge and tip black. Inhabits Europe and Ame. rica, and makes a laughing kind of noife. The eggs, three in number, are greenifh-brown, fpotted with tawny. Gmetin admits two varieties of this fpecies: one of a white colour, with hoary back, and the head and bill blackiih, as defcribed by Nozena; the other is white, with blue legs, the bill at the bare blue, at the tip yellow. Latham in Ind. Orn. confiders as varieties of rudibundus the Limnaan larus cinerarius, and alfo larus erythropus of Gmel., both which are placed as diftinct fecies in the preceding publication. Gen. Syn.

Marinus. White; back black. Linn. It. Wgoth. Larus dorfo nigro, podibus rubris, CEd. Gooland noir, Buff. Great black and zubite gull, Ray. Black-backed gull, Arct. Zool. Dunov, 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 flef3-colour. Feeds on fin and young birds.

Nevius. White; back cinereous; tail-feathers at the tip black. Gmel. Wagellus corrubienfium, Ray. Wagel. gull, Will., \&e. Donov. Brit. Birds, \&cc.

This fpecies inhabits the fhores of European feas.- It length is about two feet ; the bill black; legs dirty fehmcolour. This is by fome efteemed the female of the foregoing (marinus), and by others as either a variety rather than a diftinct bird, or as the younger bird. The bird defcribed by Brunnich under the name of larus argentatus, the filvery gull of Latham, is likewife confdered as a variety of L. marinus.

Fuscus. White; back brown. Linn. Fr. Suec, La-
, 8 ius srifous, Brili. Larus cincrcus maximus, Marld. Goè. Land ì manteau gris-brun, Buff. Merriag gull, Will. Donov. Brit. Birds, Sic.

Inhabits Europe, America, and Afia. The length twenty-three inches; bill and legs in the adult bird yellow; eyes thaw colour. The birds feed on the herring, the nioals of which it purfues, and thus directs the fifhermen to the capture of that fifh. The eggs, three in number, are whitin?, fpotted with black.

Graveus. White; back and wings hoary; quill-feathers tioped with white; bill yellow, at the ancle faftron. CEd. Luarus albus, Olaff. Goeland cendré, Bulh. Burgermeifer, Martens. Gluucous gull, Arct. Zool.
luhabits. Sweden; is larger than the herring gull, very voracious, and feeds on fmaller birds, fifh, and carrion.

Atmenles. Whitin; head blackinh; bill red; legs -hlack. CEd. Gavia rudilunda, Brift. Laras albus, Scop. Larus minor, S's. Klein. Dalhuer's great a/b-colourcel fea-mew, Will.

Length eightcen inches. Flies in flocks, with a continual clamour; builds in pine trees, and inhabits America and Europe.

Atricilloides. Reddifl-white; head, orbits, and neck black; back and wings cinereous; legs fcarlet. Falck. Gmel. Siberian gull.

Smaller than the former. This" inhabits the falt marfhes of Siberia.
** Nofrils covered ruils a Ccre.
Parasiticus. 'Two middle tail-feathers very long. Linn. Sierna, EJc. It. Wgoth, Catarracla parafitica, Priinn. Siercorarius, at ficroorarius longicaudatus, Briff. Avis Norwegical $k_{j u z f} f_{b}$, Ol. Labbe à longue queue, Buff. Araic bird, EXwards. Arctic gull, Donov. Brit. Birds, \&x.

Length twenty-one inches; the bill and legs dufky; hody above duky, beneath, with the temples, and front white; breaft with a dukky band; female brown beneath. Very rare in Britain. 'The fpecies is found in the north of Europe, and alfo in Afia and America. It is of a rapacious dilpofition, and will purfue the leffor gulls in the air till they mate, when, infantaneoully darting down, it dexterouny catches the excrement before it reaches the water, and devours it. The eggs are cinereous, fpotted with black.

Crepidatus. Dufky-white and brown, varied; two middle tatl-feathers longer ; anterior half of the feet black. Donov. Br. Birds. Larus crepilatus, Gmel. Hawkefw. Catarrafla copphes, Briun. Stcrcorarius fliatus, Briff. Blackjoed gull, Arct. Ziool. \&c.

This, like the former, is very fcarce in Britain; its length is fixteen inches; the bill black, with the tip orange; brealt and belly whitif, with numerous darkifh lines. The two middle tail-feathers longer than the relt; and the anterior half of the feet black; the polterior, with the legs, paler and yellowifh, or, as it fometines appears, blueif.

The defcription of the black-toed gull in Dr. Latham's Kynopfis, is an exteact from Pennant's Britifh Zoology, befides which Dr. Latham mertions another bird of the fame kind in the late Leverian mufeum, which had the lghter half of the feet, with the legs, yellow inflead of blue. In the defeription of this Latter bird Dr. Latham obferves, how ever, that "the two middle tail feathers are not particularly longer than the others;" and arrain in Ind. Orno, this author hefitates apparentily from this circumftance, in addi. tion to the yellow colour of the legs, whether it fhould be al mitred as a variety of larus crepidatus, or be efteemed a diftinet fpecies. It becomes therefore detirable to add that the defoription afforded us by Dr. Latham is not, in this
refpect, entirely free from crror; that able ornitholowit was, in fome manner, deceived, perbapa from the fituation of the bird itfelf, which might preclude the posfibility of an attentive infpection. Be this as it may, the Leverian fpecimen recorded by Dr. Latham, and alfo another from the fame collection, are both in the mufeum of the writer of this article; in one of thefe (which we conceive to be the male) the two middle tail feathers are nearly as confpicuounly longer than the refl, as in the Arctic gull projecting begond them fcarcely lefs than two inches; and in the other, which we apr prehend muft be the female, they are advanced above an inch beyond the rett; in other particulars they accord pretty generally with D r. Latham's defeription, and, as that writer obferves, the lighter parts of the feet, with the legs, are ycllow. We have befides this another example of this bird, a fpecinen recorded as being fhot near Oxford, in which the legs are black and yellow, as in the former, from whence wo may conclude thofe to be the true colours, except perhaps in certain varieties.

Cataractes. Greyifh; quill and tail-feathers white at the bafe; tail fub-cqual. G.mel. Catharafa fkua, Bruinn. Larus fufcus, Briff. C'atarrafles, Gefn. Skuabycri, Cluf. Goiland-brun, Buff. Corniff gannt, Ray. Brown gull, Albin. Skua gull, Donov. Brit. Dirds, \&c.

Length two fect; the bill dufky, and much hooked; upper mandible covered half way down with a black cere; body brown; beneath rufty-cincreous; legs blackifh, rough, and warty: claws hooked and black; pofterior toe fhort, and armed with a flarp hooked claw. This voracious bird inhabits Europe, Afia, and America, and is remarkable for its roracity and ferocious difpofition, efpecially in the brecding feafon. It feeds on fifh, and all the fmaller kinds of water-birds, and is the terror of the leffer 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.

Kreask. Brown; wing-coverts variegated with white; tail black, fpotted and tipped with white. Lath. Ind. Orn. Esquimaux 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 fpotted 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, fuperior and inferior, are branches of the par vagum. See Nehve.

LARYNGOTOMY, (from $\lambda \alpha$ fuy $\xi$, the upper part of the windpipe, and $\tau+\mu v a$, to $c u t$,) an operation in Surgery, which confits in making an artificial opening into the larynx with a knife, a meafure fometimes neceflary in certain cafes of difeafe to prevent fuffocation, as well as to enable the practitioner to inflate the lungs in inftances of fufpended animation. The incifon is now generally made in the windpipe. itfelf, and the operation called tracheotomy. See Tracheotomy.

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 refpiration, and producing the voice,

The organs of locomotion, whether thofe of the limbs or of the trunk, are the principal means by which man re-acts on thofe extermal objects which have acted on him through the medium of the felles. They are particularly deftined, in the natural ftate, to provide for the wants of digeftion, of which they collect the materials. They alfo fumifh the animal with

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the means of oftence and defence, of which digention is in general the immediate object. But focial man has vally extended the domain of this function. Subnitted, through the cercbral nerves, to the direction of intellect, it is the influment by which moft of the conceptions of the latter are execured: and if the valt fiold of activity opencel io our view in the arts fhews the extentive agency of this power, it proves no lefs clearly how greatly the fothere of action of the locomotive organs has been iucreafed. Man in fociety not only derives from his voluntary mufeles, by acguiring extreme precifion in their motions, much greater advantages than thole to which the limited operation of iuttinct confines anmals, but he has allo given to them another direstion-they ferve him as a falent language, and a mede of intellectual communication. The head, the arms, the eyes indicate to us what the volce does not difclofe ; but geftures are in general only fup. plementary to the latter function.

Speech is the chief means of cur intellectual communications: and here we have occafion to obferve how vait!y the functions of the larynx are extended by man in fociety. 'This extenfion is fill greater than that which the locomotive agents offer to our view in the arts where indultry has been pufhed the fartheft. Originally nature beftowed on man merely a voice, the chief object of which was, to ettablifh thofe relations which bring together the fexes. Hence the clufe 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 exill at all until that epocha, or in thole, where, exilting antecedently, it undergoes at this time a remarkab'e change. Remove thefe organe, and a new and peculiar moditication of the voice foon thews iffelf. Each fex has a voice dittinguithed by particular characters : energy and force belong to that of the male; flexibility, deliwacy, and grace to that of the female. Moit animals em. ploy their voice chiefly at the rulting feafon; many are dumb at all other times: We camot therefore avoid the conchfron, that, in the natural late, the communications of the two fexes relating to gencration are the particular object of the preduction of found. Wan in fociety has deltroyed this original deltination, 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 exprefs the mutual wants connoeted with the generative functions, is inadequate to the conveyance of thofe which have arifen out of the Itate of fo. ciety. It has therefore been modified; fpeech is the refult of that modilication; and thenceforth the larynx has performed a part in fociety not lefs impertant than that of the locomotive organs. Thefe two modes of communication, which man enjoys, are almoit equally empioyed, and produce, each in its way, neariy equal effects. If one be the organic inftrument of all the arts, and of all the affections which the mind experiences in the focial date through the eyes, the other is the agent of all that belongs to the domain of inceligence, of all that the mind perceives throush the ears. Compare the valt itock of iteas, which are cranfantied from man to man, with the material objects employed in their reciprocal commere, and you will hind 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 inthrument takes up a little room in a fmall gart of the fame hociv. The great difproportion between the organs of the wice and the important effects which they produce in fociety, is very friking.

The voice, from its detination, would raturaily fall wher the imasediate capire of the brain. Hence the fituc.
ture of the largnx has ruveh annlogy to that of the iocentio. tive apparatus. It is compofed of cartikymous Ineces, moved in various directions by voluntary mufeles, on the motions of which the habits of focicty have conferred a pre. cilion foreign to the natural fate, as it has on thofe of the fugers in certain arts, and on thofe of the lower limbs in cthers. Thus the voice is to fpecch, in relation to the mufcless of the larynx, what the rude movencurs of the fingers of the favare are to the precife and delicate motions of the non who has employed himfelf on a mechanical art, in reiatton to the mufcles of the upper extremity. "I'he princuple is the fame, the refults only are different. It is a general law in the organs of voluntary motion, that they acquare per fection. by exercife, that they are in fhori fufceptible of education.

This dependance of the functions of the larynx on the brain is not only marled in the thate of heath, but alfo in difeafes. Paralylis, convulfions, and fpafms of the mulcies 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 phytiological and anatomical arrangement: their proximity has generally led to their being conffdered together, in treatifo of anatony and playifology.

The following arrangement will be adopted, in confiderises the vocal organs: t!t, General confiderations on the larynx $;$ adly, Particular defcription of the component parts ; $s^{3} \| y$, The affomblage of thefe paris in the general conformation of the cavity; 4 thly, Mechamifm of the larynx; 5 thiy, Its developement in various ages; 6thly, The organs of fyeech; Fthly, The phyfrolory of the voice and fpeech.

Gencral Confelerations. . The larynx is a cavity compofed of moveable pieces, of a form not. ealily 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 crgans of the animal life. It eerminates the trachea above, and forms a ftrikinc: contralt with the lower extremity of that organ, which, formed by the bronchi, and concerned merely with the fuiictions of the organic life, is made up of two lateral porsions not refembling eath other. The lateral portions of the larynx are, on the contrary, exactly finilar. This fymmetry of the larynx is neceflary to the harmony of its functions: a difeordant woice would inevitably refult from different organizations of the two fides, or from inequality in the powers of the mufcles of the right and left fides. The organ is placed below the os hyoides, to which it is fixed: it is fuperlicial in front, and rells behind on the vertebral column, from which the pharynx alone feparates it.

Dettived, on the one hand, to allow a continnal paffege to the air in $r$-fpration, which is to a certain point molurtary; and concerned, on the other, in pioducing the voice en*ircly under the influence of the will, the larynx offers to our view a tructure accommodated to thefe two very dife ferent phenomena. Several cartilages umited tugether form its cavity, and their elattictty provents it from being ever clofid: hence a free paffage is fecured for the air. ' 'lo Weic tnoveable cartilages are attached mufcles, of which the voluntary contraction may increafe or dimiunt the dimenfions of the cavity ; circum? ances wheh are effertial to the production of the vorce. One of thele cartilages, very difforent in its itructure from the others, can clele the savity momertariv, by being deprefed on its sperture Lailly, a macous membane, conemous with that whinh lizes the mouth, lines shl thefo parts, and is prolonged into the fugero following all the ramitations os the bronchi.

## LARYNX.

'The fize of the laryns does not follow the proportions of the general ttature: it may be as large in a little perfon as in one of couliderable height; and this correfponds to what we know of the voice, the furce or weaknets of which do not depend on the fize of the individual. It would be an interelting refearch 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 fome peculiarities in the laryugeal ftructure; bitt the impoffibility of knowing, in the cafe of fubjects employed for diffection, what kind of soice the individuals poifeffed, prevents us from afcertaining any thing concerning this point. The difference in the voices of man and woman cannot but have been always obferved; and their larynses exhibit, on a merely fuperficial infpection, a great difproportion in fize. The organ is large and broad in man: it appears contracted in woman, fo as to be about one-third lefs: often it is not more than half as large as that of the male. This does not depend on ftature: a large woman and a fhort man have this diftinguifling character, as well as two individuals of equal fize, or as a tall man and fhort woman. The fame circumftance runs through all parts of the larynx : it is obferved alfo in the neighbouring organs, as the trachea, the os hyoides, and their dependencies; it takes place alfo conitantly.
The general form of the organ is nearly the fame, or at leat the differences are much lefs remarkable than thofe which affect the fize. However, the fexes are diftinguifhed in feveral points. The two plates of the thyroid cartilage are much more oblique and proportionally lefs feparated 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 fuperficial and roundcd in the female: much deeper and terminated by an acute angle in the male. The cricoid cartilage fhews no difference in the two fexes in front. The male and female larynxes are diftinguifhed alzolt folely by their fize behind; yet, as the two fides of the thyroid are more widely feparated in women, there is in them a greater relative breadth in the triangular fpaces 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 alfo broader, more prominent above, and thicker: its general form is the fame in both fexes. The glottis is alfo of the fame form in both, and diftinguifhed merely by its dimenfions. As the arytenoid cartilages are longer, and confequently more elevated in man, the ventricles of the larynx are more decply feated, and more difant from the external opening. The only difference obferved 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 obfervations 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 caufe of the differences in the key or pipe of the voice, which appear much rather to depend on the ftriking difproportion in fize. It will be feen afterwards, that the particular character of the voice in the infant depends on the fame caufe.

Defcription of the Parts of the Larynx.- We may diftinguifh, in this organ, the cartilages which effentially compofe its cavity, and give it folidity; 2. The ligaments which fie thefe together; 3. The mufcles moving the cartilages, and thereby conftituting the active inftruments of the voice ;
4. The glandular bodies fituated in the neighbourhood of the cavity; 5 . The membranous lining. The firt four divilions mult be examined in detail; the common membrane will be defcribed with the larynx taken altogether.

Cartilages of the Larynx.- Thefe are five in number. The firlt, 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 mufcles. The fecond or cricoid cartilage, which poffeffes, as its name implics, an annular figure, forms the folid part of the cavity. Two arytenoid cartio lages, fituated behind, and much fmaller than the others, give to the glottis that mobility which makes it the feat of the voice. Laftly, the epiglottis, a true fibro-cartilage, has the office of clofing the larynx occafionally.

The thyroid or fcutiform cartilage occupies the front and lateral part of the larynx, meafuring more from fide to fide 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 lefs prominent acute angle, correfponding 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 divifions offers in front a nearly plane furface, flightly concave, covered principally by the thyrohyoideus mufcle. An oblique line bounds this furface ex. ternally, and affords attachment to the thyro-hyoideus, fterno-hyoideus, and the inferior conftrictor of the pharynx. Behind it is a fmall furface covered by the two latter mufcles. This cartilage prefents behind a concavity in the median line, correfponding to the front prominence: the ligaments of the glottis and the thyro-arytenoidei mufcles are attached to this. Two plane furfaces, floping backwards, correfpond above to thefe mufcles, from which a fatty cellular fubftance feparates 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 larget, 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 night prominence correfponding to the external oblique line, and terminates beyond this by an appendix which will be mentioned. The inferior edge is florter, concave in the middle, and has on the fides two convex prominences correfponding to the lower ends of the external oblique lines, and then two depreffions. It affords attachment to the crico-thyroid membrane and to the crico-thyroidei mufcles. The potterior margins, two in number, are directed obliquely, and reft againft the fpine: rather çoncave above and convex below, they afford attachment to fome fibres of the ftylo and palato-pharyngei. A rounded procefs, of different lengths in different fubjects, directed obliquely backwards, furmounts each of thefe margins, and is connected by a ligament to the extremity of the os hyoides: thefe are the fuperior cornua of the thyroid cartilage. A fimilar rounded procefs, fhorter than the former, directed rather forwards, terminates each of the perpendicular margins below: thefe are the inferior cornua, and are articulated by their extremities to the fides of the cricoid cartilage.

A round opening is fometimes feen on each fide of the cartilage, towards its upper part, tranfmitting an artery and nerve to the cavity of the larynx.
The cricoid or annular cartilage occupies the lower and

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back part of the larynx, of which it more particularly compofes 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 polterior borders of the thyroid. The external furface muft 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 mufcles; and further back by the thyroid cartilage, whofe inferior cornua are articulated to two fmall rounded furfaces. The broad pofterior furface is nearly quadrilateral, and prefents, in the middle, a perpendicular rifing, covered merely by the membrane of the pharynx; on the fides, two ftrongly marked depreffions, in which the pofterior crico-arytenoidei mufcles are placed. The internal furface of the cartilage, every where concave, is lined by the laryngeal membrane. The fuperior circumference prefents in front a broad and fuperficial excavation, to which the crico-thyroideal membrane is attached, and on the fides of this the infertion of the lateral crico-arytenoid mufcles. Behind, the edge of the cartilage rifes confiderably, and prefents two fmooth furfaces for articulation with the arytenoid cartilages: thefe two furfaces are oblique, narrow, and convex; between them the arytenoid mufcle 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 pofterior portion. It is joined to the firft ring of the trachea by a membrane fimilar to that which joins together the other rings, and affords attachment behind to the pofterior tracheal membrane.

The arytenoid cartilages, two in number, a right and a left, are much fmaller than the preceding, placed at the back of the laryma, 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 fingle 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 criooid cartilage, and caufe, 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 poffeffes a pofterior concave furface, filled by the arytenoid mufcle; an anterior convex one, with excavations filled by the arytenoid gland; an internal flat and perpendicular one, turned towards the oppofite cartilage, and covered by the membranous lining. Thefe furfaces are united by three angular edges; an internal, an ex. ternal, and anterior: in the latter there are fometimes inequalities. The bafis offers behind a concave oval articular furface, covered by a fynovial membrane, directed downwards and outwards, and refting 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, fometimés confifting of a fmall diftinet cartilage, and always affording attachment to the aryteno-thyroid ligament. The apex, brought to a fharp point, is inclined backwards and inwards. It is commonly furmounted by a fmall tit of cartilage, connected to it, involved in the mem. brane, and turned towards the pharynx. Soemmerring calls thefe cornicula laryngis. Another frall rounded portion is feen on each fide in the membrane, which paffes from the

[^2]epiglottis to the arytenoid cartilage. The fame author calls thele cartilagines laryngis cuneiformes.

All thefe cartilages have a common ftructure. Theit denfe and folid tifue, and greyifh colour, which is not fplendid like that of the articular cartilages, approximate them to the bony fyttem. In the progrefs of years, they come ftill nearer to it : they are conflantly found offified in old fubjects, particularly the thyroid and cricoid. Even before this time we very frequently find in them reddifh points, the nuclei of an incipient and often extenfive offitication. An areolar fubltance, analogous to the fpongy texture of bones, forms at the fame time, and contains a little medullary texture, from which an oil may often be expreffed.

Fibro-cartilage of the Epiglottis. - This has not the fame ufes as the parts juft defcribed. Situated at the upper part of the larynx, between it and the root of the tonguc, it varies in its direction. It is perpendicular in the ordinary ftate, fo as to leave the glotis free for the purpofes 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 tranfverfely : it is directed anteriorly, or towards the mouth, in the perpendicular pofition of the organ ; fuperiorly, or towards the pharynx, in the horizontal ftate. It is covered by the macous membrane of the mouth, continued to it from the tongue, and forming three folds between thefe two organs. The middle, which is the moit ftrongly marked, is prolonged on the lingual furface : this is fometimes called fronum epiglottidis. The lateral duplicatures are loofer and lefs confpicuous, and end on the circumference of the epiglottis. The frenum, being flretched when the epiglottis is depreffed, muft affift a little in elevating it, when the tongue is carried forwards : but if we cut the frænum, the epiglottis ftill recovers its perpendicular pofition, fo that this fold carr affect it but very lightly. 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 feparated from the thyrohyoideal membrane by the peculiar tiffue conftituting the epiglottic gland. The laryngeal furface is convex from above downwards, and concave tranfverfely: it is covered by a continuation of the laryngeal membrane, and its afpects, in the different pofitions of the organ, may be underftood, from what is faid concerning thofe 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 bafis 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, compofing the epiglottis, is thicker below than above, on the median line than on the fides: it belongs to the membranous fibro-cartilages. (See Fibrocartilage.) Its two furfaces, particularly the laryngeal, prefent a great number of fmall holes, like the prickings of a pin, lodging glandular bodies: thefe are clofed by the mucous membrane, and may be feen by removing that part. Several of them communicate from one furface to the other.

Articulations of the Larynx.- Its cartilages are united to each other, or to the furrounding parts, by fibrous and mem-

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branous connections: we finall confider at prefent only thofe of the firlt kind, the others belong to the gencral defeription 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 cricuid cartilage, and is attached to the middle of the lower border of the thyroid; it is lolt infenfibly on each fide on the mucous membrane of the larynx. It is deepeft in front, and grows narrow and lefs diltinct towards the fides; it has a fibrous appearance in the former, which it lofes in the latter of thefe fituations. Covered on the fides by the crico-thyroidei mufcles, it is fubcutaneous in front, and corrcfponds 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 difinct ligamentous fibres. An anterior fafciculus is continued obliquely downwards and forwards from the front of the thyroid cornua to the fide of the cricoid cartilage. A pnfterior goes from the back of the fame procefs, and afcends to be fixed to the back of the cricoid under the arytenoid cartilage. There are fome irregular fafciculi, befides the two firit defcribed.

The oppofed furfaces of the aryteroid and cricoid carti. lages are covered by very loofe fynovial membranes, lubricated by a copious fecretion, and ftrengthened by ligamentous fibres at fome parts. The moft remarkable of thefe fibres are on the infide and behind; externally they are little apparent, and feem often hardly to exift 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 compofed of parallel fibres, and about half an inch in length, arifes from the anterior prominence of the bafis of the arytenoid cartilage, paffes horizontally forwards and iuwards, 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 oppofite fide. It is covered externally by the thyro-arytenoid mufcle, and correfponds every where elfe 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 mufcle. It is faid that a tranfverfe fibrous fafciculus 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 fafciculus, about half an inch in length, which is covered in front by the epiglottic gland, and is fixed to the angle of the thyroid, juft 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 fuperiora of Soemmerring.

Mufcles of the Larynx. - The organ is moved by two kinds of mufcles, of which one is common to it with other parts, the cther belongs particularly to it The firft are the muf.
cles of the os hyoides, and move the whole organ together = thefe, as well as the os hyoides, are defrribed in the article Deglutimon. The others are concerned in moving on each other the parts of the larynx.
The crico-thyroideus is a thin quadrilateral mufcle, fituated 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 pofterior furface, the internal fibres are fixed. The external are longer, and reach to the front of the inferior thyroid cormaa. An interval appears between the right and left mufcles, in which the crico-thyroid membrane is vifible. It correfponds in front to the fterno thyroideus, and to the inferior conltrictor of the pharynx; behind to the cricothyrond membrane, and to the crico-arytenoideus lateralis.
The crico-arytenoideus pofficus is a ftrong mufcle, 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 fhortett, and proceed nearly tranfverfely; the following are longer, and gradually more and more oblique from below upwards and outwards.; they are attached to the poterior and outer part of the balis of the arytenoid, between the infertions of the arytenoideus, and of the crico-arytenoideus lateralis. In front it correfponds to the cricoid cartilage, and behind to the membrane of the pharynx.
The crico-arytenoideus lateralis is a thin and flattened mufcle, rather elongated and quadrilateral, proceeding from the fide of the cricuid to the fide of the arytenoid cartilage. It arifes from the fuperior margin of the former, pafles obliquely backwards and upwards, and is fixed externally to the bafis of the arytenoid. It is connected in front with the thyro-arytenoideus, feparated on the outfide from the thyroid cartilage by cellular fubftance, 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 arifes near the angle of that cartilage, from the lower part of its pofterior furface, proceeds backwards and outwards, becoming rather narrower, and is inferted in the front of the arytenoid cartilage, below the preceding, to which it is clofely connected. It correfponds externally to the thyroid cartilage, and internally to the laryngeal membrane.

The arytenoideus is the mafs of mufcular fibres filling the pofterior concavities of the arytenoid cartilages, and occupying the interval between them. The fibres arife from the concave furface of one cartilage, go acrofs, and are inferted into the correfponding part of the oppofite cartilage. They are partly oblique and partly tranfiverfe; the former confilt of a few fuperficial fibres croffing refpectively from the bafis of one to the apex of the other cartilage, and confequently decuffating like the two parts of the letter X. The great mafs of the fibres has however a tranfverfe direction. From the different courles of thefe two deferiptions of fibres, two arytenoidei mufcles have been dítinguined; viz. an obliquus and a tranfverfus. Thefe fibres are placed between the membranes of the larynx and pharynx: in front they are alfo partly in contact with the arytenoid cartilages.

Under the names of thyreo-epiglotticus, major and minor, fome anatomits have deferibed a few flender fibres proceeding from the pofterior furface of the thyroid cartilage to the fide of the epiglottis. Others do not admit the exiftence of thefe mufcles, which are allowed by all not to be found generally. Haller regards thefe fibres, when they

## LARYNX.

exilt, as a part of the thyro-arytenoideus. The motions of the epiglottis, in the human fubject, are all entircly of a mechanical nature, and not performed by mufcular action.

Glands of the Laryn:- - There are three bodies of this defcription 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 lpace 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 fpaces left hetween the fides of the thyroid and the cricoid cartilage. This \{pace is filled by a body, manifetly cellular and adipous for the moft part, but covering below fmall granular glands, fometimes united together, fometimes infulated, and findiag prolongations into the holes with which the epiglottis is pierced. The latter open on the laryngeal furface of the organ by very diftinet apertures. The glandular bodies are fometimes fo much covered and concealed by the furrounding fat, that they can hardly be diftinguifhed. In all cales we may remove by diffection the le bodies from the openings in the epiglottis, which then appear as empty fpaces. We may dittinguifh as many as thirty of thefe. The fuperior excavations of the epiglottis contain fmall diftinct grains: the epiglottic gland and its cellular tillue 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 itraight 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 fmall diltinct grains, very analogous to thofe which compofe the lacrymal gland, and generally of a greyifh hue. It may be compared in form to a carpenter's iquare. The perpendicular branch, which is rounded, and may be felt by the finger, when we feize the fold that contains it, lies againtt the front of the arytenoid cartilage, and is loofe abore. The horizontal branch runs along the fuperior fold of the ventricle of the larynx, and is lefs promineat than the other. The. Gituation, at which the two branches form their angular union, is in front of the bafe of the arytenoid. The glandular grains of this fmall body, probably, have excretory ducts terminating on the edge of the fuperior aperture of the larynx : but thefe apertures are not vifible like thofe of the ducts of the laft-mentioned glands.

Thefe epiglottic and arytenoid giands furnith a mucous fecretion, and are of the fame nature as the others which belong to the laryngeal membrane. The paffage of the food in deglutition, and of the air in refpiration, requires that thefe organs thould be defended by a mucous fluid.

The thyroid gland is one of thofe organs, of which the ufe is entirely unknown to us, although its conftant exiftence, 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 bas any concern in the fame functions. This organ, as well as the fpleen, capfulx renales, \&c. fuggelts a very important reflection; wiz. that our notions concerning the general relations of the functions of the animal economy muft ftill be neceffarily very imperfect, and that we fhould deceive ourfelves if we fuppofe that we can embrace the plan of nature in one general view, and raprefent it accurately in our phyfiological claffifications. Can we
doubt that the unkrown functions of thefe vifecra 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 conliderably modify our prefent notions on thofe fubjects. Why is the theory of foctal exiffence fill fo obfcure? Becaufe the tunctions of feveral organs, at that time perfectly developed, and in a very active flate, efcape our obfervation, and we camnot 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 fitiking variations. No particular condition of the body, no modification of any particular function, no differences in tiature, in the tiate of the larynx, trachea, lungs, \&ic. have been obferved to accompany thefe varieties. Its form is tolerably conflant; but in this refpect there are alfo varieties. It is compoled of two diftinct portions, nearly pyramidal in their figure, occupying the fides of the larynx, and of the upper extremity of the trachea, fo that the bafe is placed downwards and forwards, and the apex Itretches upwards and backwards. Variations are obferved in the extent and direction of thele two lateral portions. They are united in front by a frall fateened tranfverfe band, which may be large and thick, fmall and narrow, or made up of diftinct tubercles ; inceed, we fcarcely find it the fame in two individuals fitcceflively. In a few inftances this part does not exift, fo 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 fternothyroidei, fterno-hyoidei, omo-hyoidei, and latiffimi colli. It relts behind and towards the outhide on the vertebral column, to which a loofe cellular fubitance connects it, and where, according to its bulk, it conceals or leaves expofed the nerves and blood-veffels of the neck. Internally, or towards the middle line, it covers the fides of the firt rings of the trachea, part of the cricoid and thyroid cartilages, the crico-thyroidei, thyro-hyoidei, and infer:or conArrictor of the pharynx. Exactly in the middle and front it conceals the two firft rings only of the trachea. A luofe tiflue feparaies it from all thefe parts.
It is furrounded by no membrane: the exterior cellular tiflue is rather more denfe and compact than the reft, as in the pancreas and falivary glands; but it forms no proper mentrane. It never contains any fat.
With this external covering fome mufeclar fibees are blended; not noticed by Albinus, nor by inoft other anatomifts, but forming the levator gland. thyr. of Fiailer, the mufculus giand. thyr. of Soemmerring. It does not exit conftantiy; is generally a fingle mufcle, fituated in the middle of the larynx, fometimes is placed towards the right or left, and fometimes, but very rarely, is double. It anfes by a narrow tendinous llip from the bafis of the os byoides; defcends in a ftraight courfe, growing broader, and has its fibres expanded on the froat of the gland, and blended with the covering of the organ. It muit apparently have the effect of fulpending and fupporting the gland. Mufcular fibres have fometimes been feen, extending over the furface of the gland from the crico-thyroideus. Beides the effect, which thefe and the fibres juft defcribed may produce oa the gland, it will be expofed to powerful compreciion againft the larynx and trachea by the ferno-hyoidei and liernothyroidei, which embrace it very clofely.
The proper tiflive of the thyroid gland varies confiderably
in colour and denfity: it is often red, and even dull brown, like the fpleen, fometimes yellowifh or greyifh. It may be flabby or compact; but its denfity varies lefs than its colour. The fubfance of the organ, like that of other glands, is difpofed in diltinct 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 cafes of jncreafed volume without organic change, where the furface of the organ is tuberculated and irregular from the unequal prominence of the lobes. In the natural fate of the part, we may diftinguifh the lobes by diffection, as the great vafcular trunks run in their intervals: the latter, which are hardly perceptible at firlt view in confequence of the lobes being preffed againlt each other, become apparent by the ufe of the knife. A fine cellular tiffue, never containing any fat, and fmall in quantity when compared to what is found between the lobes of orher glands, is feen in thefe intervals.

The lobes of the thyroid gland are mixed in fome fub. jects with rounded veficles, containing fometimes a yellowifh, fometimes a tranfparent and colourlefs fluid. In moft fubjects thefe cyfts do not exift, and in many we cannot obferve the flightelt traces of them. Yet flices of the gland recently cut give us a peculiar feeling of vifcofity, not obferved in other glandular bodies, and proceeding from the fluid juit mentioned. If an acid be poured on the cut furface, a fight whitenefs is produced, as in moft other crgans.

Although provided with a great number of blood-veffels, the thyroid gland contains in its capillary fyftem lefs blood than the liver, the kidney, \&c. It only difcolours the water of maceration once or twice, which arifes evidently from the fmall number of its capillaries. It is not by the large veffels, 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 moft others. Slices of it dried are greyifh and friable. When boiled, they curl a little before ebullition, and then become confiderably harder and corrugated as almof all the animal folids do. But, inftead of growing foft again, like the mufcles, tendons, \&c. they are rendered ftill harder, like the glands, by a continuance of the boiling. Acids and alkalies have no peculiar operation on the tiffue of the thyroid gland.

Nothing like an excretory duct has hitherto been difcovered in this body: no communication has been pointed out between it and the trachea or larynx. The emphyfema, of which it is fometimes the feat, proves nothing in this queftion; for the air is contained in the cellular tiffue which unites the glandular lobes, and is introduced in confequence of its general diffution in the cellular tiffue of the neck. By inferting a blow-pipe into the fubftance of the organ, and inflating forcibly, it may generally ba diftended fo as to form an artificial emphyfema. The air, in this cafe, is not contained in the veficles, but in the cellular interltices: it follows the courfe of the vafcular trunks.

Some fexual differences may be noticed in the thyroid gland. It is generally larger in the female, and its lateral divifions 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 clofe on the fides of the larynx, below the external oblique line of the thyroid cartilage. But there are fo many varieties in other points, that this fexual difference is often little obfervable.

The differences from age are few. The gland is proportionally larger in the foctus and child than in the adult. Its front prominence is more ftriking at the firit period : and its colour is deeper and brownihh. Its proportional excefs of volume cannot, however, be compared to that of the thymus, capfulx renales, \&c. : indeed, it is not fufficiently remarkable to authorife us in concluding that the ufe of the part is particularly relative to fcetal exiftence, although feveral authors feem 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. Thefe veffels are connected in the gland by large and numerous inofculations. The veins correfpond in number and magnitude to the arteries, and terminate in the jugular and fubclavians. The abforbing veftels are alfo confiderable, and join the jugular glands. The thyroid arteries are accompanied by nervous filaments from the great fympathetic ; but it cannot be eafily decided whether the proper fubftance of the gland receives any nervous fupply.

As we have ftated already that the ufe of this organ is unknown, we fhall not fatigue the reader with mentioning and refuting 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 lift of "opiniones de glandulo thyreoider ufu;'" and there is a fimilar catalogue in Haller's Elementa, lib. ix. fect. I. § 22

## Of the Larynx in general.

General Conformation.-The larynx is a cartilaginous cavity moved by various mufcles. It is broad above, narrower below, and poffeffes an external figure, which does not correfpond to that of the internal hollow. In fact, the latter, being effentially formed by the cricoid and arytenoid cartilages, and the membranous coverings belonging to them, poffefles nearly an uniform diameter throughout; and it is moft contracted towards the upper part. This arifes from what we have faid of the thyroid cartilage, which rather protects than forms the larynx, although it is effential to its ftructure and action, from the attachment which it affords to muicles and ligaments. We may confider, in our view of this organ, the external and internal furfaces, the fuperior 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, almoft entirely covers the cricoid cartilage. Behind, the external furface of the larynx, more depreffed in the middle than 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 fpace, broad above and narrow below, filled with a more or lefs adipous cellular fubtance; laftly, two rounded edges, bounding the fpaces juft mentioned, more prominent than any other parts in this afpect, and refting on the vertebral column, fo 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 firft is inferior, in point of fituation, and formed entirely by the cricoid ring. The proportions of this part are conitantly the fame; 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 ftate 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 juft behind and below the root of the tongue, and is often called the glottis, although it has no fhare in the formation of the voice. Of its relation to the pharynx, in refpect to deglutition, fee a further account in that article. The part, at which thefe two divifions of the larynx are united, is remarkable for the two membrannus folds, called ligamenta glottidis, or chordx vocales. Thefe arife from the bafes of the arytenoid cartilages, and pafs obliquely, forwards and inwards, to meet together at the concavity of the thyroid, where they are fixed juft under the epiglottis. They leave between them a triangular \{pace, of which the bafis 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 defcribed above: as the meafurement of the opening from behind forwards confiderably exceeds the tranfverfe dizmeter, 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, differeffentially in their compofition from thofe of the inferior aperture. The former are merely membranous: the latter contain the fibrous fafciculi, defcribed already under the name of the thyro-arytenoid ligaments. The interval left on each fide between the fuperior and inferior folds conftitutes the ventricles of the larynx, or facculi laryngis. Their form muft correfpond to the direction of the folds, which have been juft defcribed; their depth is inconfiderable. Sometimes the mucous fecretion of the internal lining accumulates here for a fhort time: fometimes foreign bodies become engaged in them, and produce fuffocation by ftopping the rima glottidis, or caufe great diltrefs until they are removed. The ventricles, as well as the fuperior laryngeal folds, correfpond on the outfide to the thyro-arytenoidei mufcles: the inferior folds feparate thefe mufcles from the crico-thyroidei, which complete towards the outfide the fpace feparating thefe folds from the circumference of the cricoid.
The inferior extremity of the larynx, formed by the infes rior circumference of the cricoid cartilage, is exactly circular. It is united to the firlt ring of the trachea by a fibrous membrane, fimilar to thofe which unite to each other the remaining rings of this tube. Behind, the pofterior tracheal membrane is attached to it.

The fuperior extremity, much larger than the inferior, is formed in front and at the fides by the upper edge of the thyroid cartilage. This edge is connected to the os hyoides, which is immediately above it, by the loofe and foft thyrohyoideal membrane: this is thicker in front than towards the fides, has very little fibrous appearance, but feems rather of a cellular nature. It is covered by the hyo-thyroidei and fterno-hyoidei ; it correfponds behind to the epiglottis, from which the epiglottic gland feparates it, and to the la-
ryngeal membrane. It is Thorter in the middle than at thic fides; confequently the cornua of the os hyoides can be elevated to a greater diftance from the thyroid cartilage than the bafis of the fame bone, and the bafis of the tongue, which is fupported 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 conveycd towards the offophagus. 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 bodics of a cartilaginous or bony nature. Thefe are named ligamenta hyo-thyroidea lateralia, to ditinguifh them from the former, which is called lig. hyo-thyroid. medium. The length of thefe lateral ligaments, in addition to that of the thyroid cornua, meafures the diftance between the os hyoides and the thyroid cartilage behind, which is about double the front interval.

Behind the edge of the thyroid cartilage, and in front of the epiglotis, there is a triangular fpace filled by the epiglottic gland, and its adipous cellular fubitance. This fpace is bounded above by the fold of mucous membrane continued from the bafis 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 queftion is ftronger in the middle than at the fides: it arifes from the concavity of the os hyoides, and is attached to the middle of the epiglottis. Behind this face we fee 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 compofe 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 pofition 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 fyltem common to the refpiratory and digeftive organs. It proceeds backwards from the bafis of the tongue over the front of the epiglottis, forming, as it paffes, the three folds already defcribed: it is reffected over the loofe edge of this fibro-cartilage, covers its pofterior furface, and then enters the larynx. On each fide it is continued directly backwards to the aryteroid cartilages, being loofe and unconnected at its edge, and correfponding only to the thyro-arytenoidei mufcles. At the pofterior 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 laryny, and towards the bafis of the arytenoid cartilage, it forms on each fide a horizontal fold, directed obliquely forwards to the concavity of the thyroid, to which it is fixed, joining that of the oppofite 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 diftinguifhed 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 duals. Mucous glands are apparent in feveral points of its furface. The capillary fyftem of this membrane is not very confiderable, and hence arifes its palenefs,
palenels. It polfencs rery acute fenfibility from the fuperior 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 fenfibility is not excited by the contact of air, as that is liabitual ; but it is quickly roufed by vapours diffeminated in the atmofphere, particularly when they are at all acrid.

Mechanifin of the Larymx.- 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 Deglutition.

The laryns is moved in the fame way, and by the fame mufcles, 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 fenfible depreffion. Thefe 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 aicent of the larynx is neceffarily accumpanied by an elongation, and its defcent by a fhortening of the trachea; in the former cafe its diameter is diminifhed, and in the latter increafed. Some have fuppofed that thefe changes in the trachea are concerned in producing the alterations of tone; but if they produce any effect on the founds, it is very fight, 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 largnx ? We know very little on this fubject. We may obferve that they have no relation to the force or weaknefs of the found ; folong as the voice remains at the fame tone, the larynx does not move, however the found may be changed in ftrength or weaknefs.

The thyroid and cricoid cartilages admit of reciprocal motion; the former can be brought downwards and forwards upon the latter; in this cafe the chordx vocales are relaxed. The crico-thyroideus mufcle has this effect.

But the motions of the arytenoid cartilages are the mof important, on account of their connection with the chordæ vocales. They may be brought towards each other, until, indeed, they come into actual contact; this is attended with a proportionate approximation of the chordx vocales. When the cartilages tonch each other, the rinia glottidis is completely clofed; this is done by the arytenoid mufcle. This flutting of the aperture is fometimes produced fpafmodically, as when the parts are irritated by acrid vapours, or by foreign bodies coming into contact with them. Refpiration muft experience a termporary obftruction under fuch circumftances. When thefe cartilages are moved away from each other, the chordx vocales are feparated, and the rima glottidis proportionally enlarged ; this is the aftion of the crico-arytenoideus polticus. The arytenoid cartilages admit alfo of being moved forwards and backwards; the chordx vocales are rendered tenfe in the former ftate, and are relaxed in the latter. The thyro-arytenoidei and crico-arytenoidei laterales carry them forwards; and the crico-arytenoidei poftici backwards.

Developentent of the Larynx.-The differences of this organ, according to the age of the individual, are not lefs confpicuous than the fexalal diftinctions in the adult. They refer to two principal periods ; viz. the years which precede, and thofe which follow puberty; for the great changes \#, the ftructure of the larynx, which in this relpect follows the
developement of the fexual organs, take place sbout this epocha. In the foetus 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 obferved both in the male and female. At this time the organ is much fmaller in proportion in both fexes, but more particularly in the male, than it will be in the fequel. 'This' will appear in a more ftriking 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 ea:ly in life, projects before the larynx; while in the adult, and efpecially in the male fubject, 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 obferved of the cricoid cartilage ; and all the parts at the back of the larynx prefent the fame difpotitions as in the fequel, excepting the difference in fize.

The nature of the voice is influenced by this diminutive fize of the larynx, and by the famenefs 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 diftinguifhes the voice of man from that of woman.

As the growth proceeds, the larynx approaches to the ifate in which we find it in the adult. Yet it does not follow the fame courfe of developement as moll other organs. In children of fix months it is often as large as in thofe of two years. Sometimes in a fubject of three years it will be imaller than in one of a year, although the flature of the two may be fuitable to their refpective ares.

A change almolt fudden, or at lealt much lefs 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 ftructure. The change is much more remarkable in man than in woman, becaufe 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 dimenfions by a fpeedy growth analogous to what is obferved 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 cartulage more coufiderable in man.

In the old perfon, as the cartilages are conitantly receiving frefh depolitions of earthy matter, they at laft nearly equal bone in hardnefs. This change affects the thyroid firk: then the cricoid, and laitly the arytenoids. The epiglottis is lardly ever affected, probably on account of its peculiar organization, which refembles that of the cartilages of the nofe, ears, \&c. This exemption is very favourable to its functions, which require pliancy. The voice always becomes weak and broken in the aged: the weaknefs of the mufcles and the fliffuefs of the joints account for this, as analogous changes explain fimilar phenomena in the organs of locomotion.

The remarkable change in the pipe of the voice produced by the removal of the telticles has been mentioned in the article Gexeration. It has not been afcertained whether there is any change in the organization of the larynx in thefe cafes.

The parts hitherto defcribed are the inftruments by which the voice is produced: the action of other organs is required,
quired, in order to modify this, fo as to form it into articulated founds or fpeech. Of thefe the tongue and the os hyoides are the molt important: the latter bane is the balis of the tongue, the fixed point from which its mufcles proceed, as alfo the point of attachment of the chief mufcles of the larynx. The defcription of thefe organs, and of the mufcular powers em. ployed in moving them, will be found in the article Deglutition. A knowledge of the parts about the throat, which anatomills generally term the fauces, is alfo effential in confidering the fubjeet of the voice. The larynx opens into a large membranous cavity, defeending from the bafis of the Ikull in front of the lix upper cervical vertebre, 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 clofed. A nother palfage goes above the palate into the nofe; but this in not fo changeable in its dimenfions as the former. Thus the air, expelled from the larynx, muft proceed either through the month or the nofe, or both. The mouth is the large faice bounded by the lips and cheeks, the tongue and palate. Into it the tongue projeets below, with free power of motion in every direction, and in the ordinary flate nearly fills the cavity. The two rows of tecth form a kind of divifion into an outer and an inner cavity. For the more particular defcription of all thefe parts, fee Deglutition:

It was formerly held that the palate and uvula had a condiderable influence on the voice: but this feems doubtful. The foftnefs of the part, which is drawn down againft arother foft part, the tongue, renders it unfit for producing any modification in the found. Animals, for the moft part, lave no uvula, and we know that the organ may be varioully difeafed without affetting the fpeech: "Wherefore, fays Haller, (Elem. Phyfiol. lib. ix. fect. 2. § 17.) if affections of the uvula have produced any confiderable alterations in the voice, I fhould be rather inclined to alcribe them to fome undue paffage of the found from the velum palati being at the fame time injured. Thus, when the nofe is difeafed, a peculiar modification of the voice takes place, not becaufe the noftrils are moved in the vocal functions, but becaufe they tranfmit or reflect the fonorvus tremors of the air. Thus, too, when the woice is injured by deftruction of the bony palate, an artificial plate, which rellores the power of reflection, without adding any motion, remedies the deficiency. I have the fame opinion concerning fpeech. The guttural letters may be lefs perfectly formed, when the organs about the throat are difeafed, becaufe the allifions of parts carnot 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 deftroyed by difeafe, or originally deficient without the fpeech being impaired."

The paflage from the pharynx, above the velum palati, leads into a large and irregularly formed bony cavity, lined with a foft membrane, and increafed by many excavations in the neighbouring bones. This is the cavity of the nofe, divided by a nearly perpendicular partition into two halves, the right and left nettrils. This cavity is defcribed under the articles Cranium and Nose. The air emitted from the larynx, rufhes into thefe bony hollows, when they are not filled with mucus, ftrikes their fides, and throws the whole of the furfaces into vibrations, from which important modifications of the voice enfue.

Pby fology of the Voice and Specch. - The voice, like all other Sounds, isa vibration communicated to the air; and it offers to our obfervation, like them, three diftinct kinds of qualilies, independent of each other. I. The tone, or the various degrees of acutenefs and gravenefs; 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 relasing to the ftructure, the fublance, or the figure of the fonorous body. The human voice is fufceptible of a fourth order of modifications; viz, that which we reprefent by the letters of the alphabet, and which is itfelf divided into two other orders; the one relative to the principal founds, which we reprefent by the vowels; and the other to their articulations, which conltitute the confonants. We do not exactly know on what the two latter modifications depend : and although we perceive to a certain point the circunitances under which they are executed, we are not jet able to imitate them by artificiai inftruments.

The found is produced by the paffage of air through the rima glotidis, or the nit-like ovening left between the two chorde vocalcs. Almoft invariably it is the paflage of the air from the lungs, in exfpiration, that produces the found : but there are fome rare exceptions to this. In hiccough, and under fome circumftances in coughing, found is produced during infpiration. Many conceive, moreover, that the phenomena of ventriloquifm 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 circumftance, that difeafes and accidents affecting it deftroy or modify the voice. If an opening be made in the trachea, below the larynx, fo that no eir fhall pafs 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 incilion between the os hyoides and the thyroid cartilage, and through the membrane, which connects the tongue to the epiglottis: through this tranfverfe opening he drew out the epiglottis with a hook, fo that the found, inftead of paffing through the mouth and nofe, came directly by the external wound. The voice was as Itrong as before, and very little changed in character. He drew the glottis between the fides of the wound, fo that the found could not pafs at all into the mouth and nofe: the refult was fill the fame. In thefe experiments the epiglottis may be completely confined, or even cut away, without affecting. the phrnomena, fo that it can have no consern 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 woice was deftroyed.

The two elaftic ligamentary and membranous bodies, which form the chordx vocales, ure analogous, in the human inftrument of the voice, to the various provifions for producing vibration in the different wind inftruments. No 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, unlefs it meets with a body fufceptible of being thrown into vibration. It is, moreover, afcertained that the fides of the inftrument are not the vibrating parts:. For the fubltance of which they are compofed, 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 inftruments, it afpears, that vibrations are produced in the air contained in the tube, as they are in the external air; that is, the intervention of an elaftic body is neceffary, which the blowing of the player agitates, and the vibrations of which are communicated to the air in the tube; or at leaft fome angular body, againit which the air may break as it paffes with violence, and thereby be thrown into vibration. In the flute with a mouth piece, in organ-pipes of various kinds, in the.
hautboys

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hautboy, baffoon, \&c. in trumpets, horns, \&e. there are different provifions of this kind, to which the chordx vocales are perfectly analogous. The tube then produces no found itfelf, it only modities, directs, or augments that which it produced at its embouchure by the fonorous body againit which the air breaks. The trachea of an animal is a continuous tube without any contraction, or any piece fufceptible 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 inftrument; and the only part of the vocal organ in the mammalia, which can be compared to the tube of one of our wind inftruments, is that placed in front of the glottis, viz. the mouth and nafal cavity. If we confider, not only the want of refemblance between thefe two cavities and all the inftruments which we are acquainted with, but alfo the almoft infinite number of means by which we can change their length, diameter, figure, and vents, -means which it is almoft impoffible to determine with fufficient exactnefs to deduce from them phyfical confequences, we fhall not be furprifed at the difficulties which the theory of the human vocal organ prefents.

But the mere paffage of the air through the glottis is not fufficient for the purpofes of this function. The voice connects us with the individuals of our own fpecies, enables us to communicate our thoughts to them, and muft, 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 conftantly breathing during fleep, without the production of any found : and we may exfipire, as ftrongly as we pleafe, in the waking ftate 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, deftroys the voice. An injury of one nerve deftroys 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 phyfiologitts, have afcertained that the effects are correctly ftated by Galen. In fhort, all the changes and conditions of the vocal organs, of whatever defcription, neceffary to the production and modification of found, are produced by the mufcles of the part, under the influence of the will. The exact nature of the mufcular motions, required for producing the voice, is not known. Bichat obferved, 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 ftronger. He ftates that it never was dilated during the formation of found. He obferved, moreover, that infpiration and exfpiration were conftantly attended refpectively by dilatation and contraction of the glottis.

The air expelled from the lungs through the opening, prepared for its paflage by the action of its proper mufcles, throws the fides of this aperture, the chordæ vocales, into a ftate of vibration: the fame effect is produced in the larynx, whofe cartilaginous ftructure renders it particularly fufceptible of fuch vibrations, and in all the furrounding organs. The found produced by the tremulous motions of all thefe parts is the voice. Hence we underftand why hoarfenefs and fmallnefs of the voice accompany catarrhs, in which the unufual coverings of mucus render the parts lefs fufceptible of vibration; why thofe animals which have the greateft quantity of cartilage and the leaft membrane in
their vocal organs, have the ftrongeft and moft fonorous voices, and vice verfa? We fee alfo that all animals provided with a pulmonary organ will have a voice; fince nothing more is required, for the production of this found, than the accumulation of air in fome receptacle, its expulfion in a mafs, with a certain force, and its meeting on its paffage with elaftic and vibratory organs. Fiihes, which have gills, and infects, in whom the diftribution of air is by means of trachex, produce no found.

It feems impoffible to explain how the paffage of air through the human glottis fhould produce vocal founds diftinguifhing man from all other animals, and how each animal fhould have his peculiar and characteriftic voice, where the differences of ftructure, in a part of fuch fimple formation, mult be very flight. Yet it feems true that the glottis alone produces the fpecific character of the voice in each animal. Numerous and refpectable 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 fubject, the cow, pig, cat, rabbit, hare, goofe, and frog. It is directly adverfe to what we have already flated concerning the neceffity of fome mufcular action to the production of the voice, and is fo contrary to thofe principles, by which thefe functions are fubjected to the will, that we cannot help doubting the whole affertion. After reciting what others have ftated, Haller adds, "with me thefe experiments have not been fo fuccefsful: I have fometimes obtained a found, 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 lefs in man." Elem. Phyfiol. lib. ix. fect. 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 thefe parts, which produce in it changes affecting its key or pipe.

Ventriloquifm is, perhaps, one of the mof fingular phenomena connected with the vocal functions; and certainly one, of which the nature is very little undertood. This name, as well as the Greek term of engaftri-muthifm, proceeds on the fuppofition 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 procefs. Ammann, the Swifs, whofe philofophical labours on the fubject of language, and particularly in the inftruction of the deaf and dumb, entitle him to much confidence, fays, that he faw an old woman who could fpeak during infpiration, and others have explained ventriloquifm in the fame way. We believe that the point has not been fufficiently afcertained by actual obfervation : and others, in their attempts at explanation, even fuppofe that it is produced, like ordinary fpeech, during exipiration. Some conceive that the tongue is fixed, and that fome motions of the pharynx and velum palati do the bufinefs. Richerand obferved, that a man who could give a dialogue between two fpeakers, with different voices, as if placed at fome diftance from each other, did not infpire while he was doing this, but that he expelled air in much. fmaller quantity than ufual. The fame author obferves, that a Mr. Fitz-James, who poffeffes the power of ventri-. loquifm in wonderful perfection, does it by means of an extremely gradual exfpiration, in which the air is brought out in a very flender ftream. He precedes this by a very deep infpiration: hence a full ftate of the flomach renders the exertion of his talent difficult, which all individaals, who have had the art in queltion, 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 diftances, and produce the mott complete illufion on thefe points. See Richerand, Elemens de Phytiologic, § 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 lics on the furface. The peculiar noife is produced by the air thus violently dafhed againt the parts.

Snoring is produced by a kind of tremulous of cillation of the velum palati, generally in infpiration, but fometimes alfo in exfpiration. Wailing, or the plaintive found produced in weeping, is the confequence of tremors of the foft palate, gradually diminifhed in force as the air is ex. fpred.

In humming the mouth is clofed, and the expired air enters the nafal cavities with tremulous motions of the mufcles of the fauces.
When the tongue is drawn upwards and preffed againft the palate, and then fuddenly depreffed, fo as to allow the air to pafs quickly, the noife called chuckling takes place. By drawing the lips between the teeth, and ther quickly feparating them, we can imitate the trot of the horfe; and by exercife we can even produce a found like the clapping of hands.

When we wifh to afcertain the odorous properties of any body, we fniff at it ; that is, the infpired and exfpired air is conveyed through the nofe with a tremor of the alr nafi caufing a particular noife.

Hiffing is produced by expelling the air between the teeth, when brought clofe 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 paflage for the air between it and thofe 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 increafe or diminilh the dimenfions of the openings through which it paffes. The prodution of a loud found requires a large quantity of air, a ftrong and accelerated exfpiration, and a confiderable tremor of the chord $x$ vocales. The lungs mult therefore be large and admit eafily of diftention; the trachea and larynx muft alfo be ample, and the reflexion of the found in all the paffages unimpeded. A diftended flate of the flomach is un$\mathrm{f}_{\text {dvourable }}$ to the production of fuch founds, as it impedes the defcent of the diaphragm. The impervious ftate of the lungs in the confumptive muft be equally unfavourable; and we accordingly find that the voice becomes weaker, as the difeafe advances.

In forming high or acute founds, a contracted fate of the glottis, with tenfion of its ligaments, are required; the air paftes rapidly through the narrow opening, and numerous ofcillations of its fides are produced. The whole larynx is carried upwards and forwards; and, in uttering the moft 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 finger on the laryns, which gives us immediate demonfration of its afcent, when we utter acute founds; by the comparatively acute voice of children and women, in whom the larynx is fmall, and the glottis confequently narrow; by comparative anatomy, which fhews us that the glottis is fmall and narrow in finging birds, large and relaxed in aniVol. XX.
mals which utter deep founds; by the blowing of wind in. ftruments, in which the opening for the paffage of the air is always contracted in order to produce the high notes; and alfo by this general fact, that the founds are always more acute in proportion as thefe inftruments are of fmaller fize.

If we talk too impetuoully, the quick paffage of the air throws the chordx vocales into too rapid ofcillations, and the voice fuddenly becomes exceedingly frill. Thefe changes have nothing to do with the loudnefs of the found; a weak as well as a fltrong found may be either acute or grave in its tone.

In the production of deep or bafe tones, an oppofite flate of parts is required; the larynx is carried downwards, and the head itfelf brought towards the cheft. This defcent, like the afcent, is about half an inch for an octave: In the male fex, where the larynx is larger, and the glottis confequently more ample than in the female, the voice is habitually deeper toned. Eunuchs and women may be taught to fing foprano, but not bafs. When very low tones are formed, in which the chordx vocales are greatly relaxed, the production of found ceafes altogether.

A human voice that has been much exercifed, can pars through about two octaves and a half in either direction from the middle; confequently it has a range in the neck of nearly three inches.
The queftion has been much agitated among phyfiologifts, whether the changes of tone in the voice depend on alterations in the diameter of the opening, or in the flate of terfion of the ligaments forming its fides. By the advocates of the former opinion, the organ of the human soice is compared to wind inftruments, in which the enlargement of the aperture renders the found grave, and its diminution acute; and by thofe of the latter to ftringed inftruments. We admit, in the preceding account, the efficacy of both kinds of changes, but we confider the alterations in diameter as the molt 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 acutenefs in females, whofe glottis is lefs by one-third than that of man, fhew that the fize of the aperture has a great influence. Obferving, on the other hand, that the chordæ vocales admit of confiderable tenfion and relaxation, we muft allow that thefe variations will render them fufceptible of executing, in a given time, vibrations more or lefs extenfive and rapid. And although they are neither dry, ftretched, nor ifolated, which are neceflary conditions to the production of found in thofe ftringed inflruments to which the larynx has been compared, yet they are analogous to vibrating bodies placed at the tcp of wind inftruments, 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 Phyfiologix, lib. ix., has given a long and very inftructive account of the whole controverfy. We fhall be furprized at feeing how very fmall a change can alter the tone, when we refled that the breadth of the rima glotidis does not exceed a line at its broadeft part, and that there is an almoft innumerable variety of tones diftinetly perceptible.

Singing is the expreffion of love and joy, common to birds with the human fubject. The pronunciation of words or letters is not effential to its nature. It includes the greatelt variety of acute and grave founds, and the moft rapid tranfition from the one to the other. In general the tone of finging is more acute than that of talking. The great difference between thefe two modes of vocal exertion is in the tranfitions of finging; in order to execute thefe, the larynx, inftead of relling, is fultained in a kind of equilibrium betweea the elevating and depreffing powers. A perfon will foon Tt
perceive

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perceive this by placing his finger on the larynx while he fings, or by obferving the throat of another. As finging requires the exertion of many mufcles, it foon fatigues. It alfo exercifes the mufcles of refpiration; as a large quantity of air is frequently required. 'I'he rapid paflage of the air in finging dries the parts quickly.

Speech is the formation of the voice, produced, as we have already defreibed, by means of the organs about the throat, nofe, and mouth, into articulated founds, by which men communicate their thoughts to cach other. All mals have a voice, bat manalone fpeaks in the fenfe 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 reafon can be drawn from organization, why man invariably fhould poffefs, and animals invariably want the power of fipeech.

The tones are not fo quickly changed as in finging, confequently the larynx is much lefs moved. Recitative is a kind of mixture of finging and fpeaking, partaking equally of the characters of each.

If we confider a letter to be a found, that cannot be refolved into more fimple elements, fpeech is the formation of the voice into the founds expreffed by letters, and the compofition of words from there.

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 degzee, without the tongue being applied to the lips or to any other part. Thele founds are produced in laughing, and fomething like them may be obferved in the viices of animals.

In the formation of the vowels, the paffage through the nofe is clofed ; the voice proceeds fraight through the tongue and lips, and the mouth is open. The larger the fpace left for the voice along the tongne 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. Thefe founds are the moft clear and diltinct, becaufe 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 muft therefore have vowels either before or after them. The found of the vowel in thefe cafes is altered by the tongue being applied to fome part in the cavity of the mouth, Itriking againlt the teeth or lips, \& c c.

The confonants are diftinguifhed into different claffes according to different principles of arrangement. Soemmersing gives the four following claffifications.

1. 2. Nafales; $n, n, n g . \quad$ 2. Orales; $l, r$. 3. Sibilantes; $f, g, b, a h, f$. 4. Explofive ; $b, d, k, p, q, t$. 5. Compohite; $x, z$,
II. I. Nafales; $m, n, n y$. 2. Liquidx; $1, r$. 3. Mutx; $f, b, c h, f, \approx, f c b, t h, v, w .4$. Explofive; $b, p, d, t, k, g$.
III. 1. Mutr; $k, p, t$. 2. Explofive et vocales ; $g, r$. 3. Explofive ; $f, b, f, f c b$. 4. Vocales ; $b, d, g, f, m, n$.
IV. 1. Gutturales ; $g, c l, h$, th. 2. Palatinæ; $d, l, n, r$, f. 3. Labiales; $b, f, m, p, w$. De corp. hum. fabrica, t. 6. p. 110 .

To point out the motions by which all thefe founds are produced, would lead us into too wide a field. We refer the reader to the ivork of Soemmerring already quoted, "and to Haller's Elementa Phyfiologix, lib. ix.

The remarkable change which occurs in the voice, at the time of pubert $y$, mult be referred to the fudden developement which the organ undergoes at that time, as we have already flated. The various affections of the mind are accompanied
by the utterance of particular founds; and this is floongly feen alfo in animals. In them, the wants comrected with the generative functions, afford the molt frequent caufe for the exertion of the yocal crgans. But we may obferve further, both in birds and quadrupeds. that certain modifications of the voice exprefs fear and anger, affiction for the off pring, joy and pain, that other are ufed in calling the aflembly together, and, in the cafe of sregarious animals, in imparting to each other fomething which we do not undertand. Similar vocal expreffions of what is paffing internally are obferved alfo in the dumb, who have not fearned to fpeak; and even animals diftinguifh in man the founds denoting anger, approbation, \&c. In the founds which we utter, on many of thefe occafions, in civiluzed fociety, there may be fomething 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 ! pecies of inftinct, and to exprefs the fimple voice of nature. Various malformations and difeafes of the organs concerned in \{peech impair or entirely deftroy the power of pronunciation. From the important fhare which the tongue has, in producing articulated founds, we fhould expect that extenfive injuries of it would be very injurious in this way. But experience fhews us that it may be very extenfively injured without greatly impairing the powers of fpeech. Indeed feveral letters may be pronounced without its aid. Mr. Louis has collented feveral cafes in his "Memoire phyfivlogique et pathologique, fur la Langue ;" in proof of this point, he itates, that after very ferious injurics the power of £pecch was at dirf greatly impaired; but that it gradualy returned. Memoires de 1'Acad. de Chirurgie, t. vo

Stammering may be caufed by too large and thick a tongue, by great lengt of the frxnum; by any caufes that impair the motions of this organ, whether they be referrible to organization, or to the ftate of the nervous fyltem, as in drunkenuefs, apoplexy, \&c.
Too great confinement of the organ, by its frxnum, fometimes prevents children from learring to fpeak.

Want of the front teeth, as well as unduc fize of the tongue, produces lifping.
The confinement of the tonguc 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 organieal defects, as the caufes of defective pronunciation, we do not mean to affert that this is conitantly true. A perfon who ftammers, for example, will often be able to fpeak clearly, if he will fpeak nowly.

The obftruction of the paffage of the found through the nofe, either by clofing the front openings of the noftrils, or by the elevation of the velum palati belaind, produces a peculiar modification of the voice, which is Atrangely enough termed, in common language, fpeaking through the nofe. Difeafes of the palate, or its velum, ulcerations, and preternatural openings in them, have alfo very confiderable effect on the voice ; the fame may be obferved of difeafe affecting the bones of the nofe.
Dumbnefs may be accidental, or may fublift from birth. In the former cafe, it arifes from organic injury; which either affects the mechanifm of the paris, or which intercepts the communication between the vocal mulcles and the brain. In dumbnefs from birth, deafnefs feems to be always the caufe; fo that the abfence of fpeech fhould here rather be called filence. This, at leaft, is conitantly the cafe, according to the obfervation of Sicard on the numerous pupils committed to his care. Here there is an abfolute ignorance of founds, and of their reprefentative value in letters of the alphabet. The vocal organs exhibit no marks of deficiency;
they are fit, in thort, to fulfil the ufes for which nature has deltined them, but they remain in a flate of inaction, becaufe the deaf infant is not confcious that he has the means of communicating his thoughts. See the article DumbNess.

Bichat, Anatomie Defrriptive, t. ii. Soemmerring, Dc Corporis humani fabrica, t. vi. I-Ialler, Elementa Phyfivlogix, lib. ix.

LasAIA, in Grography, a town of Naples, in Principato Citra; 21 miles S.S.V. of Cangiano.

LASANON, a word ufed by different authors in vety different fenfes; fome applying it to the trivet commonly ufed in kitchens; others to a clofe-ltool; and others, anong whom are Hippocrates, and the ancient phyficians, 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, thall hielp to draw away the fectudines.

LASCARIS, Constantine, in Biography, a learned defcendant of the imperial family of that name, was born at Conflantinople. He quitted his native city when it was taken by the 'Turks in ' 5 . 5 ', and went to Italy, where he was moll amicably received by duke Francis Sforza of Milan, who placed his own daughter, a child of ten years of age, under the care of Lafearis for inftruction in the Greek language. For her ufe be compofed 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 fchool for Greek and rhetoric. Having fent fome years in this employment, he was defirous of repofe, and embarked with the intention of fettling at a town of Grecce; but having touched at Meffina, he was urged by fuch advantageous offers to make it his refidence, that he complied, and paffed there the remainder of his days. Here he received the honour of citizenfhip, which he merited by his virtues as well as his learning, and by the inflex of fcholars which his reputation drew thither, among whom was the celebrated Bembo. He lived to a very adranced age, but the time of his death has not been exactly afcertained. He bequeathed his library to the city of Meflina. Hiṣ Greek grammar was printed at Milan in 1476 , and was the firlt book that iffued from the Italian prefs. A better edition of it was given in 1494, by Aldus Manutius: Erafmus confidered it as the beft Greek grammar then extant, excepting that of Theodore Gaza. Lafcaris was author likewife of two tracts on the Sicilian and Calabrian Greek writers.

Lascaris, Joan Axbiew, a learned Greek of the fame family with the preceding, came over to Italy, on the ruin of his country. He fludied at Padua, obtained a high reputation for his knowledge in the learned languages, and received the patronage of Lorenzo de Medici, who Sent him into Greece with recommendatory letters to fultan Bajazet, in order :o colleet ancient manufcripts. After the expulfion of the Medici family from Florence, in I49t, he was carried to France by Charles VIII., after which he was patronized By Louis XII., who fent him, in 1503, as his ambalfador to Venice, in which office he remained till 1508. He joined the purfuit of literature with his public employment, and held a correfpordence with many learned men. After the termination of his embalfy, he remained fome years at Venice, as an inftructur in the Greek language. On the election of pope Leo $X$. to the popatom in 1513 , he fet out for Rome, being perfuaded that he thoald meet with a favourable reception frem that patron of learning. At the inltigation of Laicaris, Len fuunded a college for noble Grecian youths at Rorie, at the head of which he placed the author of the plan. In 2588 , he quited Rome
for France, whither he was invited by Francis I. ; here he was employed by the monarch in forming the royal libraryHe was alfo fent as his ambaffador to Venics, with a view of procuring Greek youths for the purpofe of founding a college at Paris fimilar to that of Rome. After the accomplifhment of other importaut mifinons, he died at Ronse in 1535, at an advanced age. As an author he compored epigrams in Greek and Latin ; he tranfíted into the Latin language, a work extraEted frem Polybius, on the military conllitutions 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 extenfion of literature.

LASCHE, in Gcography, a town of Bohervia, in the circle of Chrudim; eight miles E. of Chrudim.
LASCHI, in Bigrafby, an admimble finger and actor in the firlt burletta band of fingers which arrived in England during the autumn of 1748 , when ferious operas were difoontinued by the abdication of lord Middlefex, who was as unfuccefsful in his opera regency, as James II., in en. deavouring to eftablifh the Roman Cathoic religion in this country.

The new troop confifted of Pertici, as luffocaricato, La chi, tenor, and Guadagni, ctaunter 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 beft comic actors we ever faw on any flage, formed a very good troop, and in the comic operas of "La Comedia in Comedia,", "Orazio," "Don Colafcione," " Gli tre Civifbei Ridicoli," \&c. cumpored by Latilla, Mitale Refla, and Ciampi, who came over as maeftro to the company, pleafed the public and filled the theatre very fuccefsfully during the whole winter. Lafchi was certainly the beft firft buffo, except Lovatini, that has ever appeared on our Alage: and the acting of him and Pertici was undoubted'y the moit amufing and ingentous that can polfibly be innagined.

LASCIGO, in Grography, a town of Naples, in Principato Citra; 18 miles W. of Policaftro.
LASCO, Jons A, in Biography", a zealous promoter of the Reformation, was born in Poland, of a noble family, about the clofe of the fourteenth century. He received the early part of his education in his own country, and then travelled into foreign parts for improvenient. In Switzerland he became acquainted with the celebrated Zuingle, by whofe influence he determined urpo fludying divinity, and having by the example of his friend imlibed the firit of the reformation, he returned home with the defign of propagating the principles which he regarded as having their foundation in important truth. At firf he was pronoted to a high flation in the Catholic clurch, and at length was nominated bifhop of Vefprim, in Ilungary. His honours, probably, did not fit ealy upon him, and he determined to make an open avowal of his fentiments; by this decided courfe he drew upon himfelf the vengeance of the Catholic bilhope, 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 fhield of his authority in protecting his bifhop, and he was obliged to quit Hungary in the year 1540. In 1542, he was chofen minifter of a church at Embden, and in the following year he went to Oldenburgh, to eltablifh the doctrines and dilcipline of the reformation in that diftrict. In 1544, he was invited into Pruffa, by duke Albert, for the fame purpofe, but as he was not altogether a Lutheran, he was obliged to relinquilh this miffion and to return to Friefland. Here her refled about ten years,
wiles

## LAS

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 archbifhop Cranmer. Here he became minifter to a German Proteftant church, which afo fembled for divine worfhip at Auftin-Fryars. Of thefe Proteftants, almolt four hundred were admitted to the honour of citizenfhip; they were not tolerated, but guaranteed by royal patent, in the confcientious difcharge of their duties to God, while numbers of his majefty's natural born fubjects were grievoully perfecuted on account of their inability to join in all the ceremonies enjoined by the eftablifhed religion. The preamble to the patent referred to, is a curious document confidering the times; it admits that the German church made profeffion of pure and uncorrupted religion, and was inftructed in truly Chriltian and apoltolical opinions and rites, and it was permitted them to enjoy and exercife their own rites, ceremonies, and difcipline, though they were different from thofe ufed in this kingdom. Lafco avowed the fame npinions as thofe held by Hooper, Latimer, and other illaitrious divines of that day: he was, however, permitted to live in peace during the reign of the youthful monarch; but upon the acceffion 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 coaft of Denmark, but were not permitted to land on account of their known tenets. For the fame xeafon they were refufed an afylum at Lubec, Hamburg, and fome of the cities of Saxony ; at length, after they had been driven from place to place, they were hofpitably received at Embden in March $1554^{\text {. }}$. In the following year Lafco went to Frankfort upen the Maine, and obtained leave from the fenate to build a church for foreign Proteftants. In 1556, he wrote a letter to Sigifmund, king of Poland, in vindication of himfelf and his doctrines, from certain mifreprefentations which had been cireulated by his enemies. In 1557, he publifhed an apology for the church of the reformed Proteftants at Frankfort, on the fubject of the variation in their creed from that of the confeffion of Augfburg with refpect to the Eucharit. He was anfwered by Weltphalus, who, feeling that he had the weakelt fide of the argument, exhorted the fenate to interpofe its power, and to withdraw its protection from the difciples of Zuingte, whom he denomirrated rank heretics, and the Devil's martyrs. Lafco, after a thoufard vicififudes, returned to his native country; but fcarcely had he arrived, when the bifhops 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 Lafoo was a heretic; he was accufed before the king, and a petition was drawn up praying that he might be banifhed. 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 profound learning. He was the friend of Erafmus, who acknowledged the obligations he was under to him; and Peter Martyr calls him his moft learned patron. He was highly efteemed, and frequently confulted by Sigifmund, king of Poland; and he is commended by contemporary hiltorians as a man poffefling many virtues, and the moft unafiected piety. Gen. Bing.

LASCORIA, in Ancient Geograpby, a town of Afia, in Galatia, belonging to the Trocmi. Prolemy.

LASDIPELEN, in Geograpphy, a town of Pruflian Li. thuania; tine miles N. of Pilkallen.

## L. A S

Laser Cyrenaicum, in the Materia Medica, a-name fuppofed to be given by the ancient Greeks to the gum we at this time call alfa foxtida. The word affa, or, as it was originally written, afa, was evidently formed on the lafer of the Grecks; but there was allo an afa mentioned by the old authors very different from this, being a fragrant and fweet-fcented gum. This fweet gum was evidently the lafer and afa, or affa, of the ancient Greeks: and the filphium was the plant which produced it. This plant grew in Cyrenc, and furnifhed it a long time; but in the days of Pliny it was in a manner loft. The people of Cyrene found it more profitable to feed their cattle upon the filphium, than to gather its gum.

Pliny continues to tell us, that by the feeding cattle on this plant, it was fo perfectly deftroyed, in a courfe 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 diltinguifhed by the name forado lafirum.

LASERPITIUM, in Botany, Laferwort; an ancient name of uncertain derivation, fynonymous with the onatoon of the Greeks. Lac ferpitium, alluding to its milky juice, or lacipitium, becaufe that milk y juice has a pitchy fmell, both fuggetted by etymologitts, afford little fatisfaction. The word is evidently compounded of Lafer, the riame of the gum which it produces, and from which $A f a$ is by fome thought to have been corrupted. Hence Afar-jatida has been fuppofed the true Lafer, or gum of the $\sigma t \lambda \hat{\lambda} \frac{10 n}{}$, which is known to be of a fetid nature. Ambrofinus afferts Lafer to be a corruption of Latir, from lac, milk. Whatever the csipooy of the Greeks, or the Laferpitium of the Latins may have been, the Silphium of modern botanilts is a genus of the fyngenefious clafs, and the Laferpitium is one of the umbelliferous tribe, of which we are now to fpeak. It fo far accords with the ancient plant, that feveral of its fpecies difcharge, when wounded, an acrid and ftrongly fcented relinous gum.-Linn. Gen. 136. Schreb. 186. Willd. Sp. Pl. v. r. 1414. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v 2. 138. Sm. Prodr. Fl. Grixc. Sibth. . . 1. 191. Juff. 222. Tourn. t. I72. Lamarck Illuftr. t. 199. Grertn. t. 85: (Siler; Gxrtn. t. 22.)-Clafs and order, Penlandria Dighnia. Nat. Ord. Umbellata, Linn. Uribellifera, Julf.

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 freading, nearly equal, petals, their points bent in fo as to form the fhape of a heart. Stam. Filaments five, brifle-fhaped, the length of the corolla; anthers fimple. Pij. Germen infcrior, roundifh; flyles two, rather thick, pointed, difant; ftigmas obtufe, fpreading. Peric. Fruit oblong, with eight longitudinal membranous angles, feparable into two parts. Seeds two, very large, oblong, femicylindrical, flat on the inner fide, furnifhed each with four dorfal and marginal membranes on the other.

Eff. Ch. Involucrum both general and partial Fruit oblong, with membranous angles. Petals uniform, inflexed, emarginate, fpreading.

The fpecies of Laferpitium are in general of a larger proportion, with more ample foliage, than moft other umbel. liferous plants. To this neveribelefs there are fome excep-

## LASERPITIUM.

tions, for we perceive a prodigions difference between the gigantic L. aquilcgifolium, Jacq. Autr. t. $8+7$, and the little lo.fimplex, Jacq. Mifc, v: 2. t. 2. 'The 14thedition of Sylt. Veg. has fourteen fpecies, comprehending Forfter'y 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 occafional abfence or prefence of an involucrum, are fuppofed to be defcribed twice over in the Linnæan fyftem. Such is the cafe with $L$. Chironium, fufpected to be the fame as Pafinaea Opopanax, we believe juftly. Willdenow doubts whether L. Archanselica of Jacquin, Ic. t. 58, be diftinct from this plant of Linnæus, but we are quite clear on this point, and are almolt as perfectly fatisfied that $L$. Cbironium is Pafinaca Opopanax, which laft name Linnxus, in his note on the fubject, has accidentally written Coflina, apparently from having Bauhin's fynonym in his head; yct Reichard, Willdenos's and Laicharding copy him without reflection or remark.

Indubitable fpecies of Laferpitium, which will ferve to give a competent idea of the genus, are the following. None are natives of Britain.
L. latifoliun. Broad-leaved Laferwort. Linn. Sp. Pl. 356. Jacq. Auitr. t. 146. (Libanotis Theophratli major; Ger. em. 1010.) - Leaflets obliquely heart-fhaped, undivided, with fharp-pointed teeth.-Native of mountainous dry woods in various parts of Europe, flowering in July, ripening feed late in autumn. Jacquin obferves that it varies greatly in fize and roughnefs, being only a foot or two high on the Alps, while in lefs elevated fituations it rifes to four or five fect, with ample and handfome foliage. He afferts alfo that wild plants of a very rough habit, on being brought into the garden, became fmooth the next feafon. Hence he determincs the L. afperum of Crantz, Diff. falc. 3.50. t. 1. f. 2 , and glabrum of the fame author, 54 , to be one and the fame fpecies. This $f$. 2 . of Crantz very correctly expreffes a leaflet of our plant, fuch as is preferved in the Linnxan herbarium, and exhibited by Jacquin as above. The radical leaves are twice or thrice compound, with large, heart-fhaped, ftalked, undivided leaffets, unequal at the bafe, veiny, from one to two or three inches long; fmooth and dark green above; paler, and more or lefs rough with rigid briftles, beneath; the margin befet with ftrong broad tharp ferratures, the bafe entire. The fem is fmooth and round, bearing a few fmaller more entire leaves, whofe common ftalk is greatly dilated and inflated at the bafe. The umbels are broad. Flowers fmall, white. Wings of the feeds, according to Jacquin's plate, even, and fcarcely at all undulated, rounded not angular at their fummit, agreeing very well with the firft figure of the feed annexed to Morifon's Sect. 9. t. 19. f. 1, fo that, if he be right, his whole fig. I. mutt 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 fpecies. Profeffor Willdenow, however, feems to have been led by Crantz and Lamarck to eftablifh another fpecies, by the name of L. Libanotis, for which he quotes this plate of Rivinus, as well as another figure of Morifon, Sect. 9. t. 19. F.6. This he fupiofes to be the glabrum of Crantz, who cites as a certain though rude figure Libanotis alpina latifolia, femire $\epsilon$ rifpo, Bocc. Muf. 24. t. 3The 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. Lilanotis, being, as far as we can tell, not yet defined by any fyrtematic author. The wings of its feeds, though called srifped, are nearly even, and terminate in a lateral angle at
the top, like Morifon's t. 19. f. G, which may polfibly be.a bad delineation of Boccone's plant. Willdenow does not mark his L.. Libanolis as one that he had feen, and he might well be led into confufion by the writers on whom he has depended. Among thefe the moft blameable is Crantz, who roundly afferts his afpcrum, (our latifolium,) to be I.. Chironium of Linnæus, which we can politively contradict, and which nobody but Lamarck has believed. The latter feizes with alacrity the opportunity of cenfuring Linnæus on the fubject of his fynonymi, though in this inftance unjuftly, while he himfelf defcribes under the name of L. Libanotis, with extremely confued fynonyms, what appears clearly by his account to be $L$. trilobum of Linnæus, of which we thall now fpeak.
L. Irilobum. Three-lobed Broad Laferwort. ILinn. Sp. Pl. 357. (L. Libanotis; Lamarck Dict. v. 3. 423, by the very excellent defcription, Ligufticum Rawwolfii, foliisaquilegix; Bauh. Hith. v. 3. p. 2. 148. Pluk. Phyt. t. 223.f.7. Siler foliis aquilegix; Rivin. Pentap: Irr. t. 64.) -Leaflets broad-ovate, threc-lobed, cut and fharply ferrated.-Native of Italy, and we believe alfo of Switzerland; though Profeffor 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 latifolizm, which according to him has occafionally two or three lobes in its lower leaflets. A Swifs fpecimen from Schleicher feems to be the real trilobum, but it wants the lower leaves, and therefore cannot be abfolutely determined. The leaflets of L. trilobum differ from the foregoing, in being by no means heartfhaped at the bafe, but either ovate or tapering, and more or lefs deeply three-lobed, fometimes to the very bafe; as well as cut and tharply ferrated. The umbel is very large and fpreading, with long purple rays. Flowers fmall, 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 diltinguifhed this from the following, though they are widely different.
L. aquilegifolium, Great Columbine-leaved Lalerwort. Jacq. Auftr. v. 2.-Leaflets feffile, rounded, bluntly lobed and cut. Winge of the feed very narrow.-Native of Auftria, Sivitzerland, and the Bithynian Olympus, firf well determined by Jacquin. It is five or fix feet high, with ample leaves, much refembling thofe of a Columbine ia their rounded obtufe torm and fegments. The umbels are very large and fpreading. Flowers white. Wings of the feed even, and very narrow. Crantz makes it a Siler, and mifquotes under it fynonyms which belong to the lait, and which he therefore jultly fays "could never be gueffed tobelong to the prefent." Why then, as they certainly do. not, are they quoted?
L. Siler. Mountain Entire Laferwort. Lim. Sp: Pl. 357. Jacq. Auftr. v. 2. 27. t. 145. Sm. Prodr. Fl. Græc. Sib. v. r. 19r. (Siler montanum officinarum; Ger, em. r-48.) -Leaflets elliptic-lanceolate, entire, ftalked.Found on the mountains of Auftria, Switzerland, France, Greece, and other parts of the fouth of Europe. It is of more humble growth than any of the former, and diftinguifhed by the form of its lenflets. The feeds are thaped and winged much as in the lalt. They are aromatic and very bitter. Haller complains of its being neglected as a medicinal plant, though ftrong in aromatic virtues.
L. pratenicum. Pruffian Laferwort. Linn. Sp Pl. 357. Jacy. Aultr. t. 153. Ehrh. Herb. 93. (L. minus; Rivin: Pentap. Irr. t. 23.)-Leaflets pinnatifid; their fegments lanceolate, acute, decurrent, entire. Stem birpid.- Fourid in Prulfia, Aufria, Switzerland, \&x. The flem is about two feet high, erect, hairy, as well as the deaf-1talks,

Leaves light green, fmooth, bipinnate; their leaflets pinnatilid, with elliptic-lanceolate, decurrent, pointed fegments. Umbels tather large, white, with white-edged involucral leaves. Sceds fmall, their wings broadifh and wavy.
L. birfutun. Hairy Fine-leaved Laferwort. Lamarck Diet. v. 3. 425, with a wrong reference to Linnxus. (L. Halleri; Villarf. Dauph. v. 2. 625 . L. n. 795; Hall. Hitt. v. I. 3.53 . t. 19.)-Leaves hairy, many times decompounded, with lanceolate decurient 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 Augult. The broad, extremely compound, finely cut and hairy leaves, at once diltinguifh this fpecies. The umbels are large, denfe, and white. Wings of the feeds rather broad, pale, and flighty crifped.

Laseleitita, in Gardening, $\mathcal{E}^{\circ} c$. The plants of this genus grow naturaliy in the fouth of France, in Italy, and Gerinany, and are prelerved in botanic gardens for the fake of variety; they have no great beauty. It has been generally fuppofed, that the filp? ium of the ancients was procured from one fpecies of this genus, but from which of them (if any) we are at prefent ignorant. All the fpecies, if wounded, drop a very acrid juice, which turus to a refinous gummy fubtance, very acrimonious. This was externally applied by the anciants to take away black and blue fots that came by bruifes and blows, as alfo to take away excrefcences: it was alfo by foune of the ancients prefcribed in internal medicines, but o.hers have cautioned people not to make ufe of it this way, from the effects which they mention to have feen produced from the violence of its acrimony.

All thefe plants are extremely hardy, fo will thrive in moft foils and lituations. They are propagated by feeds, which, fown in autumn, will afford plants in the fpring, that may be tranfplanted in the following autumn. Miller.

LASERRA, in Geography, a town of Corfica; 10 miles N.E. of Sarcena.

LASERWORT, in Betary, \&ce. See Laserpities.
LASGRUFVA, in Geograpby, a town of Sweden, in Hellingland; 58 miles E. of Hudxick fwal.

LASH, or to la $\beta$, is to make fatt the booms, anchors, \&c. by feveral turns of rope, to prevent their moving by the mosion of the fhip.

Lafbirg, which alfo denotes a piece of rope ufed to faften or fecure any moveable body in a fhip, or about her maits, fails, and rigging, is chiefly ufed for binding up to the frip's Gide, mukees, butts of water or beer, or pieces of timber to make fpare tom-malts.

LASHERS are properly thofe ropes only which bind faft the tackles, and the breeches of the ordnance, when they are haled or made faft, within boaid.

LASHOM JAmisas, in Geografby, a town of Egypt, on the coait of the Mediterranean; 12 miles N.W. of Damietta.

LASIA, in Ancient Geograbby, an ifland fituated on the coalt of Lycias. Pliny.-Allo, an inend on the coalt of the Peloponnefus, over-againit Troëzené.-Alfo, one of the names of the ifle of Andros.

Lssia, in Botaity, from azowe, bairy or brifly, becaufe the plant is befet with numerous little briftes or prickles. Loureir. Cochinch. Br.-Clafs and orèer, Tetrandria Mínogyrnia. Nat. Ord. Piperite, Linn. Aroidce, JuT.

Gen. Ch. Cal. Spatha awl-fhaped, twifted, coloured, very long. Spadix florter than the \{patha, entirely covered with florets. Cor. Petals four, flethy, obtufe, concave, clofel embracing the organs of impregnation. Stam. Fila-
ments four, fhort, flat, hidden by the petals; anthers two to each filament, rounded, concave, protruding beyond the corolla. Pij. Germen fuperior, roundifl; ftyle none; fligma rather abrupt. Peric. Berry finall, roundifh, unequal. Seed folitary, roundifh.

Eff. Ch. Spadix covered with florets. Petals four, flefhy, inferior. Anthers two to each filament. Berry with one feed.

1. L. aculeata. Cu chaóc gai, of the Cochin-chinefi. Native of the moilt plains of Cochinchina. A femlefs plant, fix feet high, with large, pinnatifid, leaves, on long, round, upright lalks. Flozerer-lalk radical, quite fimple and naked, about as tall as the leaves. The leaves, and all the falks are covered with numerous little short curved prickles. Loureiro juflly indicates the affinity of this plant to Potbos, and no lefs jufly prefers placing it in the fourth clafs, rather than in Gynandria. 'The prickly pubefeence, if we may to 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 Gcography, a town of the Peloponnefus, or Triphylia.-Alfo, a mountain in the ifland of Crete, on which was the tomb of Jupiter.
LASIOPETA LUM, in Botany, from 7.x506, hairy, and -sfancy, a petal, alluding to the hairinefs of the flower.-Sm. Tr. of Linn Soc. v. 4 216. Venten. Malmaif. 59. Bitlard. Nov. Holl. v. 1. 63. Ait. Hort. Kew. ed. 2. v. 2. 36.-Clafs and order, Peritandria Mcrogyzia. Nat. Ord. Rbamni, Julf.
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, roundifh, inferted into the bafe of the calyx between its fegments. Stam. Filaments five, very flort, eppofite to the petais; anthers terminal, ovate, twolobed belind, opening by two pores at the top. Pjff. Germen fuperior, grobofe, with three furrows, very hairy; ftyle Short, itraight, fmooth; lligma fimple, acute. Peric. Capfule invelted with the calyx, nearly globofe, with three angles, downy, of three ceils and three valves, partitions from the centre of each valve. Sceds few, roundifh, ipferted into the inner edge of the partitions.

EIT. Ch. Calyx wheel-fhaped, in five deep folded fegments. Petals five, minute, oppofite to the dtamens. Arthers opening by two terminal pores. Capfule fuperior, of three cells, and thrce "valves, with the partitions from their centre.

ObF. The late excellent M. Ventenat, erroneouny quoted as the author of this genus in the new edition of Hort. Kew. has juftly corrected its original defcriber, who miltook for a corolla what is truly the caly x . 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 obferved a fpecies with five intermediate abortive ttamens, and no petals.
I. L ferrugineum. Rully Woolly-bloftom. Andr. Repof. t. 208. Venten. Malmaif. t. 50.-Leaves alternate, linearoblong, dependent. Flowers racemofe.-Native of marfhes in New South Wales, from whence the feeds were received in 1791, by Meffrs. Lee and Kennedy. It flowers during moft part of the fummer, being fieltered in winter in the green-houfe, and allowed but a fmall fupply of moiture. Stem fhrubby, upright, flender, round, leafy, clethed with denfe, ru!ty, Ilarry pubefcence, and, in its native fituations, throwing oit long, nender, extremely tough branches, to the extent, as it is repurted, of many yards, amongft other
fhrubs.
sirubs. Leaves alternate, ftalked, dependent, linear-oblong, bluntifh, entire or flightly wavy, from two to four inches in length, and half an inch broad; heart-fhaped, rather dilated, and often fomewhat angular at the bafe; deepgreen and fmoothifh above; white and downy, 1 th a rully rib, beneath. Flowers in hort, lateral, deflexed clufters, nearly oppofite to the leaves, with three or more linear rufty bracteas clofe to each flower. Calyst half an inch broad, light green, befprinkled on both fides with denfe, ftarry, rather rufty down. Patals and anthers brown. The whole fhrub is more remarkable for fingularity than beauty: Sometimes, according to Ventenat, the flowers are four-cleft and tetrandrous only.
2. L. Iedifolium. Rofemary-leaved Woolly-boffom. Venten. Malm. at p. 59-Leaves oppofite, linear-lanceolate, fpreading. Stalks lingle-flowered. Bracteas remote from the flower. - Seen by M. Ventenat in the herbarium of M. Thibaud, profeflor of botany at Strafburgh. We prefume it mult be, like the former, and all the known fpecies befides, a native of New Holiand. It is defcribed as varying with broader and crowded, or narrower and more diftant, leaves; and as being remarkable for the fituation of its brafleas, in the middle of the flower-ltalk.
3. L. purfureum. Purple Woolly-bloffon. Ait. Hort. Kew. n. 2.-Leaves oval, catirc.-Found in New Holland by Mr. Brown. Sent to Kew in 1803 by Mr. Good. It is a green houfe fhrub, flowering from April to July. Of this we have no further knowledge, not having feen any fpecimen.
4. L. a-borefens. Nettle-trec-leaved Woolly-bloflom. Ait. Hort. Kew. n. 3.-Leaves heart-fhaped, deeply toothed. - Native of New South Wales, from whence it was fent by Mr. George Calcy i: 1802, through fir Jofeph Banks, to Kew, It fowers from May to July, and is fheltered in the green-houfe.
5. L. triphyllim. Three-leaved Woolly.blofom. Billard. Nov. Holl. v. 1. 63 . t. 88 -Lcaves three together; the middle one largeft and lobed. Stamens ten, the intermediate ones abortive. Petals wanting.-Gathered by M. La Billardiere in Van Levin's land; by Mr. Menzies at King George's found, on the weft coalt of New Holland. We received a fpecimen in flower, by favour of Mr. Aiton, from Kew garden in May lait. It is a $\int$ riab, kept, like others of its genus, in the green-houfe. The whole plant is clothed with rather foft flarry pubefcence, like fome of the mallow tribe, which affumes a rulty hue on the ftalks, and on the veins of the leaves. The foliage is remarkable. Three leaves grow on ftalks from one fpot, (at the fides of the branches,) of which the middlemoft is much the largeft, from one to two inches long and nearly as wide, heart-flhaped at the bafe, more or lefs ditinctly five-angled, or five-lobed, and fomewhat finuated, its footitalk nearly its own length; the fide ones are unequally heart-fhaped and entire, on very fort ftalks, and refemble tipulas. Long dimple cluffers, of feveral flowers, grow folitarily, oppofite to the large leaves, between the fmall ones. The calyx is blufl-coloured, hairy, with pointed \{egments. Antbers dark brown, with yellow tips ; the barren ones fmaller and paler.
6. L. quercifolium. Oak-leaved Woolly-bloffom. Andr. Repof. t. 459 . Ait. Hort. Kew. n. 4.-LLeaves three to. gether, all finuated; the middle one largelt and three-lobed, fomewhat pinuatifd. Stamens five. Petals wanting.-Gathered by Mr. Menzies, at King George's found, on the weft coaft of New Holland. Mr. Brown alfo obferved it in that country. Seeds were fent to Kew, by Mr. Peter Good, in $\leq 803$. This is moft akin to the laft, but abund-
antly diftinct. The leaves are finaller, fomewhat glancous, and much nore harfh, owing to the more rigid and prominent flarry brilties un 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 moit deeply lobed: the edges are flighty revolute. The forucrs have their calyx of a deeper rofe-colour, with lefs pointed feg. ments. We perceive no barren flamens, nor any petals.
7. L. corniculatum. Horned Wooily-blufom.-Leaves three together, cut and crenate; the lateral ones very fmallo. Petals with linear points as longr as the cadyx. - Gathered by Mr. Menzies, at 'King George's found.-The leaves are more denfely and unifurmiy bairy than in the laft, as well as fofter to the touch. The flowers are racemofe, as in that, but much fimaller, and are eflentially diftinguifhed by the long prominent linear apperdages, or horns, of their petals, which equal the caly $x$ in length, and in its dry fhrivelled thate extend much heyond it.

Several more frecies of this genus are in our poffeffion, but we forbear to attempt their defnition from imperfect dried fpecimens, as they will doubtiefs be more correctly and amply illuitrated in the Proliromus of Mr. Brown, who has had the advantage of feeing them alive, ard whofe meritorious labours we never feel a defire to foreltall. S.

LASIOSTOMA, fo called by Schreber, from hazb:; bairy, and $5 \sigma \mu x$, the mouth, in allufion to the hairinefs which covers the upper fide of the flower, and furrounds its orifice. Schreb. 75. Wiild. Sp. P1. v. 1. 624 . Mart. Mill. Dict. v. 3. (Rouhamon; Aubl. Guian. 93. Lamarck. Illuftr. t. 81.) - Clafs and order, Tetrandria Blonozyaia. Nat. Ord. Apocinee, Juff.
Gen. Ch. Cal. Perianth inferior, of one leaf, very fhort, in five deep acute fegments, with two fmall oppofite fcales at its bafe. Cor of one petal, funnel-fhaped tube cylindrical ; limb in four acute equal fegments, villous on their upper fide. Stam. Filaments four, capillary, villons at their bafe, inferted into the tube of the corclla; anthers oblong. $P_{i j}$. Germen fuperior, ovate; fyle longer than the corolla; ftigma obtufe. Peric. Capfule orbicular, of one cell, with a brittle bark. Seeds two, hemifpherical.

Eif. Ch. Calyx five-cleft. Corolla funnel-fhaped, hairy about the mouth. Capfule fuperior, brittle; of one cell, with two feeds.
I. L. cirrofa. Willd. (Rouhamon guianenfis; Auble Guian. 93. t. 36. Lamarck. Illultr. 322.)-Gathered by Aublet on the banks of rivers in Guiana, bearing fruit as well as flowers in November. Roukamon is the Caribean name. The woody trunk is feven or eight feet high, with many very long, knotty, oppofite branches, climbing over the neighbouring trees, and clothed with reddifh down. Leaves oppofite, on fhort ftalks, elliptical, pointed, entire, pale, fmooth, three-ribbed. Tendrils'axillary, fimple, rather longer than the leaves, recurved and thickened at the extremity, not always prefent. Flosvers fmall, white, in axillary tufts. Capsfule rather large in proportion, an inch in diameter, yellow- -Jufficu refers this plant to the genus Strychnos, apparently with great reafon.
LASK, a term ufed by Farricrs, for a loofenefs in horfes, often fatal to them.

Lask, or Lafko, in Geography, a town of the duchy of Warfaw ; 30 miles N.E. of Siradia.

LASKi:TS, or Latches, in a Ship, are fmall lines, $^{\text {a }}$ like loops, faftened by fewing into the bonnets and drablers? in order to lace the bonnets to the courfes, or the drablers to the bonnets.
LASKING, a fea-term for going large, or veering.
LASNE.
I.ASNEBOURG, in Geography, a town of France, in The department of Mont Blanc, on the Arc, at the foot of mount Cenis, the paffage of which is the principal fupport of the inhabitants. The fun is hidden from this town by the mountain during two months in the year; 20 miles N.N.W. of Sufa.

LASOY, a town of Thibet; 40 miles N.N.W. of Tacpoy.

LASSA, the capital of Thibet, is called by different names, which have occafioned no fmall degree of confution. Its proper rame, in the language of Thibet, is faid to be Baronthala; but the Tartars call it Laffa or Lahaffa. Others call it Tonker, and apply the names Laffa and Baronthala to the diftrict which contains Laffa and Putala. Others again give the name of Putala, inftead of Laffa, to the capital of rhibet. Rennell fays that we ought to apply the name Laffa or Lahaffa, to the capital, and to confider Puta1 as the cattle and palace of the Lama, and his ordinary place of refidence. Laffa, which is not confidered as a large city, is fituated on an extenfive plain; the houfes are of itone, and are fpacious 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 flands the palace of the grand lama, the high prieft and fovereign of Thibet, (fee Lama , is about feven miles E. of the city. On the north of Laffa ftands 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. Laffa is in the province of Ou , and almoft in the centre of Thibet. The river Sanpooa Burrampooter runs at the diflance 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 alfo one of the celebrated academies or fchools of Thibet, which are frequented by the youth of many furrounding countries, as far as Cafhgar, Yarkend, Camul, Turfan, and fome from Kokonor, Amdoa, and China. The courfe of ftudies employs twelve years, occupied in logic, aftronomy, philofophy, medicine, and, above all, the theology of Boud, or Xaca. In the city of Laffa are many foreign merchants, and the women have bzen recently polifhed by their converfation with the Chinefe. A beneficial traffic is carried on with Laffa, by exchanging gold dult for filver bullion. N. lat. $30^{\circ} 30^{\prime}$. E. long. $91^{\circ} 40^{\prime}$.

LASSAN, or Lessan, a town of Anterior Pomerania, on a lake formed by the Peene; $3^{8}$ miles S.S.E. of Stralfund. N. lat. $53^{\circ} 5^{\prime}$. E. long. $13^{\circ} 5^{\prime \prime}$.

LASSAY, a town of France, in the department of Mayenne, and chief place of a canton, in the diftrict of Mayenne; 9 miles N.N.E. of Mayenne. The place contains 2976 , and the canton 14,258 inhabitants, on a territory of $132 \frac{1}{2}$ kiliometres, in I4 communes. N. lat. $48^{8} \cdot 27^{\prime}$. W. long. $0^{\circ}{ }^{2} 4^{\prime}$.

LASSEUBE, a town of France, in the department of she Lower Pyrenées, and chief place of a canton, in the diftrict of Oleron ; 6 miles E. of Oleron. The place contains 2884, and the cantor 4974 inhabitants, on a territory of 330 kiliometres, in 5 communes.

LASSIELI, a town on the E. coaft of the illand of Bouro. N. lat. $3^{\circ} 30^{\prime}$. E. long. $127^{\circ} 34^{\prime}$.

LASSIGNY, a town of France, in the department of the Oife, and chief place of a canton, in the diftrict of Compiègne; 6 miles W. of Noyon. The place contains 518 , and the canton 10,575 inhabitants, on a territory of 135 kiliometres, in 24 communes.

LASSIRA, in Ancient Gcography, a town of Spain, in the Tarragonenfis, in the interior of the country of the Edetani. - Ptolemy.

LASSITI, in Geography, a town of the illand of Candia; 22 miles S.E. of Candia.

LASSITUDE, in Medicine, a fenfe of wearinefs and debility, independent of fatigue, by which a perfon is induced to feek for repofe and quiefcence.

A laffitude is felt in almoft febrile difeafes ; and in many chronic affections, in which the circulation is fceble and unequal, as in fcuryy, chlorofis, \&c.; and in diforders of the flomach, liver, and alimentary canal. 'This feeling of wearinefs and indifpofition to exertion, is indeed often the firtt and only perceptible fyn⿰ptom of approaching illnefs, as was remarked by Hippocrates: "Laffitudines fpontanere morbos' prenuinciant." (Aph. ii. 5.) It is a confequence alfo of moft acute difeafes, which leave the ftrength confiderably impaired; and in this cafe it diminifhes in proportion as the fyitem regains its vigour in the progrefs of convalefence. As it is to be confidered only as a fymptom of various morbid ftates of the body, it requires no particular remedies to be fpecifically 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 Biggraphy, an eminent French phyfician, 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 fuccefs of the plan evinced their wifdom and prudence. In his early years, however, young Laflone was not remarkable for his perfeverance in ftudy: on the contrary, his family were frequently alarmed by the propenfity which he fhewed for the gay pleafures of youth; but he as often raifed their hopes by fome ingenious performances, which merited academic honours, as well as the elteem of his preceptors. He wrote a comedy, which his parents infifted that he fhould fupprefs, and facrifice the imprudent production: he fubmitted, and was never afterwards willing to declare the title of the piece, which had neverthelefs been acted with much fuccefs, under a different name, and ftill remains on the theatre. This juvenile work, foreign as it was to his ftudies, gave an extraordinary proof of the facility and flexibility of his genius, which afterwards enabled him to acquire in the different fciences a juft and elevated reputation. Determining upona ftrict attention to ftudy, he devoted himfelf wholly to the purfuits of anatomy, in which he made fuch rapid progrefs, that, at the age of twenty-five, he was received into the Academy of Sciences as affociate-anatomift. He examined, with great care and perfeverance, the ftructure of the bones, and of the arteries, and demontrated the mufcular coat of the latter. He alfo inveftigated the ftructure, and inquired into the economy and ufe of the fpleen, attempting to reconcile the different accounts given of that vifcus by Ruyfch and Malpighi. He had ftrong hopes of difcovering the office of this vifcus, when an extraordinary event put a period to his anatomical purfuits. In felecting among fome dead bodies a proper fubject for diffection, he fancied he perceived in one of them fome very doubtful figus of death, and endeavoured to reanimate it : his efforts were for a long time vain ; but his firft perfuafion induced him to perfift, and he ultimately fucceeded in bringing his patient to life, who proved to be a poor peafant. This circumftance imprefled fo deep a fenfe of horror on the mind of the anatomift, reflecting on the confequences of his having felected this unhappy object for difection, that he declined thefe purfuits
in future. Natural hifory fucceeded the fludy of anatomy; and mineralogy became a favourite object of his purfuit : he publifhed his obfervations on the crydallized free-ttones of Fentancbleau. But chemitry, a feience to which he was thus led, finally became the beloved occupation of M. de Latione. His numerous memoirs, which were read before the Royal Academy of Sciences, prefented a valuable train of new oblervations, ufefulboth to the progrefs of that Itudy, and to the art of compounding remedies; and in every part of thefe he evinced the fagacity of an attentive obferver, and of an ingenious experimentaliit.
M. Laffone, although he had, by the number of his works, given every one reafon to fuppofe that he had devoted himfelf exclufively to the fciences, had not neglected the practice of medicine. After having exercifed it for a long time in the hofpitals and cloiters, he was fent for to court ; and he was the only example, except the celebrated Fernel, of one individual holding the office of firit phyfician at Verfailles, fucceffively to two queens, and afterwards to the king: the minifters and the courtiers had been all changed, but he preferved the friendilhip of his fovereigns. He lived in friendihip 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, whofe indultry he encouraged, and whole reputation was become one of his molt fatisfactory enjoyments, gained him general refpect. When from a natural delicacy of contitution, M. de Laffone began to experience the inconveniences of a premature old age, he became forrowful and fond of folitude; yet reconciled to his fituation, he calmly obferved his death approaching, and expired on the sth of December, $I_{j} 88$. Laffone, at the time of his death, held the appointment of firlt phyfician to Louis XVI. and his queen; he was counfellor of ftate, doctor-regent of the faculty of medicise at Paris, and penfionary-veteran of the academy of fciences, member of the academy of medicine at Madrid, and honorary affociate of the college of medicine at Nancy. Hutchinfon, Biog. Med. Eloy. Diet. Hitt. Hift. de l'Acad. Roy. des Sciences, 1788.
LASSOTH, in Grography, a town of Silefia, in the principality of Neiffe; Io miles N. of Neiffe.
L.ASSOUR, a town of Hindooftan, in the circar of Aurungabad; $3^{2}$ miles N.W. of Aurungatad.

Lassus, Orlaxides, or, as he is called by the Italians, Orlando di Laffo, was a native of Mons, in Hainault, born in 1520 , and who not only fpent many years of his life in Italy, but had his mufical education there, having been carried thither furreptitiounly, when a child, on account of his fine voice. The hittorian Thuanus, who has given Orlando a place among the illultrious 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 fervice of princes; and that Orlando was carried to Milan, Naples, and Sicily, by Fierdinand Gonzago. Afterwards, when he was grown up, and had probably loot his voice, he went to Rome, where he taught mufic 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 mafter and director of his band; an honour which he accepted, but was flopped on the road to Paris by the news of that monarch's death. After this event he returned tp Mu-

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nich, whither he was recalled by William, the fon and fuecentor of his patron Albert, to the fame office which he had held under his father. Orlando continued at this coure till his death, in the year 1593, at upwards of feventy years of age. His reputation was fo great, that it wass faid of him: "Ific ille Orlandus I, alfins, qui recreat orbem."
As he lived to a conliderable age, and never feems to have checked the fertility of his genius by indolence, his compofitions exceed, in number, even thofe of Paleltrina. There is a complete catalogue of them in Drandius, amounting to upwards of fifty different works, confifting 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 Ladfo was the contemporary of Cypriano Rore, a compofer of equal renown in the 1 fth century, and who to much refembled him in genius, abilities, and reputation, we fhall here draw a parallel between them, as the two principal mafters of Flemiih and Netherlandifh counterpoint. 'Io form a comparative idea of the ftyle of thefe two compofers, with that of Palefrina, the fpecific difference feems 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 calt of melody than Paleftrina, who, refiding conttantly at Rome, and writing chiefly fur the church, had a natural and characteriftic gravity in all his productions. Indeed, the compofitiona a capella of Cyprian Rore and Orlando Laffo are much inferior to thofe of $\mathrm{P}_{2}$ leftrina in this particular; for by triving to be grave and folemn, they only become heavy and dull; and what is unaffected dignity in the Roman, is little better than the ftrut of a dwarf upon ftilts in the Netherlanders. They were, however, great mafters of harmony, and, out of the church. prepared the colours, and furnifhed the mufician's pallet with many new tints of harmony and modulation, which were of great ufe to fubfequent compofers, particularly in dramatic painting.

In the fame collection of fongs, printed r 555 , we have a Latin poem, fet by Orlando di Laffo, in the manner of x madrigal, in which the modulation is curious; but thougl elaborate and recherchée, it is pleafing, and has had many" imitators.

Cyprian and Oplando were the firft who hazarded what are now called chromatic paffages. 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 ityle, in which not only" an $A$ 決, but an A b, appear, for the firit time, in the fame movement, and almoft every accident incident to modern mufic. Part of this curious compolition is inferted in Burnéy's General Hiitory of Mufic, vol. iii. as a Ipecimen 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 hittory and progrefs of the art of counterpoint at this time, than all the catalogues of books, and defcriptions of their contents, which diligence and language could furnifh. Many of the forced, crude, and unexpected modulations in the motet of Cyprian Rorc, however they may have been admired for their boldnefs and novelty, were never adopted by fubfequent compofers. Bcautiful, natural, and pleafing paffages and effects are foon rendered common by plagiariim and imitation; whereas the unnatural and diflicult are long left in the poffeffion of the original proprietorPerhaps in a feries of years, fome other compofer, unable to attonifl by his inventions in a natural way, and detemine?

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to produce fomething that thall, at leaft, feem new, will propofe them again to the public, who will again reject, and fo on; ad infnitum. But thefe mulical hunters after novelty, without genius to find it, forget that fuch palfages or modulations muft have prefented themfelves to thoufands in the courfe of their Itudies and ricercate, but that good talte and found judgment hat rejected them. It is at all times eafy to prodnce new arrangements and combinations of founds, if nature, grace, and propriety be renounced; but at once to be nesu and natural, belongs only to genius of the firit order.

The fongs in the fame collection by Orlando, are faid by the publither to have been compofed "a la nouvelle compofition d'aucuns d'Italie.' We find but little melody in any of them, though much modulation, different from the ather Flemifh matters 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 compolitions of the mid. die of the 1 Gth century. The chromatic accidental femitones are exprefled by a fharp, and no longer left to the mercy and fagacity of the finger, as was before the conftant cuttom. The occalional changes in the intervals, which are neceffiry in counterpoint, though formed upon ecclefiaftical melodics, were at firt fmuggled into harmony, perhaps by fingers whofe good ears fuggelled them, though the compoler had not dared to point them out, lelt he hould be accufed of cormpting the modes. Orlando feems the firit who, in fpite of ancient prejudice and pedantry, when he wifhed to alter a note, dared to exprefs his intentions in writing. In this more gay and comic ityle, however, the modulation is overcharged with wanton and unneceffary tranfitions from one key to another, without remaining long enough in any one to fix it in the hearer's attention.

Of the two compolitions by Orlando di Laffo, and Cypriano di Rore, to Latin words, the firlt is in hexameter and pentameter, and the fecond an irregular ode, partly in the choral meafures of the Greek tragedies. At this mark + , in Orlando's compolitions, the firit A 桜 occurs that we had ever feen ufed in counterpoint of equal antiquity; and this feems to have been fuggefted by the words novzmque melos. Which of thefe productions was firlt compofed, we know not, as they were both publifhed together at Antwerp, in 1555. The only copy of this work which we have ever feen, is preferved in the Britifh Mufeum. The madrigals, in general, of both Cypriano and Orlando, to Italian words, are excellent, in the thyle of the times. But as the fingularities in the two compofitions before us feem innovations, and preparatory to that revolution in the art, which takes place foon after, they feemed proper fubjects of difcuffion; for the laboured and equivocal modulation, attempted by thefe compofers, who, though often learned and ingenious, by abandoning the fimplicity of their contemporaries, thefe productions border fometimes fo much on caprice and affectation, as to fatigue the attention and offend the ear.

The pedantry of cride 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 applaufe of faftidious chamber-critics, whofe approbation was beftowed on no compofitions that did not fmell of the lamp, fimplified their fecular mufic, and inftead of puzzling and goading the hearer with complicated contrivances and extraneous modulation, aimed at grace and facility in their melodies, which they clothed with fuch plain and tranquil harmony, as, in*ead of difguife and fuffocation, added greatly to their ener-
gy and effect. Dramatic mufic was not yet even in idea, and concerts, or other affemblies of gay and unlearned hearers, feem now not to have exifted; fo that mufical compofers could not be faid to write for the public, who will ever prefer fuch plicafure and amufement as give them the leaft trouble. Authors of all kinds, who feek for applaufe, conform to the talte of their judges; and we find, in out own times, that thofe muficians who are qualified by their genius and abilitics, to direet and govern the public opinion, think it neceflary, however falfe and corrupt it may be, to humour and flatter it, by all the conceffions 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 fhort. In mufic, the learned are few and filent; the ignorant numerous and noify : in the chamber it was right to pleafe the former, and in the theatre, where

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\text { " } \begin{aligned}
& \text { Govern the fair, the gay, the young } \\
& \text { numbers of each fong," }
\end{aligned}
$$

there is no choice. A public and mixed andience is fuch a many-headed montter, that all its ears cannot be pleafed at the fame time; and whether the good or the bad predeminate, the greater number mult be gratified at the expence of the lefs.
'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 organit- to that prince. Thefe collected their father's motets, as well thofe which had been publifhed during his life, as thofe which remained unpublifhed at his deceafe, 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 thefe compofitions, feems not to have equalled the expectations of the editors. Other productions had taken poffeffion of the public ear and favour. It is, we fear, in vain to hope for the revival of old mufic ; too many are interelted in the fuccefs of the new ; and fuch are the vicifitudes of what are called tafte and expreffion in this art, that if fufficient probity and zeal could be found in fafhionable performers to incline them to attempt doirg juftice to the productions of former times, it is hardly poffible for them to fucceed; the accent, energy, and expreffion 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 ranner of the times in which they were compofed, as to pronounce a foreign language as well as his own; and if, againt all calculation, he fhould facceed, this mufic will ftill be an unknown tongue to the public.
LAST, or Lest, in general, fignifies the burden or load of a hhip.
Last is alfo ufed for a certain weight and meafure, which is various in various countries; though, in the general, the laft is eftimated at four thoufand pounds weight. A lalt of cod-fifh, white herrings, meal, and afhes for foap, is twelve barrels ; of corn, or rape-feed, ten quarters; of gunpowder, twenty-four barrels, or two thoufand 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 itock-fifh, a thoufand: of flax, or feathers, one thoufand feven hundred pounds weight.

Last, in the marhes of Kent, a court held by the twentyfour jurats, and fummaned by the bailiffs; wherein ordors
are made to lay and levy taxes, impore penalties, \& $\&$. for the prefervation of the faid marfhes.

Last Heir, is he to whom lands come by efcheat, for want of lawful heirs; which, in many cafes, is the lord of whom they are held: but in others the king.
Last Will. See Will.
Last, Port. See Port-Laf.
LASTAGE, or Lestage, according to Raftal, is a duty exacted in fome fairs and markets, for carrying things bought whither one will.

Lastage, according to another author, is properly that cuflom which is paid for wares fold by the lafl.

In the law of Richard II. laftage is taken for the ballaft, or for lading of a flip. Sce Bahlast.
Lastage is fometimes alfo ufed for garbage, rubbifh, or fuch filth.
LASTEIN, in Geography, a town of Pruffia, 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. coaft of Afturia; 30 miles N.E. of Oviedo. N. lat. $43^{\circ} 33^{\prime}$. W. long. $5^{\circ} 19^{\prime}$.
LASTRINGE, a town of Sweden, in Sudermanland; 12 miles N. of Nykoping.

LASULA, a fmall illand near the E. coaft of Luçon. N. lat. $13^{\circ} 27^{\prime}$. E. long. $123^{\circ} 57^{\prime}$.

LASUS, in Biography, was born at Hermione, a city of Achaia, in the time of Darius Hyitarpes, in the 5 Sth Olympiad, 538 years B. C. Diogenes Laertius fays, that he deferves to be ranked among the feren fages. He was generally allowed to be the firit among the Greeks who wrote about mulic, and was not only a theorilt 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 addreffed infpired.

Plutarch fays, that he introduced new rhythms in his poetry and dithyrambic mufic, and upon the lyre, imitated the compais and variety of the flute; for which he is mentioned, in the Dialogue on Mufic, as a great innovator. Among the corruptions complained of, in the nerw mafic, the frequent and licentious tranfitions from one mode and genus to another, was not the lealt. If the object for multiplying the flrings of the lyre, and the holes in the flute, fo much complained of by the adherents to the old fchool, may be fuppofed to have occafioned the convenience by having an inftrument nearly tuned for all the modes, like our harpfichords, it feems probable, that Lafus and other innovators might have been temperers, and have accommodated their doarine to their praciice.
Theon of Smyrna teftifies that Lafus, as well as the Pythagorean Hippafus of Metapontus, made ufe of two vafes of the fame fize and tone, in order to calculate the exact ratio or proportion of concords. For by leaving one of the vafes 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 percuffion of the two reffels produced the concords of $4^{\text {th }}$ and 5 th ; from which procefs refulted the proportions of thefe three concords contained in the numbers $1,2,3,4$.
This affertion, which has been taken upon truft, like the anvil ftory of $P_{\text {ythagoras, }}$ is equally falle: to tune glaffes 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. Moft glafles 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 Anatomyo See Licamintuss. LATABI, in Gcography, a town of Africa, in the kingdom of Aquamboc.

LATAC, or Ladak, a town and country of Thibet, forming a kind of detached fovereignts: "The town is feven miles N. of the river Lachu, which falls into the Ganges. N. lat. $30^{\circ} 55^{\circ}$, E long. $74^{\circ} 34^{\prime}$.

LATACUNGA, a town of South America, and a jurifdiction in the audience of Quito. This jurifdiction is called Affiento Latacunga; affiento denoting a place lefs than a town, but larger than a village. This place is fituated on a wide plain, having on the E . fide the eattern Cordillera of the Andes, from which projects a very high mountain, at a fmall diftance from the foot of which is fituated Latacunga, in S. lat. $55^{\prime} 14^{\prime}$. W. long. $\overbrace{}^{5} 16^{\prime}$; ; miles S . of Quito. This affiento is large and regular ; the ftreets broad and ftraight ; the houfes of flone, arched and well contrived; but on account of the dreadful carthquakes to which it is fubject, confitting only of one flory ; one of thefe happened in June, 1698 , and its effect was fuch, that of 600 Itone houfes, which the affiento then contained, only a part of one, and the church of the Jefuits, were left ftanding in a damaged Itate, and moft of the inhabitants were buried under their ruins. The ftone of which the houfes and churches are conftructed, is a kind of pumice, or fpongy fone, ejected from volcanoes; inexhauftible 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 diflant from the mountain of Cotopaxi, which, not being lefs in extent and height than thofe 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 exceffively cold in places bordering on the mountains. The villages are generally larger, and more populous, than thofe of the other jurifdictions in the fame province. Their inhabitants are Indians, Meftizos, and a few Spaniards. The affiento, befides a parifh church, ferved by two priefts, one for the Spaniards, and the other for the Indians, has convents of Franciicans, Augultines, Dominicans, the Fathers of Mercy, and a college of Jefuits. The inhabitants amount to between ten and twelve thoufand, chiefly Spaniards and Meftizos. The Indians live in a feparate 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 interfperfed with plantations of willows, the perpetual verdure of which gives a chearful afpect to the country. The Indians of Pugili and Saquifili, two villages in this jurifdiction, 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 workmanhip is very neat and ingenious. Juan and Ulloa's Voyage to South America, vol. i.

LATAKIA, the ancient Laodicea (which fee), a feaport town of Syria, in the pachalic of Tripoli, is fituated at the bafe, and on the fouthern fide of a fmall peninfula, which projects half a league into the fea. Its port, like all the others on the fame coaft, is a fort of bafin, environed by a mole, with a very narrow entrance. It is capable of
containing twenty-five or thirty veffels, but the Turks have fuffiered it to be choaked up, fo that it can fearcely admit fuar. Ships of above foo tons cannot ride here; and hardly a year paftes in which one is not flranded in the entrance. Neverthelefs, Latah " carries on a very great commerce, partly of olives, but chic@y 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, inftead of tobacen, the exports confilted 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 ttrength; they have neither cannon nor foldiers: a fingle privateer would conquer them both. Each of them is luppofed to contain from four to tive thoufand inhabitants; 50 miles S. of Antioch. N. lat. $35^{\circ} 36^{\circ}$. E. long. $35^{\circ} 50^{\prime}$. Volney's Travels in Egypt, \&c. vol. ii.
I. ATALATTA, one of the Molucca iflands. S. lat. $0^{\circ} 3^{\prime}$. E. long. $1275^{\prime}$.

LATANG, a town of Thibet; nine miles S. of Dfaprong.

LaTANIA, in Botany, a name given by Commerfon to a kind of palm, found in the Ifle de Bourbon, anid which feems to be barbaroufly conflructed of the French word Iate, a lath, this palm being called in that language latanicr. -Juff. 39. Lamarck. Diet. v. 3. 427 - Chafs and order, Diseciz Alonadelphia. Nat. Ord. Palmue.

Eff, Ch. Male, Spatha of numerous imbricated leares. 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-celled. Female unknown.
I. L. Borbonica. Lanarck.--Its trunk is Araight, fimple, cylindrical, leafy at the top. Leaves Italked, fan-fhaped, glaucous; their ribs cottony at the back. Fooffalk without ipines. Spathat at the bafe 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.
I.ATATSI, in Geography, a mountain of Thibet. N. lat. $31^{\circ} 35$. E. long. $77^{1} 14^{\prime}$.

LATCHA, a lake of Ruffia, in the government of Olonetz, about 32 miles long and eight broad. N. lat. $61^{\circ}$ to $61^{\circ} 20^{\prime}$. E. long. $38^{\circ} 30^{\prime}$.

## LATCHETS. See Laskets.

LATCHOU, or Lache', in Geography, a river of Thibet, which runs into the Ganges, No lat. $30^{\circ} 50^{\prime}$. E. long. 77.49 .

LATE, a town of Peru, in the jurifdiction of Lima.
LATEEN SAll, in Sea Language, a long triangular fail extended by a lateen-yard, trequently ufed by xcbecs, polacres, fettees, and other vefiels navigated in the Mediterranean fea.

Lateral. See Collateral, Multilateral, and Quadmlateral.

Lateral Equation, in Alrebra, denotes a fimple equation; an equation whofe root is of one dimenfion.

Lateral Ligaments, in Anatomy, are thofe placed at.the fides of the joints. See Joint.

Lateral Line. See Line.
Lateral Operation for the Siene. See Lithotomy.
Lateral Palfy. See Palsy.
Latcral Sinufes, in Anatomy, the right and left; are the two branches into which the fuperior longitadinal finus of the dura mater is divided at the intermal tranfverfe ridge of ite occipital bone. See Vias.

LATERAIIS Monnes, a name given by fome writens. to the pleurify.
Larenums Naris ATufoulus, a name given by many authors to that mufele of the face which Albinus has called, from its. office, the levator labii fuperioris alaeque nafi. It is alfo called the obliquus nafi.
L.aterahris Regus Capiis. Sce Rectus.

LATERAN was originally the proper uame of a man, whence it defeended to an ancient palace in Rome, ard to the buildings fince erected in its place; particularly a church called St، John of Lateran; which is the principal fee of the popedom.

Lateman, Councils of the, are thofe held in the bafilica of the Lateran: of thefe there have becn tive, held in 1123, $1139,1179,1215$, and 1513.

Literan, 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 fucceffion of clerks, living in community from the time of the apofe, tles; and that a number of thefe were eftablifhed in the Lateran in the time of Conflantine. But the canons were not introduced till the time of Leo I. and thefe held the church eight hundred years, till the reign of Doniface, who took-it from them, and placed fecular canons in their room: one hundred and fifty ycars after, the regulars were reinfated.

LATERCULUM, among the Romans, was ufed for a roll or lilt of all the magittrates and military officers under the Roman emperors, with an account of their refpective offices and fees.

LATERE, A, a Latin term ufed to denote the qualifcation of cardinals, whom the pope fends as legates intoforeign courts; who are called cardinals d latere, as being his holinefs's counfellors in ordinary, and afliftants. See Legate.

The guards of princes were heretofore called latcrones, becaufe always attending at their fides, à lateren
Du Cange, in his Gloffary, fays there were aneiently counts à latcre, and monitors a 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 Chemiflry, a name by which Van Helmont has, in feme of his writings, called the famous menttruum, which he boalts Paracelfus and himfelf to have been poffeffed of, and which he ufuaily calls alkabeg.

LATH, in Building, llips of wood ufed in plaftering, tiling, and flating. Thefe are what Feitus calls ambrices; in other Latin writers they are denominated templa; and by Gregory of Tours, ligatura.

In plattering, the narrower the laths are the better they are for the purpofe, fo as they are of fufficient breadth to hold the nails, as the number of interflices are increafed, the lime or ftuff will hang more readily, and the shicker they are they will be the better adapted to refift violence; but then they would be much more expenlive. The laths are generally made of fir, in three, four, and five feet lengths, but may be reduced to the ftandard of five feet. Laths are fingle or double; the latter are generally about three-eighthsof an inch thick, and the former barely one quarter, ard about an inch broad. Lath is fold in bundles; the thiree feet are eight fcore to the bundle, four feet, fix fcore, and the five feet, five fore. The lath for plain tiling is the fame as that ufed in plaltering. Laths are alfo diltinguifhed into heart and fap-laths; the former hould always be ufed
in plain tiling, and the latter, of an inferoor quality, is mon frequently ufed by the platlerer. Heart-ofonak laths, by the flatute Edw. IIl., fhould be one inch in breadth, and half an inch in thicknefs: but now, though their breadth be an inch, their thicknefs 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 ftatute, pan-tile laths are nine or ten feet long, three-quarters of an inch thick, and one and a half inch broad, and fhould be made of the beft yellow deal : the bundle confifts of twelve fuch laths. A fquare of plain tiling will require a bundle of laths, more or lefs, according to the pitch. The ditance 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 ufual diftances, with a counter-lath between rafter and rafter : but if the rafters Itand at wide intervals, two counter-laths will be neceflary. Laths are employed for various other purpofes as well as plaftering and tiling, as in filleting for fultaining the ends of boards; in naked flooring and roofing; for furring up the furface: ; and in every kind of fmall work, where the dimenfions 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 platter, and if the laths are very crooked, as they frequently are, there will be no fpace whatever left to ttraighten the platter: the finifhed furface mult, 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 thould be thinned at the lapping oat to nothing at the extremity, or othervife they fhould be cut to exact lengths.

Laths fhould be as evenly fplit as poffible: thofe that are very crooked fhould not be ufed, or the crooked part fhould be cut out; and fuch as have a fhort concavity on the one fide, and a convexity on the other, not very prominent, fhould be placed with the concave fide outwards.

The following is the method of fplitting laths: the lathcleavers having cut their timber into lengths, they cleave each piece with wedges into eight, twelve, or fixteen pieces, according to the fcantling of the timber : the pieces thus cloven are called bolts; then, in the direction of the feltgrain, with their dowl-ax, into fizes for the breadth of the laths: this operation they call felting; and, laltly, with their chit they cleave them into thicknefs by the quartergrain.

Latil Bricks are bricks made much longer than the ordinary fort, and ufed inltead of laths for drying malt upon; for which purpofe they are extremely convenient, as not being liable to catch fire, and retaining the heat much longer than thofe made of wood, fo that a very fmall fire is fufficient after they are once heated.

LATHAM, in Geograply, is a townfhip in the parifh of Ormkirk, hundred of Weft Derby, Lancafhire, England, fituated 210 miles from London, and containing 43 thoufes, and 2179 inhabitants. In this townfhip is Latham-luoufe, the feat of Edward Wilbraham Bootle, efq. M. P. This place is noted in the Topographical Anmals of Lancafhire 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 Izth century, 1, atham-houfe was heroically and gallantly defended by Charlutte, countefs of Derby, who was befieged here by colunels Egerton, Rigby, Afhton, and Holcroft, from the 28 th of July, 10ft, to the ${ }_{2 j}$ th of the following May. This is a memorable intance
of femmine courate and fortitude: a fimilar crample, however, was manifetted in Blanch, lady Arundel, at War-dour-caftle, in Wilthire. A particular accomnt of the former is recorded in the "Hiltury of the Houfe of Stahley," Svo. 239; and of the latter in Britton's "Beauties of Wiltfhire," Svo. vol. i. Latham-park is about five miles in circumference, and contains fome fine forett feenery. Nearly in the centre is the houfe, built of flone, after a defign of Lconi. In this townhip is alfo Crofs-hall, once belonging to the earls of Derby, but is now the property of colonel Stanley, M. P. Near it is Blythe-hall, the feak of Thomas Langton, efq. Beauties of England, vol. ix.
LATHE, an engine of the molt extended application in the incclanic arts, for forming wood or metal into any article of a circular figure. The mode of action in a lather is eflentiaily different from any other method of cutting, as the work is caufed to revolve in a circle, while the tool is held upon a fixed fupport, and prefented to it to cut away any parts projecting beyond the circle defcribed by tho 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 conlidered as perfect. All. things which can be turned are made in the lathe, both for accuracy and expedition. The common wooden lathe, in ufe among, wood-turners for making articles of houtho'd furniture, is fo generally underitood, that it is needlefs to give a minute delcription of it ; we have, therefore, given drawings in Plate (Latbe) of a metal lathe, the molt perfect of its kind, proper for turning accurate and delicate works. for mathematical inftruments, or machinery: it was made by Mr . H. Maudllay, London, who has a great number of different fizes, but on a fimilar conltruction, in conaltant ufe, at his manufactory for theam-engines, and other machinery, in the Weftminter-road. Figs. 1. and 2. of the plate are a front and end elevation of the whole lathe, where $\mathrm{A} A$ is a ftrong mahogany bench, fupported on iron ftandards $\mathrm{B}, \mathrm{B}$, which are fhewn fully in fig. 2 ; beyond thefe are fuits of drawers $\mathrm{C}, \mathrm{C}$, to contain the tools, Sc . : the Itandards B . carry the axis D of the great foot-wheel E, which gives motion to the work when it is turned by its crank 1 ) and treadle F , on which the workman preffes his foot, at intervals, to turn the whecl round. The lathe itfelf, which is fixed upon the bench, confiits of a triangular har $G$. See alfo fig. 3 , which is an enlarged ligure of it; it is fupported. on Imal! tandards $a, b, c$, fixed to the bench A by fcrews going through it : upon this bar the puppets $\mathrm{H}, \mathrm{I}$, and K , are fitted with perfect accuracy, and $H$, which is called the back puappet, can be faltened at any part of the bar by afcrew beneath it; the other two puppets, I, K, are ferewed dowin upon the itandards $a$ and $b$, and are connected together by a piece of metal $d$ litting upon the bar, and calt in the fame piece with them: thele two puppets fupport the mandrel, or fpindle L, one having a fcrew with a conical itvel. point to enter a hole in the end of the fpindie, and the other having a hard fteel collar to receive the neck of the findle, which fits it with the molt perfect ascuracy, to turn round freely (by a band encompalin ig its pulley M.), but without any thate in its collar; on the end of the fpindle, 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 inte it to fupport the erded of a long prece of work; the point is fattencd bry a fcrew $\delta$ in the top of the puppet, and has a fcrew $f$ behind it to force it forwards: the bar G, alfu, has the rett, or fuppurt, for the tool fixed upon it, by a pieca of metal gr, (fg. 1.) fitted upon
the bar; a nlider is fitted upon this piece to flide in a direction perperdicular to the bar, and the fame fcrew beneath faltens the reft upon the bar at any place, and the fider at any length acrofs the bar. On this flider is a focket to receive a pin, on the top of which is a crofs-piece, formed like a ' T , upon which the tool is laid; this ' T can be adjuted to the height of the work the tool is to be applicd to, and can be fatened at any height by the ferew in the fide of the focket. The various kinds of work to be turned are faftened to the end of the fpindle, fo as to be turned round with it, by means of what are called chucks: thefe are pieces of wood, or metal, fitted to ferew falt upon the end of the fpindle, and a hollow, like a difh, 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 reft, which is previouny fixed clofe 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 increafed velocity. A chuck of this defcription is fhewn mounted in fig. 1 , with what is fuppofed to be a plate of brafs, held in it to turn the flat face. Some chucks are flat, with holes through them, and the work is held by fcrews againtt 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 fcrew, fo as to encompais a piece of work of any dimenfions. This method of chucking is adopted to form all kinds of flat or hollow work, as cups, boxes, circular rings, or płates, wheels, \&c. which are, therefore, termed chuck-work; but articles of confiderable length are fupported 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 $f$, thruft forwards, and its point enters a fmall hole, previoufly drilled in the end of the work: the ferew $g$ 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 fquare hole in the end of a chuck fcrewed to the fpindle. In other cafes, the fpindle has a chuck ferewed to it, terminating in a conical point fimilar to that at $e$; this forms a fupport 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 fpindles of wheels, bolts, fcrews, rollers, the outfides 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. I, and fupported by an additional ftandard $c$ fcrewed to the bench. In the fame ftate it will admit longer work.

The particular manner of holding the tool to the work is not eafy to defcribe in words, but is foon acquired by practice. The tools for brafs are fquare or flat bars of fteel, the ends of which are cut off obliquely, to form an edge like a chiffel, but with a very obtufe angle. It is held in fuch a pofition, that its upper flat furface points to the centre of the work to be turned: it is to be held down as firmly as pofiible to the reft, and advanced to the work at intervals, whenever it ceafes to cut, by having removed all the projections of the work without the circle it defcribes. For turning with extreme accuracy, the flide-reft is a very ufe. ful addition to the lathe. It is a reft with two fliders in different directions, to one of which the tool is fixed : by means of fcrews with handles, the fliders 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 mechanifm. NA
is a piece of metal, fitted to the bar of the lathe, and provided with a ferew to faften it at any place: upion the upper fur. face, which is flat, two pieces of brafs are ferewed, to form a dove-tailed groove, in which a glider, $b$, is fitted, to move with freedom and precifion; a fcrew, $i$, is mounted in the frame N , and is lapped into a piece projecting from the lower fide of the flider, fo that the fcrew, when turned round by a handle fitted on its 〔quare, advances or draws back the flider in its groove. Upon this fider, $h$, is a frame $k$, having at the top of it a flider $l$, provided with a fcrew $m$, 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 fcrew at top to faften it in. The flide-reft being mounted, in the manner of $f . g .3$, upon the bar, the upper flider, $l$, is parallel with the fpindle, and the lower one, $b$, perpendicular thereto. For turning flat work, the tool is put in as there flewn: now by turning the fcrew, $m$, of the upper flider, the tool is advanced in contact with the work, which is mounted as in fy. I; then by the other fcrew, $i$, it is drawn acrofs the face of the work, turning it as it proceeds, to a perfectly flat furface. For turning a cylinder between centres, the tool, 0 , is put through its holder $n$, in a direction perpendicular to that fhewn in fig. 3 ; and then the lower flider, $b$, is moved to adjuft the tool to the diameter of the intended work; and the upper flider is moved, to carry the tool along the length of the cylinder, and cut it as it goes. The flide-reft will alfo turn cones, by the following contrivance: the frame $k$, fupporting the upper flider, is fitted to the lower flider by one pin, upon which the whole frame and upper flider may be turned round and faftened at any inclination, by two ferews paffing through circular grooves. By this means the upper fider is inclined in any angle to the fipindle, 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 fhort bar P , exactly of the fame dimenfions as the large one, is fitted thereon, and faftened by its fcrew $p$. Upon this the nidereft is placed: its fliders now Itand in a direction perpendicular to what they did before, though on the fame level. The fcrew to be cut, reprefented by $Q, f g .6$, 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 fcrew, $i$, of the lower flider: 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 ferew, $i$, of the lower flider, fo that it will be turned round at the fame time with the fpindle. A tool, with a point of the proper form to cut the thread of the fcrew, is put in the holder $n$, and advanced by the fcrew, $m$, of the upper flider to touch the cylinder $Q$. The lathe being now put in motion, the tool is moved along by the ferew of the lowes flider, at the fame time the work revolves, and upon which it traces a fpiral groove. When it arrives at the end of the fcrew, which it only fcratches the firft 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 firlt fet out. The tool is then fet by the fcrew $m$, to cut deeper than the firft time, and the forew is cut over again: this heing repeated four or five times, the fcrew is completed. By this method a fcrew of any degree of finenefs may be cut, by merely changing the proportion of the cog-wheels, V, W, which connect the fpindle and the fcrew 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 ferew of the flide-reft at $i$; and if the wheel, W, on the fcrew, is the

## I. A T

largent, the fercw cut will be finer; if, on the other hand, the fmalleit wheel is fixed on the ferew at W , it will cut a forew of a coarier thread than the fcrew i. The lathe is provided with wheels of all the different fizes, fhewn by the dotted circles V, fis. 7, any of which may be dixed 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 ferew of the flide-relt; and if that is a lefthanded fcrew, it will cut a right-handed ferew, becaufe the flider-fcrew revolves in an oppofite direction to the fpindle. That the lathe may cut ferews of either kind, an intermediate coor-wheel is introduced between the two, to caufe them to turn the fame way. This gives another advantage, viz. that any two whecls may be ufed together; the intermediate wheel communicating motion from one to the other, though they are confiderably diftant from tonching each other. The application of the intermediate wheels is explained in figs. 8 and 9 , where $r$ is a projeting thelf from the itandard $a$; upon this a piece of metal, $s$, is faftened by a fcrew, and a fhcrt hollow fpindle, $v$, is fitted into it, and faltened by proper fcrew-collars which admit its rotation; upon the end of this the cog-wheel W, which turns the forew of the flide-relt, is faftened by a nut: an arm, $a v$, is fitted on the fhort fyindle $v$, fo 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 thefe two motions this wheel may be fixed at any joint, fo as to connect the wheels of any fize. The hollow fpindle, $v$, 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-reft ferew $i$ : by this method the flide-rell may be fet at any part of the lathe bar; when it is required to cut a fcrew at the end of a long bolt; the arbor $y$, forming the connection between the cog-wheel, W, and the fcrew, for which purpofe it flides through the hollow fpindle $v$, but is caufed to revolve with it, by a feather or fillet projecting from one fide; the focket of the hollow fpindle may be fet and faftened at any required diffance from the lathe bar, and fafened by its fcrew; the flide-reft being fet at a correfpondent diffance from the fpindle of the lathe, by moving it upon the bar P , will admit a large piece of work, when a ferew is required to be cut upon it. R, fig. 7 , is an iron frame, faftened to the lower flider of the fide-reft, to fupport the fcrew from bending by the preffure of the tool, when it is long and flender. The frame is fhewn in plan in fig. - 10, where the holes are fhewn for the two fcrews which hold down the frame upon the lower fider.

The methods of holding various pieces of work in the lathes to turn them are endlefs, and depending in a great meafure upon the ingenuity of the workman to adapt them to the particular occafions he meets with. This fubject, as well as the fgure and manner of holding the tools, will be refumed under the article Turning; an art which, from the facility with which it produces fo many beautiful forms, has become a fafhionable amufement among gentlemen, who .may require many practical inftructions, which would be needlefs to the mechanic regularly educated in the workthop. We thall alfo defcribe the method of turning elliptic work, as well as circular.

## Latie, in Law. See Letie and Latireve.

Lathe, in Rural Economy, a provincial termufed in fome eounties to fignify a barn.
 cealed, becaufe the herbage is moftly under the ground, or at lealt covered with dead leaves of trees.) Toothwort. Linn. Gen. 3.5. Schreb. 402. Willd. Sp. Pl. v. 3. 200. Mart. Mill. Diet. v. 3. Sm. Fl. Brit. 654. Juff. 102. La-
marck Illuntr. 1. 551. Gxern. t. 52.-Clafs and order, Dillynumia Angiofpernia. Nat. Ord. Perfonath, Linn. Pcdiculizes, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, bell-naped, erect ; its orifice deeply four-cleft. . Cor. of one petal, ringent; qube longer than the calyx; limb ringent, Fwellinge, its upper lip concave, helmet-like, broad, with a narrow hooken point ; lower lip fmatlelt, reflexed, obtufe, moflly threc-cleft. Nectary a very fhort notched gland, depreficdon both fides, inferted into the receptacle of the flower at one edge of the germen. Stam. Filaments four, awl-fhaped, the length of the corolla, and concealed under its upper lip, two rather fhorte: than the reft ; anthers oblong, two-lobed, barbed, flatened, cohering in pairs. Pif. Germen fuperior, globofe, flightly compreffed; ityle thread-flaped, of the length and fituatien of the flamens; figma tumid, abrupt, drooping. Peris Capfule roundifh, obtufe with a point, invelted with the enlarged fpreading calyx, of one cell and two elaltic valves, each bearing a central, longitudinal, fungous receptacle. Seeds few, nearly globular, inferted into the receptacles.

Obf. The nectariferous gland fhews its very near affinity to Orobancbe. Linn.

EIT. Ch. Calyx four-cleft, inferior. A depreffed gland at the bafe of the future of the germen. Capfule of one cell, with lateral fungous receptacies. Sceds globofe.
x. L. Clandefina. Subterraneous Tcothwort. Linn. Sp. Pl. 843. Lamarck, fig. 1. (Clandeltina flore fubceruleo; Tourn. Int. 652. t. 424 . Orobanche, five Dentaria aphyl. los purpurea, cefpite denfo ; Morif. Seq. 12. t. 16. f. 15.) -Stem branched, fubterrancous. Flowers erect, folitary.Native of Thady woods in France, Italy, and the Pyrenées, growing parafitically on the roots of trees. The fen is fubterraneous, at firit fhort, and denfely clothed with crowded, feffile, rounded, convex, very fleflyy, entire, whitifh leaves. In this ftage of the plant the flowers rife above the ground, and are at firft nearly feffile, very large, the corolla being two inches long, of a blueifh colour, fometimes white, and they grow in rather clofe tufts. Afterwards the ficm is greatly elongated, the leaves become remote, and flurivelled, the corolla falls, and each cal. $w$ is elevated on its own feparate fimple falk above an inch long. This latter ftate 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 inay not be unacceptable. It feems to thew the herb, if not the root, to be but of annual duration. What have been called fcales of the root in this genus, feem equivalent to leaves, and we have fo denominated them above.
2. L. Anblatum. Oriental Toothwort. Linn. Sp. PI. 844. (Anblatum orientale, flore purpurafcente; 'Tourn. Cor. 48. t. 491.)-Lips of the corolla undivided. - Found by Tournefort in the Levant. Linnxus has taken up this fpecies entirely from the plate and fhort definition of the great French botanift. It fhould appear to be moft akin to the following, with which it conflitutes Tournefort's genus of Anblatum, whofe name is of German etymology, and adopted from Valerins Cordus.
3. L. Squamaria. Greater Toothwoyt. Limn. Sp. Pl. 844. Fl. Dan. t. 136. Engl. Bot. t. 50. (Squamaria; Rivin. Monop. Irr. t. Sg. f. 2. Dentaria major Matthioli; Ger. em. 158.)-Flowers racemofe, pendulous. Lower lip three-cleft--Native of fhady woods throughout Europe, flowering in March or April, and growing parafitically onthe roots of the hafel, for the moft part. The fubterraneous. portion of the flem is branched, clothed with flefhy-white leaves, as in the firt fpecies; what rifes above-greund is fimple, purple, downy, racemofe, bearing numerous drooping purple flowers, with a pale calyx, each partial flower-

## $\mathrm{L} A \mathrm{~T}$

Atalk attended by a leaf like thofe that grow below the furface.

Lathrea Pbelypea. See Orobanche.
LATHREVE, Lemoreve, or Trithingreve, was an officer under the Saxon government, who had authority over a thind part of the county; and whofe territory was therefore called trithing, otherwife a leid, leithin, or lathe, in which manner the county of Kent is itill divided; and the rapes in Suffex feem to anfwer to the fame. As to the juridiction of this officer, thofe 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.

LA't'HRUS, in Entanology. Sec Scarabeus.
LATHYRIS, in Botany, a name given by many authors to a fpecies of tithymal, or fpurge, commonly known by the name of titbymalus latifolius, the broad-leaved fpurge, and called by fonc alio cataputius.

LATHYRUS, a name adopted from Theophraftus, whofe $\lambda$ afupos appears evidently to be, like our's, fomething of the pea or vetch kind, though it is impoffible precifely to determine what-Lint. Gen. 375 . Schreb. 497. Willd. Sp. Pl. v. 3. 1077. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 763. Juff. 359. Lamarck. Illuftr. t. 632. Grertn. t. 152 .-Clafs and order, Diedelphlia Decandria. Nat. Ord. Papilionacex, Linn. Legrominofe, Juff.

Gen. Ch. Cal. Periamth inferior, of one leaf, bell-fhaped; its fegments lanceolate, acute ; the two uppermolt florteft, the lower one longelt. Cor. papilionaceous. Standard very large, inverfely heart-fhaped, reflexed at the fides and fummit. Wings fmaller, oblong, fomewhat crefcent-fhaped, fhort and obtufe. Keel femicircular, the fize of the wings but broader, feparating about the middle inwards. Slam. Filamente in two fets, one fimple the other in nine divifions, curved upwards; anthers roundifh. Pif. Germen compreffed, oblong, linear ; Ityle in its upper part erect, flat, broader upwards, acute at the fummit; ftigma on the upper or inflexed fide of the fyle, extending from the middle to the top, hairy. Peric. Legume very long, cylindrical or compreffed, pointed, of two valves and one cell. Seeds feveral, either cylindrical, globofe, or flightly angular.

Eff. Ch. Style flattened, downy above, broader upwards. 'Two upper fegments of the calyx fhorteit.

Tournefort divides this genus into four by the foliage. His Lathyrus, t. 216, 217, has only a fingle pair of leaflets on each footitalk, the latter terminating in a compound tendrıl ; his Clymenum, t. 218, has many leaffets to each falk; his Niffolia, Intt. 656, has fimple leaves without any tendril; and his Aplaca, t. 223, bears. 1tipulas without leaves, :at leaft in the adult plant. Thefe, however, are very juftly aleemed by Linnæus mere differences in habit, among the 'fpecies of one great genus, which is on the whole fufficiently natural. His it th edition of Syft. Veg. enumerates 21 fpecies, Willdenow 36 , in three fections. The firit fection, with fingle-flowered ftalks, now and then varying to two Howers, embraces 18 fpccies; the fecond, with two-flowered ftalks, has fix; the third, with many flowers on each ftalk, has 17.-Seven of the genus only are natives of Britain. The reft grow either in the warmer countries of Lurope, or in the north of Africa, fome in America, and one it is faid in Japan. They are ftationed for the moft part in cultivated fields, in meadows, or about hedges and thickets. Thofe referrible to the firlt and fecond fections are, perhaps
without exception, always annual plants, many of them capable of being ufed as pulfe; thofe of the third are generally percmial, with very tenacious, deep or creeping roots; and more calculated for fodder. Examples are here fubjoined.

* Sullks. fingle-flozucred.
L. Apbaca. Linn. Sp. Pl. 1029. Curt. Lond. fafc. $\mathrm{y}^{\circ}$ t. 51. Engl. Bot. t. 1167. (Aphaca; Raii Syn. 320, Ger. em. 1250.) - Flowers folitary. Tendrils leafefs. Stipulas between heart and arrow-fhaped.- Found in the borders of gravelly corn-fields, but rarely. The fem is weak. a foot or two high, fupported by its numerous fimple tendrils, each fpringing from between two large, angular, almoft halbert-fhaped /ipulas, which give the plant a peculiar afpect. One or two of the very firt ftipulas only are accompanied by a pair of fmall leafefs, with or without any elongated tendril. The floweirs are fmall and yellow, very rarely two together on each flower-ftalk.
L. amphicarpos. Linn. Sp. Pl. 1029. (L. minimus pe-
 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 thefe are the offspring of perfect flowers, (at leaft as to ftamens and piftil,) though born under ground; as we have veritied 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 fpecies 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-flaped flipulos, and large folitary dull-purple flowers, which alfo produce feed.
L. arliculatus. Linn. Sp. Pl. 1031. Curt. Mag. t. 253.Stalks with one or two flowers. Tendrils accompanied by many alternate lanceolate leaflets, on a winged ftalk.-Native of France and Italy. A common hardy annual in our gardens, to a place in which it is recommended by its elegante though fecentlefs flowers, whofe crimfon ftandard is prettily contrafted with their uhite wings.
** Stalks tevosforvered.
L. odoratus. Common Swect Pea,-Linn. Sp. Pl. 1032. Curt. Mag. t. 60.-Stalks two-flowercd. Leaflets ovateoblong, two to cach branched tendril. Legumes hairy. -Native of Sicily, and fome fay of Ceylon; but the latter may perhaps be doubted, the plant being in the Englifh gardens fo hardy an annual, as frequently to furvive our winters, when it comes up in autumu. Its great beauty, delicious fragrance, and varicty of colours, render it a general favourite. More than two flowers are frequent on each ftalk, though the uppermoft are commonly blighted.


## *** Stalks many-flowered.

L. tulecrofus. Linn. Sp. Pl. 1033. Curt. Mag. t. 11 r. -Stalks many-flowered. Leaflets oval, in pairs. Stem without wings. Roots tuberous.-A troublefome weed in fome parts of Germany and Italy, fpreading widely over all kinds of cultivated ground, by means of its tuberous flehy perennial roots, hardly to be extirpated. In our gardens it is a beautiful hardy plant, confpicuous for the peculiarly delicate rofe-colour of its blofoms, and we have never heard of its being troublefome in its increafe. The feeds rarcly

## L $A T$

rarely ripen. The kuobs of the root are eatable when boiled.
L. latifolius. The Great Everlafting Pea. Linn. Sp. Pl. 1033. Engl. Bot. t. 1108 . Mill. Illuitr. t. 62.Stalks many-flowered. Leaflets elliptical, in pairs. Stem winged. - Very commonly cultivated in gardens, where its roots endure for a long courfe of years, throwing up tall climbing fems, which bear large bunches of beautiful crimfon flowers, well known to molt people. We rather doubt whether the plant be truly wild in England, yet it appears in fome places to be fo, and finds a place in all our Britifh Floras.
L. Jylvefris. Narrow-leaved Everlafting Pea. Linn. Sp. P1. 1033 . Engl. Bot. t. 805. Curt. Lond. fafc. 6. t. 52.Differing from the lait in the narrownefs of its leafets, and lefs gaudy hues of its flowers, is perhaps a more elegant plant, and certainly wild in many parts of England in low bufhy fpots.
Lathyrus, in Gardening, contains plants of the herbaeeous climbing flowery kinds, of which the \{pecies chiefly cultivated are the fiweet lathyrus, or pea, L. odoratus; the tangier lathyrus, or pea, L.tingitanus; and the broadleaved lathyrus, or everlafting pea, L. latifolius.
But feveral other fpecies may be cultivated where variety is wanted.

The firft of thefe forts has feveral varieties ; as the purpleflowered, the white-flowered, the variegated or painted lady, fiweet-ficented, and the fcarlet.

The fecond fort is a fhowy plant for fhrubberies, 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 fcarlet-flowered, and the large-flowered.

Method of Culture.-There plants may be readily raifed, by fowing the feeds of the different forts in the autumn or fpring feafons, 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 beft feafon, as the plants appear mote early, but in other cafes the fpring fhould be preferred. The plants afterwards only require to be kept clean from weeds, and be properly fupported by branchy fticks.

The laft fort may likewife be increafed by tranfplanting the roots in the autumn; but the plants in this way are feldom fo good as by feeds.

And the two firft forts mult be fown annually, but the laft will remain many years.

It may be noticed that it is the practice with the gardeners who raife the firft 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 fhould be watered frequently in a nlight manner.

All thefe plants are highly ornamental in the borders, clumps, and other parts of pleafure-grounds, when properly intermixed in their fpecies and different varieties in fuch compartments.

LATIANO, in Geography, a town of Naples, in the province of Otranto; five miles E. of Oria.

LATIAR, a feaft or ceremony, inftituted by Tar. quinins Superbus, in honour of Jupiter Latiaris, or Latialis.

Tarquin, having made a treaty of alliance with the Latins, propofed, for perpetuating it, to erect a common temple, where all the allies, the Romans, Latins, Hernici,

Vgl. XX.

## L A T

Volfci, \&c. fhould affemble themfelves every ycar, hold 2 kind of fair, exchange merchandizes, feaft, facrifice, and make merry together. Such was the inflitution of the Latiar. The founder only appointed one day for this feaft ; the firft 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 appeafing the fedition raifed on occafion of the plebeians afpiring to the confulate.
Thefe four days were called the Latin ferix; and all things done during the coutfe of the ferix, as feafts, facrifices, offerings, \&cc. were called Latiares.

LATICLAVIUM, or LATUS-CLAVUS, a garment which was a difinction and dignity among the Romans, contradiftinguifhed from the angufticlavium.
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 thefe lips were pretty broad, and in the anguftus-clavus narrower; though there is nothing about which the learned differ more than the difference between thofe two habits.
There were buttons fet on the latus-clavus, which ap. peared like the heads of large nails; whence fome think it took its name.

The fenators, protors, and the chief magiftrates of colonies and municipal cities, had a right to wear it. The robe called pretexta was worn over the latus-clavus. When the prator pronounced fentence of death, he put off the prxtexta; 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 compofer, much efteemed by connoiffeurs, in every fpecies of vocal mufic. His comic operas, however, were the moft ingenious and fuccefsful of all burletta compofitions, till the Buona Figliuola of his nephew Piccini came out, which furpaffed all preceding comic operas fo much, that no other excited any curiofity in the public', till Paefiello's fuperior fertility was known and felt.

Latilla's comic operas, that were performed in London, from 1748 to 1753 , when the Mingotti firft arrived, were "La Comedia in Comedia," "Orazio," and "Don Calafcine," which were admirable. The melodies new, eafy, and pleaf. ing ; humour without buffoonery ; and the actors confidered as well as the fingers, in allowing time for Pertici and Lafchi, thofe nice obfervers of whatever was ridiculous in the voice, countenance, or gefture of man, to convey their obfervations to the fpectators.

We met with poor Latilla 20 years afterwards at Venice, " fallen from his high eftate," and fhrunk into an humble deputy organift, at the church of St. Maca; but found him an intelligent and well informed man, on other fubjects than that of his own profeffion, which, however, he had cultivated in all its departments.

LATIMER, Hugh, the fon of a refpectable Leicefterfhire yeoman, was born about the year 1470. He was initiated in fchool learning in the country, and making a very rapid progrefs in his youthful ftudies, he was, at the age of fourteen, Ient to Chritt's college, Cambridge, where he was diftinguifhed for his rapid proficiency in the fudies of the place. Here he took his degrees, entered upon holy orders, and was at this period a zealous Papift, read the fcriptures and the fchoolmen with the fame reverence, and held Thomas á Becket and the apoftles in equal honour. He had taken alarm at the progrefs of Lutheranifm, and inveighed with great bitternefs, publicly and private!y, againft thofe prin-

## LATIMER.

ciples, of which he was hereafter to become a moft zealous defender. His zeal as a Papilt was fo dittinguifhed in the univerfity, that he was elected crofs-bearer in all public proceffions, an employment which he is faid to have accepted with a high degee of reverence, and to have difcharged with much folemnity. Our good divine was a Papift from conviction, and had a mind open to arguments on all fides of the queltion: he fortunately met with Mr. Thomas Bilney, a cler yman of great piety, and who, by the perufal of Luther's works, had become a fecret favourer of the reformation. By degrees he infufed into the mind of Latimer all thofe doubts which he had formerly felt refpecting the difcordance of Popery with pure Chritianity. Latimer heard the arguments of his friend, and was prepared at firf to difpute the ground inch by iuch. At length he found the ground on which he tood abfolutely untenable; and acknowledged the crrors in which he had been educated. But the temper of the fcholar was not like that of the maller: he could not be a Proteltaut in fecret : he muit come forth holdly and declare the convistions 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 apoitle in the caufe of Proteltantifm: he preached in public, he exhorted in private, and every where cuforced tie neceffity of a holy life, in oppofition to the fuperlitious ceremonies and obfervances inculcated by the Romifh religion. He foon became obnoxious to the generality of the clergy, but being contented to go through evil as well as good report, he continued on his courfe with more ardour in proportion to the outcry made againft him. He inveighed againtt the ccremonies which encumbered true religion, and expofed the pride and ufurpation of the Romifh hierarchy: but what he moft infilted 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 anfwer, from the pulpit, the arguments of Latimer : he performed the talk with great pomp, but not to the complete fatisfaction even of his own party, and in a fhort time afterwards the whole univerfity met to hear what the reformer had to fay in his defence. Mr. Latimer at firit recapitulated Dr. Buckenham's arguments; placed them in the llrongett light, and gave then much greater importance than the friar had been able to do: he then attacked them with fo much force of reafoning, and fuch abundance of wit, as to render the learned doctor truly ridiculous : he next appealed to his hearers, urging them to relpect their own underlandings, and not to fubnit to be led by the priets, who had ever been accuftomed to treat the people at large with contempt; and he concluded with ardently hoping, that his honeft countrymen might be permitted to have the ufe of the fcriptures, till they fhewed themfelves to be as abfurd interpreters of them as the learned friar. Latimer, by this exertion, and by an anfwer to Venetus, greatly increafed the credit of the Proteftant party at Cambridge. Bilney and Latimer were regarded as the heads of the party: and to them the itudents looked with refpect, attachment, and even veneration. The heaus of the colleges, and the fenior members of the univerfity, were alarmed, and determined to withitand the progrefs of herefy. Frequent convocations were held, and the ftrictef injunctions were laid on all the tutors to be watchful of the opinions of their pupils; but thefe efforts were in vain, and the bifnop of Ely was applied to, and entreated to crufh, by his authority, the new opinions. The prelate, though a Papitt, was mot a friend to perfecution: he was willing to judge for himfalf, and though he went to Cambridge and preached ayainft the heretics, yet he did not feruple to attend himfelf
the fermons of Latimer, and with much candour declared, that the reformer was the beft preacher he had ever heard. Latitimer's enemies next appealed to the court, and tranfmitted very heavy complaints refpecting the increafe of herefy; and Wolfey, contrary, it is thought, to his own inclination, in. flituted a court, confifting of bifhops and other divines, to put the laws in execution againit herefy. Bilney and Latimer were called to aniwer for their conduct, and as the former was regarded as the moft guilty, by being the firft promulgator of the new doctrines, his examination was the moot fevere, 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 difpolition of Tunttal, bifhop of London, difmiffed 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 Itruck with remorfe at the thought of his recantation, and the agonies of his mind deprived him for a time of his reafon. In a few years he returned to a fane flate, and determined to expiate his abjura. tion by his death. He accordingly left his friends at Cambridge, went into Norfolk, his native country, and preached moft earnefly againft the corruptions of the eftablifhed religion; he was feized, imprifoned, and executed, at Norwich, exhibiting, at his clofing fcene, a moft admirable example of compofure, firmnefs, and Chriftian courage. Latimer, in the mean time, excrted himfelf more than ever: he was conftant 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 hy Henry, he took the liberty of writing a very bold letter to his majefty, againft a proclamation which the clergy had prevailed upon the king to publifh, forbidding the ufe of the bible in Englifh. The king received the letter with good temper, and even thanked Mr. Latimer for his well-meant advice. When meafures were taken for the eltablifhment of the king's fupremacy, Latimer exerted all his powers in forwarding his majefty's defigns. His zeal in the bufinefs procured for him the prefentation of the rectory of Weftkinton, in Wilthire, and, notwithltanding the remonitrances of his friends, who confidered this as the firt itep 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 Britol to preach on Ealter 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 bifhop of Brittol, prohibiting any one to preach there without his licence. This was but the firit in Alance of oppofition which the c'ergy in that neighbourhood excited againft him; they traduced his character, and inveighed againlt him with the greateft :iolence; and at length they drew up a fot of articles, in the form of an accufation, which was laid before Stokelley, bilhop of London, who immediately cited Latimer to appear before him. To this mandate he was not obedient, but on a citation from the archbifiop he inflantly fubmitted. He fet out in the midtt of winter, and at a moment when he was grievoully afflicted with the ftone and other acute diforders. On his arrival in London he found the court fitting, but inftead of being examined as to any particular charges, he was ordered to fubfcribe a paper put into his hand, containing the obnoxious docirines againit which he had been preaching. This he pofitively refufed, and he was difmiffed, for the prefent, with an exhortation to reflect upon his conduct, and fubmit.

## L. $\triangle$ TIMER.

Frequently was he brought before the court, and as frequently he rejected the propofal. At length he remonftrated againt their ill-treatment, and was probably refcued by the interpofition of the king. In 1534 , he was appointed chaplain to queen Anne Boleyn, and in the following year he was offered the bifhopric of Worcelter, which he accepted, and difcharged 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 feffion would bring with it many important advantages for the Protefant caufe. The convocation was opened by an eloquent Latin difcourfe from Latimer, who had been appointed to this office on account of his great talents, and becaufe it was known that no other perfon could fo ably expofe the corruptions of the clergy as himfelf, and thus lead them to an netive difcharge of their duty. In a fhort time after this, an Englifh tranflation of the bible was publifhed and recommended by authority to a general perufal. During the fitting of the convocation, an animated but unfuccefsful attempt was made to ftigmatize archbifhop Cranmer and bifhop Latimer, by fome public cenfure. As foon as the convocation broke up the bifhop repaired to his diocefe; he had no tafte for ftate affairs, and he had a mind ill adapted to the manners of a court. It was the cuftom at that period for the bifhops, 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, prefented, inftead of a purfe of gold, a New Teftament, with a leaf doubled down on this paflage, "Whoremongers and adulterers God will judge."

Attempts were frequently made to ruin the bifhop, but hitherto they were unfucceffful; and he continued in favour with the king. After the paffing of the bloody ftatute, or the act of the fix articles, the bifhop protefted againft it by his conduct; he refigned his bifhopric, and retired into the country. Here he intended to pafs 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 affiltance. His arrival was foon known in the metropolis, and the fpies of the bloody-minded Gardiner watched him in every place. At length they ohtained, or made, matter for accufation ; he was charged with fpeaking againft the flatute of the fix articles, and was, wihout helitation, committed to the Tower, where he fuffered a cruel imprifonment during the remainder of king Henry's reign. On the acceffion of Edward VI. Latimer, and all the others who had been imprifoned ia the fame caufe, were fet at liberty. He might have been reinitated in his bifhopric, but he preferred a more private life, accepted an incitation from Cranmer, and took up his refidence 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 tranfactions. It was, however, known that he affited the archbilhop in compoting the Homilies, which were publifhed, 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 moft eloquent preachers of the age, he was appointed to preach the Lent fermons before the king, during the firft three years of his reign. After this he retired into the couritry, and made ufe of his majelty's licence, as a general preacher, in thofe parts where he thought his labours might be moft ferviceable. He continued in this practice till Popery was re-ettablifhed in the reign of queen Mary, when he was cited to appear before the council in London.- He immediately obeyed, and as he paffed through

Smithfield, the fcene of the moft horrid cruclties exercifed upon thofe who had been denominated heretics, he faid, very cheerfully, to his attendants, "this place has long groaned for me." 'The next day lie appeared before the council, who, after loading him with many reproaches, committed him to the Tower. His imprifonment was rendered uncommonly fevere, but he endured every cvil with refignation, and true Chriftian humility. The weather was exccedingly fevere, but no fire was allowed him, which led him to tell the lieutenant of the Tower, that, however his enemies might expect he fhould be burned, unlefs he was permitted to have a fire this frofty weather, he fhould be firt: ftarved to death with cold. About this time archbifhop Cranmer and bifoop Ridley were committed to the Tower, which became fo crowdicd with prifowers, that the three prelates were confined in the fame roon, a circumitance which, no doub:, they greatly enjoyed. The pleafure, however, was but of hort duration; they were hurried to Oxford under the pretence of a public difputation to be held there by the moft eminent divines on both fides. At this place they were moft clofely confined in thie common prifon, and deprived of every comfort, and of almoft all the neceflaries of life; hence they readily inferred what kind of difputation 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 flould give them very little trouble. "I fhall," 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 purpofe. They talk of free difputation; but I am affured, their grand argument will be, as it was that of their forefathers, We bave es lawe, and by our lazw ge ousht to dize"" When he was brought into court, he had a cap on his bead, buttoned under his chin, a pair of fpectacles hanging at his breaft, a new teftament under his.arm, and a flaff in his hand. He was exhaufted in preffing through the crowd, and was permitted to fit down: after a fufficient paufe, he was told he muft difpute againft the articles brought againft him ; he declared he was unable, through age, to do eny fuch thing; "I am not able to debate," faid the venerable old man, "I will arow my faith, and then do with me as you pleafe." He was next enfnared, by the artful conduct of his accufer, to make conceffions which were againft him, and upon this the prolocutor arofe, and exclaimed to the populace, "Here you fee the weaknefs of herefy againt the truth; here is a man, who, adhering to his errors, hath given up the gofpel, and rejected the fathers." The good old man made no reply, but wrapping his gown about him, and taking his new tef. tament and his flaff, walked out with the greatelt compofure. On the foilowing Friday he was again brought into court, was firft excommunicated, and then condemned to death. As foon as the fentence was read, Latimer, lifting up his eyes to heaven, exclaimed, "I thank God mont heartily, that he hath prolonged my life to this end.'

No fteps were taken towards putting the fentence againft the prelztes into execution, for nearly a year and a half; Dut, in 1555, new laws in fupport of the Romifh religion having been enacted, a commiffion was granted by cardinal Pole, the pope's legate in England, to the bifhops of Lincoln, Gloucelter, and Briftol, empowering them to try biftops Latimer and Ridley for herefy. The prelates were ordered before the commifioners, and when Ridley had been examined, bifhop Latimer was brought to the bar, whom the bihop of Lincoln addrefled, in an eloquent, and very pathetic fpeech, earnefly exhorting him to accept the mercy that was offered, and to acknowledge the authority of the fee of Rome. The good bihop was too firmly fixed in his
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 and Ridley. Their execution was fixed for the 16 th of October, and the place fixed on was the north fide of the city, near Baliol college. Left the bloody feene fould excite a tumult, the military were ordered to attend the place of execution. On the day appointed, the vice-chancellor of Oxford, and other perfons of diftinction, repaired to the fpot which was to witnefs the fufferings of thefe worthy men; the prifoners, at the fixed hour, were fent for, and the concern of the fpectators, which was apparent in every countenance, excepting in thofe who were actors in the fcene, was greatly augmented by the itriking contrait of their appearance. Ridley was drefted in his epifcopal habit, fhewing what they had formerly been, and bifhop Latimer wore his prifon attire, by which he exhibited the condition to which they were now reduced. Having heard a fermon, by a Popifh doctor, in which they were treated with great inhumanity, they prepared for their laft trial, and were chained to the itake. The fire was fpeedily kindled, and at the fight of the flames Latimer exclaimed, "Be of good cheer, maiter Ridley, and play the man, we fhall this day light fuch a candle, by God's grace, in England, as I truit fhall never be put out." He then recommended his foul to God, and a few minutes put an end to the fufferings of thefe noble martyrs. Such was the glorious and triumphant end of Hugh Latimer, who had been indefatigable in the difcharge of the duties of life, and who exhibited the moft altonifhing firmnefs and compofuie in the feveral trials to which he was expofed. He was not learned, in the ufual fenfe 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 compofition; his manner of preaching was affecting, as he fooke from the heart, and made deep and lafting impreffions on his auditors. He difplayed at all times a noble and apoftolic zeal in the propagation of the truth. No one had a higher fenfe of what became his office, or was lefs influenced by any finifter motive; and none ever reproved vice with more freedom, without any regard to the rank of his hearers. A collection of his fermons was publifhed, in $157^{\circ}$, by Auguftus 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 Heary VIII. for reftoring the free liberty of reading the holy fcriptures. Bing. Brit.

L:ATIN, a dead language, firf fpoken in Latium, and afterwards at Rome, and ftill ufed in the Ronsifh church, and among men of letters.

Some authors rank the Latin among the number of original languages, but by miftake : it is formed principally from the Greek, and particularly from the 压olic dialect of that tongue; though it has a great number of words which it borrowed from the languages of the Errufci, Ofci, and other ancient people of Italy; and foreign commerce and wars, in courfe of time, added a great many more.

The Latin is a ftrong, nervous language, perfectly fuitable to the character of the people who fpoke it. The Romans were engaged in wars and commotions, foreign and domeltic, which for feven hundred years engroffed all their thoughts. Fience, therefore, fays the ingenious Mr, Harris, their language became like their ideas, copious in all terms, expreffive of things political, and well adapted
to the purpofes both of hitory and popular eloquence: But the Romans were no philofophers; and hence the unfitnefs of their language to this fubject; a defect, which even Cicero is compelled to confefs, and more fully makes appear, when he writes philofophy himfelf, from the number of terms he is obliged to invent. Harris's Hermes, P. 411, \&c.

The Latin is more figurative than the Englifh, lefs pliant than the French, lefs copious than the Greek, lefs pompous than the Spanifh, lefs delicate than the Italian, but clofer and more nervous than any of them.

We may here obferve, that the profody both of the Greeks and Romans was carried much farther than our's; or that they fpoke with more, and ftronger, inflexions of voice than we ufe. The quantity of their fyllables was much more fixed than in any of the modern languages, and rendered much more fenfible to the ear in pronouncing them. Befides quantities, or the difference of fhort and long, ace cents were placed upon molt of their fyllables, the acute, grave, and circumflex: the ufe of which accents we have entirely loft, but which, it is well known, determined the fpeaker's voice to rife or fall. (See Accent and Prosody.) We may alfo obferve, that ftrong tones and animated geftures 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 accultomed. (See Action and Gesture.) When the Barbarians fpread themfelves over the Roman empire, thefe more phlegmatic nations did not retain the accents, the tones and geftures, which neceffity at firft introduced, and cuftom and fancy afterwards fo long fupported, in the Greek and Roman languages. As the Latin tongue was lolt in their idioms, fo the character of fpeech and pronunciation began to be changed throughout Europe. The fame attention was no longer paid to the mufic of language, or to the pomp of declamation, and theatrical action. The arrangement which commonly obtains in the Latin language confilts in placing, firft in the fentence, that word which expreffes the principal object of the difcourfe, together with its circumftances ; and afterwards the perfon, or the thing that acts upon it. Thus Sallult, comparing together the mind and body, ufeg the following expreffion; "Animi imperio, corporis fervitio, magis utimur ;" in which the order renders the fentence more lively and ttriking than when it is arranged according to our Englifh conftruction; "We make moit ufe 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 firit to that which is its chief object; and having once named it, carries it in view through the relt of the fentence. But though the common arrangement in the Greek and Roman languages is to place that firf which ftrikes the imagination of the fpeaker molt, 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 Engli/h is mote clear and diftinct. The Romans generally arranged their words according to the order in which the ideas rofe in the fpeaker's imagination. We arrange them according to the order in which the anderftanding directs thofe ideas to be exhibited in fucceffion, to the view of another. Our arrangement, therefore, appears to be the confequence of greater refinement in the art of fpeech; as far as clearnefs in communication is underftood to be the end of fpeech. The limitation of arrangement in the modern tongues is, in a great degree, owing to the dif. ufe of thofe differences of termination, which, in the Greek and Latin, ditinguifhed the feveral cafes of nouns, and

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tenfes of verbs; and which, by means of thefe, 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 clearnefs and precifion of language, the want of them in the Latin tongue is unqueftionably a defect, though they recur for the fupply of this defeet to the ufe of pronouns. (See Article and Pronoun.) Blair's Lectures, vol. i.

For a while the Latin tongue was confined almoft wholly within the walls of Rome; nor would the Romans allow the common ule of it to their neighbours, or to the nations they fubdued. Cicero obferved, that even in his time, Greek was ufed almoft among every people, but the Latin only conined to a very narrow compals. By degrees they were brought to grant the ufe of it as a favour; and, in time, became fenfible of the neceffity there was of its being generally undertood, for the conveniency of commerce: and, accordingly, ufed their utmoft endeavours, that all the nations fubject to their empire fhould be urited by one common language: fo that at length they impofed that as a law, which they had before granted as a favour.

After the tranflation of the feat of the empire from Rome to Conftantinople, the emperors of the Eaft, being always defirous of preferving the title of Roman emperors, appointed the Latin to be flill retained in ufe, both in their refcripts and ediets, as appears by the conifitutions of the eattern emperors, collected in the Theodofian Code; but at length the emperors, neglecting the empire of the Weft, abandoned all care of the Latin tongue, and allowed their judges to pafs fentence in Greek; and, accordingly, we find the emperor Juftrian's Novels are compofed in Greek.

Chariemagne, coming to the empire of the Weft, appointed the law proceedings in fovereign comits to be made in Latin; and the notaries were to draw their acts and inflruments in the fame torgue : 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 fome meafure, in England too; and the reafon given for it was, that abundance of difficulties arofe about the underltanding of Latin terms. See Law Language.

The Latin, however, was prodigiouly degenerated and corrupted, before it came to be laid afide. The incurfions of the Goths and Vandals into Italy brought an inundation of foreign words and phrafes into it ; infomuch that Valla and. Naud call Boethius the lait 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 laft remains of Roman dignity, may be faid to have funk in the weftern world. But that was not all; when it once got into the courts of juftice, it was ftill worfe handled; till, at lalt, being introduced amonglt the monks, and become the common language of milfals and breviaries, it was debauched to that degree, that it was almolt become fcandalous to ufe it.

In this condition it was found at the time of the Reformation, when Vives, Erafmus, \&c. began to open the way for its recovery; fince which time monkih Latinity has been declining, and all endeavours have been ufed to retrieve the pure language of the Auguftan 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 Cibarafier. See Character.
Latin Church, is a term ufed for the Romifh or weftern church, by way of oppofition to the Greek church. See Сhurch.

## LAT

## Latinet ferit. See Frrif.

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 Caftile, with the view of obtaining aid againft Manfred, king of Naples and Sicily. By the prevalence of the oppofite party he was driven from his country, and retired to France. At Paris he opened a fchool of philofophy, and wrote feveral books. We find him in his native country in 1284, and acting as fyndic at Florence. He died in 1294. The moft celebrated of his works was his "Teforo," a compilation from various atuthors, in hiftory, philofophy, rhetoric, and morals. He tranflated into the Italian language part of the firft book of Cicero de Inventione, and he was author of a moral work in verfe, entitled "Il Teforetto." He is reprefented as a profound rhetorician and philofopher, and is faid to have been the firft who began to polifh the language, and refine the underftanding of his countrymen. Though he does not appear to have been a public inftructor at Florence, he probably gave private affiftance in the ftudies of his friends, and he is mentioned as having been, in fome meafure, the tutor of Dante.

Latini, Latino, a learned Italian, was born at Viterbo in 1513 . He ftudied feveral years at Sienua, with a view to jurifprudence, which an ill itate of health obliged him to relinquifh. He then affumed the ecclefiaftical habit, went to Rome, and became librarian to cardinal Rodolfo Pio, who, dying in 1564, left Latini the bequeft of his copious library. He was employed in the reformation of the Decretal of Gratian, firft undertaken by defire of pope Pius IV. and publifhed under Gregory XIII. and com. mitted to the care of many of the moft learned ecclefiaftics of the Roman court. He died in 1593, and bequeathed all his books to the chapter of Viterbo. He was highly elteemed for bis learning and indultry, though his modefty did not permit him to publifh any thing during his life-time. After his deceafe there appeared two volumes of his "Latin Letters, Poems, and other fmall Pieces." He communicated many emendations of Tertullian to the edition of that father pubiifhed 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 Geograpby, comprehended in general all the people of Latium, and particalarly thofe 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 whofe origin was not known, of the Pelafgi, who had migrated from Theffaly, and of the Arcadians, brought thither by Evander, 60 years before the war of Troy.
LATION is ufed by fome for the tranflation or motion of a body from one place to another.

LATISSIMUS Colli, in Anatomy, a mufcle of the neck, often called platyfma nyoides. See Deglutition.

Latissimus Dorfi, is a mufcle of the back, defcribed 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 fuppofing the deferdant lurks, lies hid, and cannot be found in the county of Middlefex, to be taken by bill; but is gone to fome other conaty, to the theriff whereof this writ is directed. See Bile of Middlefex. LATITUDE, in Geography and Afronomy. The latitude of a place on the terreftrial globe is its angular diftance

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from the equator. It is meafured 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 fpherical figure of the earth was once admitted, obvious methods, founded on aftronomical principles, were immediately invented, to determine the latitude of places, or their relative fituation to the equator. Previous to the eftablifhment 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 know. ledge of the truc figure of the earth, not only fuggefted a more fcientifice divifion of its furface by imaginary circles, fuppofed to be drawn on its circumference; but by referring thefe circles to correfponding ones in the heavens, altronomy and geography were combined, and the principles of the former were fuccefffully applied to the inprovement of the latter. Long before the apparent motion of the heavens was known to arife from the real motion of the earth, the two points which we now call the poles were referred to thofe two points in the heavens which were obferved to be flationary; and a great circle of the terreftrial fphere, fuppofed to be every where equally diftant from the poles, was called the equinoctial line, and aflumed 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 pofitions of the heavenly bodies by their diltances from this circle, and a perpendicular to it, calling thefe diftances longitudes and latitudes; fo, in imitation of this method, geographers affumed the equinoctial tine as their ftandard, and taking another circle perpendicular to it, they referred all pofitions on the earth to thefe circles by the fame name. Hence longitude and latitude, in geography, are not defined in the fame terms as in altronomy, being in the latter always referred to the ecliptic, and on the terreftrial globe to the equator. This circumftance often embarraffes the young fludent in aftronomy, who is naturally at a lofs to comprehend why the fame terms thould have fuch different fignifications, when applied to the terreftrial and celeftial globe. It being once clearly underfood that every point of the convex furface of the earth has at any given inllant of time its correfponding point on the concave furface of the heavens, a number of methods were immediately fuggelted (and quite independent of actual meafurement), for deterniniag the fituation of places, or their latitudes and longitudes as defined above. The molt obvious method of defining the fituation of points on a fphere, is to refer them to two reat circles perpendicular to each other. On the celeftial globe, whether we affume the equator or the ecliptic for one of thefe circles, we can have no hefitation in the choice of the other, becaufe the equinoctial points are fo remarkable, that they naturally indicate the advantage of making the fecond circle pais through them. Still, however, it nult be remembered, that this choice is to a certain degree arbitrary ; we might have aflumed the equator or ecliptic for one principal circle, and for the other, a great circle perpendicular to either of them, which fhould pafs through any remarkable fixed ftar, 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 afcenfion and declination, or by longitude and latitude. See Right Ascensron, and Deellasation.

There is likewife another method occafionally employed by altronomers, but which relates only to their own particular fituation at the moment of obfervation: this is by altitude and azimuth. 'I'he place of a heavenly body determined by this method is not permanent, but changes at every inflant; and fince no two obfervers can have the farne zenith, no flar can have the fame altitude and azimuth at the fame inflant of time to different obfervers. . Sce Altitude, Azimuth, \&c. \&cc.

In this latter method the principal circle affumed is the borizon, and the great circle perpendicular to it is that which pafles throligh any two oppofite cardinal points, as the North and South, or the Eaft and Weft.

Let us now, confider the terreftrial globe. Here the equinoctial line prefents itfilf as the great circle, of all others the moft proper for our purpofe; but what is to guide our choice in the felection of another great circle perpendicular to it? We are not here affilted, as in the celeftial globe, by finding any one point poffefling fume remarkable property peculiar to itfelf; and even if there were fuch a point arifing from local circumftances, it would have no reprefentation in the heavens ; and, therefore, would not facilitate the object of our prefent inveftigation, which is to fhew by what method aftronomers have contrived to determine the fituation of points on the earth's furface, by finding their correfponding zenith points in the heavens.

Finding, therefore, but one great circle on the terreftrial globe indicated by nat:re, attronomers and geographers have been obliged to affume a fecond from circumftances entirely accidental. The firtt meridian has been differently affumed by writers of different countries. The French aftronomers divide the terreftrial globe by two great circles; one of which is the equator, the other a great circle paffing througlt the obfervatory of Paris, and to thefe great circles all other places are referred; hence, according to their definitions, if a great circle be conceived to pafs 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 fimilar manner paffes through the obfervatory of Paris.

Englifh geographers and aftronomers, in like manner, fuppofe their firtt meridian to pafs through the Royal Obfervatory of Greenwich.

Having thus minutely defcribed what is meant by longitude and latitude, both on the celeftial and terreitrial glose, it remains to explain the different problems connected with the fubject, and, agreeably to the arrangement adopted in this work, we fhall confine ourfelves as much as poffible to that part of the fubject connected with Latitude, referring to Longitude that which more immediately belongs to it.
The theory of finding the latitude of a place by aftronomical obfervation is fo fimple, that it may be undertood by merely infpecting a celeftial globe. See Globe.

The meridian (Plate XVI. fir. I47. A/fronomy, rifes (in our latitudes) in the north point of the horizon O , palles through the poie P , through the zenith, and croffes the equator 压 before it meets the fouthern point of the horizon. It is thus divided into four parts:
$\mathrm{PO}=$ the latitude,
$\mathrm{PZ}=$ the co-latitude,
AZ the latitude,
$\mathrm{H} \mathbb{E}=$ the collatitude.

It is evident, that if the value of either of thefe four ares can be determined, the latitude is known.
The moft ancient methol of determining the latitude was

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by means of a gnomon ; in this cale the mean of the greateft and leaft altitude of the fun was taken, which is always equal to the co-latitude, or $\mathrm{A} . \mathrm{H}$. The altitude of the equator above the horizon, and the complement of this to 90 , is the latitude of the place. See Gnoson.

We fhall firlt give the methods of determining the latitudes of fixed obfervatories on fhore, and then defcribe thofe which are beft adapted to perform the fame operation at fea.

Method of determining the Lalitude of a fixed Obfervatory.The beft method of determining the latitude of a fixed obfervatory, is by a long leries of obfervations of the pole-flar, made with an 18 -inch repeating circle of Borda. The method of adjulting and obferving with this inftrument has been already fufficiently explained under Circle and Declisation. But as this inftrument is not in this country in very general ufe, we fhall fuppofe the obferver to be in poffeffion of an attronomical circle or quadrant, or fome equivalent inftrument adapted to the determination of zenith diftances by meridional obfervations.

The latitude of an obfervatory may be determined with very confiderable accuracy by zenith ditances of the fun when near the fummer foltice, as the obliquity of the ecliptic is very correctly afcertained; but the moft preferable method is certainly by a regular feries of obfervations on circumpolar ftars. Polaris, and $\beta$ Urfe minoris, are the moft eligible ftars for this purpofe. They fhould be obferved continually, both above and below the pole, and all the oblervations carefully reduced to the firlt of January, of the year in which the obfervations are made. It is evident, that the mean of the altitudes above and below the pole, will be the altitude of the pole itfelf. The accuracy of the refult will depend on the goodnefs of the inftrument, the fkill of the obferver, and the exactnefs with which the neceffary corrections have been applied. When the altitude of a heavenly body is taken with an altronomical inftrument, the oblerver mult firft confider what correction is required from the nature and conftruction of the inflrument itfelf; fach as the error of collimation, or index error, error of divifion, \&c. This being properly allowed for, the obfervation is next to be corrected for refraction, and here attention mult be paid to the flate of the barometer and thermometer, and the mean refraction corrected accordingly. The true altitude, or zenith diltance, being thus afcertained, the next ftep is to determine what would have been the true zenith diftance if the obfervation had been made on the firlt of January, inftead of the given day'. For this purpofe we mult apply the preceffion, aberration, folar and lunar nutation, and likewife a correction ariling from the proper motion of the ftar whenever this can be known. By a careful difcuffion of a feries of obfervations thus corrected, the latitude is to be obtained, and with a good two-feet circle a kilful obferver will never err above a fecond or two from the truth, except from the lititle remaining uncertainty which till attends the fubject of attronomical refractions.

In the Philofophical Tranfactions for 1806, Mr. Pond fuggelted a merhod of correcting the refpective latitudes of any two obfervatories, by means of the catalogues of fars made at each of them, and applied it with fuccefs to the correction of the latitude of Palermo. The principle of the method is this: If the declinations of a number of fars are obferved at two obfervatories, fubject only to the errors of divifion in the refpective inftruments, the pofitive and negative errors may be naturally expected to be nearly equal to each other: if, therefore, the declinations of one catalogue mould be all cithar greater or lefs than in the other, it would
indicate that the efror was in the affumed latitude, which enters as a common element of calculation, and not in the obfervations themfelves. Now if fuch a correction be applied to the latitude of each obfervatory, as will make the fum of the pofitive differences equal to the fum of the negative, the latitudes thus corrected will be much more accurately determined than by any method that can be practifed feparately.

Examples of deducing the latitude from obfervations of the fun; taken from the Greenwich Obfervations of 1810.

| 1810, June 18, | ¢'s L. L. zen, dift. | 28 27 | $\begin{array}{cc} 111 \\ 19 & 6.3 \\ 47 & 34.1 \end{array}$ |
| :---: | :---: | :---: | :---: |
|  |  | 2);6 | 640.4 |


| Zenith diflance, $\odot$ ¢ ${ }^{\text {'s centre }}$ |  |  |  | 28 | 3 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | - |  | $+$ |  |
| Error of divifion |  |  | - |  | + | 。 |
| Refraction | - | - | - |  |  |  |
| Parallax | - | - | . |  | + | 3.1 |
| True zenith diftance |  | - | - | 28 |  |  |
| $\odot$ 's declination | - | - | - |  |  | 56.0 |
| Latitude deduced | - | - | $=$ | 51 | 28 | $3^{8.5}$ |



| IS10, June 23, 'Z. D.' $\odot$ 's centre |  |  |  |  | - | 58.9 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |
| Error of divifion | - | - | - |  |  |  |
| Refraction | - | - | - |  |  |  |
| Parallax | - | - | - |  |  |  |
| True zenith diftance |  | - | - |  | 1 |  |
| $\bigcirc$ 's declination | - | - | - | 232 | 27 | 20.0 |
| Latitude deduced | - | - | - | 512 | 28 |  |



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## Refults.

| Juae | 18 | - | - | - |  | 28 | 38.5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 21 | - | - | - | - |  | 38.0 |
|  | 23 | - | - | - | - |  | 41.3 |
|  | 24 | - | - | - | - |  | 39.1 |
| Mean of 4 |  |  | - | - |  |  | $\begin{array}{r} 356.9 \\ 839.2 \end{array}$ |

This method is fubject to whatever error may exift in the folar tables relative to the declination of the fun. The fol-
lowing method is, therefore, preferable, and is quite independent of the crrors of the folar tables.

Let the fun be oblerved as often as poffible within ten or twelve days of each folftice, and let each obfervation be reduced to the folltice, 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 follticial zenith diftances be added together ; half their fum will be the zenith dittance of the equator, or the latitude of the place.

The following example is taken from Dr. Bradley's Obfervations, for the purpofe of determining the latitude of the Royal Obfervatory at Greenwich.


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| Winter folltice Summer folltice |  |  | $74^{\circ} 56^{\prime} 54.26^{\prime \prime}$ |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 21.96 |
| Sum | - |  | - | 102 | 57 | 16.22 |
| Half | r lati | ude |  | 28 | 38.11 |

By taking half the difference, the obliquity of the ecliptic is determined at the fame time.

|  | $\begin{aligned} & 74^{\wedge} 56^{\prime} 54.26^{\prime \prime} \\ & 250021.96 \end{aligned}$ |
| :---: | :---: |
| Sum | 465632.30 |
| Half difference or obliquity of the ecliptic for 1753 |  |

Notwithfanding this method appears fo unobjectionable in theory, the uncertainty of refraction at the winter folltice renders it lefs exact than a feries of obfervations of the poleftar, obferved conttantly above and below the pole.

- Example. - The mean of 94 zenith diftances of the poleflar at Greenwich above the pole, reduced to Jan. 1, 1749, is, according to Dr. Bradley's obfervations,

Mean of IC $9^{\circ}$ below the pole

| $36^{\circ}$ | $29^{\prime}$ | $4.83^{\prime \prime}$ |
| :---: | :---: | :---: | :---: |
| $4^{\circ}$ | 33 | 39.29 |
| 77 | 2 | 44.12 |
| $3^{8}$ | 31 | 22.06 |
| 51 | 28 | 38 |
| 2 | 2 | 17.23 |

On the method of finding the latiiude at fea.-The method of finding the latitude at fea by a meridional obfervation of the fun or flar, differs fo little from that above explained,
and is fo fully deferibed in books which mariners are never unprovided with, that fcarcely any thing need be added on the fubject. Some of the nicer corrections ufed at land may be omitted, and others will be neceflary; fuch as the correction for the depreffion of the horizon, and the index error of the fextant, all which are to be found in every book of navigation. (See Depression.) The latitude may be found either by taking the meridian allitude of the fun, moon, or fixed Itar. But it fometimes happens that, in the winter feafon, a meridian altitude cannot be taken for maris days together: in that cafe, recourfe mult be had to two altitudes of the fun taken at different times, the interval between the two obfervations being fuppofed 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. Profeffor Lax of Cambridge prefented a very valuable paper on this fubject to the Royal Society in 1799, in which a method is given of finding the latitude by a double obfervation, with extreme precifion; and Dr. Brinkley likewife conftructed a fet of very ufeful tables, which were for fome time annually inferted in the Nautical Almanacs.

Problems relating to the finding the longitude and latitude of the beavenly bodies, from thair olferved paflage over the meridian, with their zenith dijlance.

We have already explained, under Dechination and Rigut Ascensiox, how thefe quantities are obtained. We fhall now add an example of the calculation, by which the longitude and latitude are deduced from an obferved right afcenfion and declination.

Example.-October 2, 18 iII. The right afcenfion of the comet was obtained from obfervation $6^{5} 23^{\circ} 43^{\prime} \times 3^{\prime \prime}$, and its declination $49^{\circ} 31^{\prime} 2^{\prime \prime} \mathrm{N}$.; required its longitude and latitude.

Example.

t. $\overline{9.0280176}\left\{5^{s} 23^{\circ} 54^{\prime} 42^{\prime \prime}\right.$ longitude.
$O+A=B$
$943 \mathrm{IV} \quad$ t. 11.1018408 $\begin{cases}\text { t. } & \begin{array}{l}9.0280176 \\ \text { Cof. } \\ 9.9975435\end{array}\end{cases}$
Lat. - $5317 \quad 9$
t. 10.1274019
$\left\{\begin{array}{llllll}\text { Longitude } & 5^{\mathrm{s}} & 23^{\circ} & 54^{\prime} & 52^{\prime \prime} \\ \text { Latitude } & 0 & 53 & 17 & 9\end{array}\right.$
Vide Introduction to 'Taylor's Logarithms.
Or thus, as a verification of the preceding method.


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Example 2.-December 2, 1811. The right afcenfion of the comet was $9^{\circ} 35^{\circ} 24^{\prime} 32^{\prime \prime}$, declination $8^{\circ} 55^{\prime} 4^{\prime \prime} \mathrm{N}$. required its longitude and latitude.

t. 9.1962655
f. 9.9558170

- t. 10.3232835
t. $9.24044^{85}$
C. a. cof. A.
$0.006493^{8}$
cof. 13. 9.9219578
t. 9.8179760
f. 9.9407458
t. 9.7587218 Latitude $29^{\circ} 50^{\prime} 42^{\prime \prime} \mathrm{N}$.


When the moon's longitude and latitude are to be deduced from its obferved right afcenfion and zenith diftance, the procefs is much longer; and as the calculation is not given at length in any author we are acquainted with, we thall add an example, with the method of comparing it with the Nautical Almanac.
Firft, compute the mean time by Dr. Mafkelyne's folio tables, or other equivalent folar tables. To the mean time of the tranfit 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 cquatorial parallax, taken from the Nautical Almanac, fubtract the correction, page 75 of Mayer's Lunar Tables, (or, ftill more correctly, a quantity which will be given in a table we propofe to annex to the article PArallax, ) the remainder will be the moon's horizortal parallax. From the obferved zenith diftance of the D's U L or L L corrected for refraction, fubtract the conflant quan. tity $10^{\prime} 3^{\prime \prime}$, which is the angle the vertical makes with the radius, (fee Degree and Figure of the Eartir, and add the log. fine of remainder to the log. fine of $D$ 's horizontal parallax, the fum will be the log. fine of $D$ 's parallax in zenith diftance; which fubtracted from the obferved zenith diftance, gives the corrected zenith diltance. To this add D's horizontal femidiameter, (taken from Nautical Almanac,) if UL was obferved; or fubtract, if LL; and thus the correct zenith dittance 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 declination north or fouth, as the firft is greater or lefs than the fecond.

But if the $D$ 's zenith diflance was not obferved exactly at the time of the tranfit of the preceding or fubfequent enlightened limb, this declination mult be corrected by the following proportion

As 12 hours is to the interval of time between the two obfervations, fo is the variation of declination on 12 hours by the ephemeris to the correction required, and which muft be thus applied:


D's declination increafing,
add.
$D$ 's zenith diftance obferved $\{$ after tranfit of limb, $\quad\left\{\begin{array}{l}D \text { 's declination decreafing,.. } \\ \text { add. }\end{array}\right.$ Thus the true declination will be obtained from obfervation.

From log. fine of $D$ 's horizontal femidiameter, fubtract. $\log$. cofine of $D$ 's true declination, the remainder will be log. fine of $D$ 's femidiameter in $A$ : R., which add, if preceding limb was obferved, numely, before the full; or fubtract, if $D$ 's fubfequent limb was obferved' 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 previoully found, compute the $D$ 's longitude and latitude by proportion from the Nautical Almanac, and apply the corrections for a fecond difference (from Taylor's Sexagéfimal. 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 apperent obliquity of the ecliptic, compute the longitude and latitude by Dr. Mafkelyne'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,

## LATITUDE.

zives the error of the tables. N. B. Compute the longitude and latitude from A. R. and declination affumed to the neareft fecond over or under; and after the operation, correct it, that is, as much as the true A. R. exceeds or falls
fhort of that found. And as much as the true declination is north or fouth of that aflumed, fo much the true latitude may be north or fouth of that found; which correct accordingly.

Example of the calculation of the moon's longitude and latitude, January 6, 1811 , and compared with the Nautical Almanac.


For the $D$ 's longitude and latitude by Dr . Mafkelyne's rule.

| Declination A. R. | $\begin{aligned} & 0^{5} 17^{\circ} 46^{\prime} 18^{\prime \prime \prime} \\ & 2144+43 \end{aligned}$ | tan. fin. | $\begin{aligned} & 9.5058544 \\ & 9.9830121 \end{aligned}$ | tan. | 10.5447574 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| A | 18260.6 | tan. | 9.5228423 | Co. ar. cof. A. | 0.0228751 |
| $\bigcirc$ | 232740.7 |  |  | Cof. B. | 99983258 |
| B | 5140.1 | tan. | 8.9443726 | Tan. longitude | 10.5659583 |
|  |  | Long, fin. | 9.9845374 | $\underset{\text { Tude }}{\text { True longi- }}\}=2^{3}$ | $14^{\circ} 4^{8} 4^{\prime \prime} .6$ |
| Latitude $S$. Cor, for decl | $=45110.1$ | tan. | 8.9289100 |  |  |

## I. ATITUDE.

Second Method.


Moon's longitude by Nautical Almanac. Jan. 5. Mid. $\begin{array}{ccccc}5 & 0 & 1 & 11 \\ 2 & 3 & 29 & 28\end{array}$
6. Noon 294419
6. Mid. 2155643
7. Noon 222651

| rit | Diff. | Mean, of 2d |
| :---: | :---: | :---: |
| 6 | 1 | $\prime \prime$ |
| 6 | 14 | 51 |
| 6 | 12 | 24 |
| 6 | 10 | 08 |




On the fecular variation in Longitude and Latituch of the fixed fars.

We have already explained, under EcLiptic, the caufe of the change of pofition in this circle, which produces a fecular variation both in the longitude and latitude of the fixed itars. The following table by M. Zach is intended to facilitate the calculation of this quantity, and has not yet been publifhed in this country.

Co. ar. cof. 0.0374748 - - fin. 9.6000245
tan. 10.5447574
tan. 10.5822322 - - fin. $9.9856 \times 79$
fin. 9.5856424
tan. 8.93153 - - - fin. 8.9299574
fin. 9.60002 - . - cof. 9.9525252
cof. 9.43825
tan. 7.980

fin. $\overline{8.9273518}$

Moon's latitude by Nautical Almanac.

| Jan. 5. Mid. | $\circ$   <br> 4 3  | if Diff. | Mean of 2d Difference. |
| :---: | :---: | :---: | :---: |
| 6. Noon | 44326 | +1247 |  |
| 6. Mid. | 45247 | + 92 I | $-3^{\prime}{ }^{\text {a }}$. $8_{5}$ |
| 7. Noon | 45837 | + 550 |  |

## LATITUDE.

The long. of Aldebaran for $1750=2^{8} \quad 6^{\circ} \frac{1}{} 6^{\prime} 0^{\prime \prime}$ Latitude fouth - $\quad 52916$
Var. in lat. by Table III. for $2^{5} 6^{3}+50.812$
Prop. part for $\mathbf{1 8}^{\prime}$


But the latitude being fouth, the fign muft be changed: the fecular diminution of latitude is therefore $-50^{\prime \prime} .882$.
To find the fecular variation in longitude.-Firft find the fubficíiary angle $\alpha_{0}$.

Arg. lat. $5^{\circ} 29^{\prime} 16^{\prime \prime}$, Table I. - angle $\alpha=2^{\circ} 29^{\circ} 27^{\prime} 0^{\prime \prime}$.
This wil give two arguments with which enter Tab. IV.
Arg. I. $=2^{\circ} 6^{\prime} 18^{\prime}+2^{5} 29^{\circ} 27^{\prime}=5^{8} 5^{\prime} 45^{\prime}=+253.75$
Arg.II. $=2618-22927=11658=-255.04$

Since the latitude is fouth, the fign mult be changed: therefore the fecular increafe of longitude of Aldebaran is $\mathrm{I}^{\prime \prime} .29$.

Auxiliary Angle $\alpha$ for calculating the fecular Variation in Longitude.


Auxiliary Angle for calculating the fecular Variation in Longitude.

| Arg. Lat. | $\begin{gathered} \text { Angle } \beta \\ +I I^{s} \end{gathered}$ |  | Diff. | Arg. Lat. |  | $\mathrm{gII}_{\mathrm{I}^{s}}$ | Diff. | Arg. Lat. |  | gle $\beta$ $I^{s}$ | Diff. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 01 | - |  | $\begin{aligned} & 4.6 \\ & 5.0 \end{aligned}$ | 8 <br> 86 <br> 86 <br> 86 <br> 86 <br> 86 <br>  | $\begin{array}{cc} 0 & 1 \\ 2 \mathrm{I} & 25.0 \\ 21 & 1.4 \\ 20 & 35.4 \end{array}$ |  | $\begin{gathered} 1 \\ 23.6 \\ 26.0 \end{gathered}$ | $\begin{array}{ll}88 & 1 \\ 88 & 55 \\ 89 & 0 \\ 89 & 1\end{array}$ | 1  <br> 28  <br> 25 2.4 <br> 24 2.9 <br> 24 22.0 |  | 1181.540.9 |
| 750 |  | 51.7 |  |  |  |  |  |  |  |  |  |
| 7530 | 27 | 47.1 |  |  |  |  |  |  |  |  |  |
| 76 - |  | 42.1 |  |  |  |  |  |  |  |  |  |
| $\begin{array}{lrr}76 & 30 \\ 77 & 0 \\ 77 & 30\end{array}$ | $\begin{array}{ll}27 & 36.7 \\ 27 & 31.0 \\ 27 & 24.8\end{array}$ |  | 5.76.2 | S6 35 8640 $\$ 645$ | $\begin{array}{rr} 20 & 21.5 \\ 20 & 6.8 \\ 19 & 51.5 \end{array}$ |  | $\begin{aligned} & 14.7 \\ & 15.3 \end{aligned}$ | $\begin{array}{ll}89 & 2 \\ 89 & 3 \\ 89 & 4\end{array}$ | 232222 | $\begin{array}{r} 39 \cdot 2 \\ 54 \cdot 7 \\ 8.0 \end{array}$ | 44.546.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| $\begin{array}{lr}78 & 0 \\ 78 & 30 \\ 79 & 0\end{array}$ | 27 18.2 <br> 27 11.0 <br> 27 3.1 |  | $\begin{aligned} & 7.2 \\ & 7 \cdot 9 \end{aligned}$ | 8650 8655 <br> 87 0 | $\begin{array}{rrr}19 & 35.2 \\ 19 & 18.1 \\ 19 & 0.0\end{array}$ |  | $\begin{aligned} & 17.1 \\ & 18.1 \end{aligned}$ | $\begin{array}{ll}89 & 5 \\ 89 & 6 \\ 89 & 7\end{array}$ | 212019 | $\begin{aligned} & 19.1 \\ & 27.8 \end{aligned}$ | $\begin{aligned} & 51.3 \\ & 53 \cdot 9 \end{aligned}$ |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 33.9 |  |  |  |  |  |  |  |  |
| $\begin{array}{rrr}79 & 30 \\ 80 & 0 \\ 80 & 30\end{array}$ | $\begin{array}{ll}26 & 54 \cdot 4 \\ 26 & 44 \cdot 9 \\ 26 & 34 \cdot 4\end{array}$ |  |  | $\begin{array}{r} 9.5 \\ 10.5 \end{array}$ | $\begin{array}{lr}87 & 5 \\ 87 & 10 \\ 87 & 15\end{array}$ | 1840.8 |  | 20.221.6 | $\begin{array}{rr}89 & 8 \\ 89 & 9 \\ 89 & 10\end{array}$ | $\begin{array}{ll}18 & 37.2 \\ 17 & 37.3 \\ 16 & 34.0\end{array}$ |  | 59.963.3 |
|  |  |  |  |  |  | 20.6 |  |  |  |  |  |  |  |
|  |  |  |  |  |  | 59.0 |  |  |  |  |  |  |  |
|  |  |  | 11. 6 |  |  |  | 22.9 |  |  |  | 67.0 |  |
| $\begin{array}{lr}81 & 0 \\ 81 & 30 \\ 82 & 0\end{array}$ | $\begin{array}{rr}26 & 22.8 \\ 26 & 9.8 \\ 25 & 55.2\end{array}$ |  | $\begin{aligned} & \text { I } 3.0 \\ & \text { I } 4.6 \end{aligned}$ | $\begin{array}{ll} 87 & 20 \\ 87 & 25 \\ 87 & 30 \end{array}$ | $\begin{array}{ll} 17 & 36.1 \\ 17 & 11.7 \\ 17 & 45.6 \end{array}$ |  | $\begin{aligned} & 24.4 \\ & 26.1 \end{aligned}$ | 8911898989 | $\begin{array}{ll}15 & 27.0 \\ 14 & 15.8\end{array}$ |  | 71.276.0 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | 59.8 |  |  |  |  |  |  |  |
|  |  |  |  | 16.6 |  |  |  |  | 27.9 |  |  |  | 8 r .2 |
| $\begin{array}{rr}82 & 30 \\ 83 & 0 \\ 83 & 30\end{array}$ | $\begin{array}{ll} 25 & 38.6 \\ 25 & 19.7 \\ 24 & 57.9 \end{array}$ |  | $\begin{aligned} & 18.9 \\ & 21.8 \end{aligned}$ | 873587408745 | $\begin{array}{ll} 16 & 17 \cdot 7 \\ 15 & 47 \cdot 6 \\ 15 & 15 \cdot 3 \end{array}$ |  | $\begin{aligned} & 30.1 \\ & 3^{2} .3 \end{aligned}$ | $\begin{array}{ll}89 & 14 \\ 89 & 15 \\ 89 & 16\end{array}$ | $\begin{array}{r} 11 \\ -10 \\ 8 \end{array}$ | $\begin{aligned} & 38.6 \\ & 11.5 \\ & 37.4 \end{aligned}$ | $\begin{aligned} & 87.1 \\ & 94 \cdot 1 \end{aligned}$ |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | $25 \cdot 4$ |  |  |  | 34.9 |  |  |  | 102.0 |  |
|  |  |  | 9.510.0 | 875087558860 | $\begin{array}{rr} 14 & 40.4 \\ 14 & 2.7 \\ 13 & 21.6 \end{array}$ |  | $\begin{aligned} & 37 \cdot 7 \\ & 4 \mathrm{I} \cdot 4 \end{aligned}$ | 89 <br> 89 <br> 89 <br> 89 <br> 18 | $\begin{array}{cc}6 & 55.4 \\ 5 & 4.1 \\ 3 & 1.5\end{array}$ |  | 111.3122.6 |  |
| 84 10 |  | 23.0 |  |  |  |  |  |  |  |  |  |  |  |
| 8420 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 10.7 |  |  |  | 44.8 |  |  |  | I 36.5 |  |
|  |  |  | 11.3 |  | 1236.8 |  | 49.1 | 898989 | $\begin{array}{rr}0 & 45.0 \\ 28 & \text { II. }\end{array}$ |  | 154.0177.5 |  |
| 8440 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8450 |  | 39.1 | II. 9 | 88 88 88 10 |  |  | 54.1 | S9 22 |  |  | 177.5 |  |
|  |  |  | 12.9 |  |  |  | $59 \cdot 7$ |  |  |  | 211.0 |  |
| 850 | 23 | 26.2 | 13.714.7 | 8820 $88 \quad 25$ 8830 | $\begin{array}{ll} 9 & 53.9 \\ 8 & 47.5 \\ 7 & 33.0 \end{array}$ |  | $\begin{aligned} & 66.4 \\ & 74.5 \end{aligned}$ | $\begin{array}{ll} 89 & 23 \\ 89 & 24 \\ 89 & 25 \end{array}$ | $\begin{array}{ll} 21 & 42.5 \\ 17 & 16.5 \\ 10 & 50.0 \end{array}$ |  | $\begin{aligned} & 266.0 \\ & 386.5 \end{aligned}$ |  |
| 8510 |  | 12.5 |  |  |  |  |  |  |  |  |  |  |  |
| 8520 |  | 57.8 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 15.8 |  |  |  | 84.0 |  |  |  | 650.0 |  |
|  | 22 | 42.0 | $\begin{aligned} & 17.0 \\ & 18.4 \\ & 19.9 \end{aligned}$ | $\begin{array}{ll} 88 & 35 \\ 88 & 40 \\ 88 & 45 \\ 88 & 50 \end{array}$ |  |  | 95.7109.9127.9 | 8926 | $\bigcirc$ | 0.0 |  |  |
| 8540 | 22 | 25.0 |  |  |  | $33 \cdot 3$ |  |  |  |  |  |  |
| 8550 |  |  |  |  |  | $43 \cdot 4$ |  |  |  |  |  |  |
| 86 o |  | 46.7 |  |  |  |  |  |  |  |  |  |  |

## LATITUDE.

Secular Variation of Latitude of Northern Stars,
Argument. Longitude of the Star.

| If the Latitude is South change the Sign. |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\stackrel{\stackrel{c}{c}}{\stackrel{\sim}{\sim}}$ | $\mathrm{O}^{2}$ + | I + | II + | IIIs + | IV + | $\begin{aligned} & \text { Vs } \\ & \pm \end{aligned}$ | $\stackrel{\Delta}{2}$ |
| 0 1 2 3 4 | S.113 9.036 9.940 10.840 11.733 | "11 33.041 33.751 34.450 35.139 35.818 | 111 49.096 49.421 49.730 50.024 50.302 | 11 52.000 51.850 51.685 51.503 51.306 | 11 40.688 40.386 39.790 39.183 38.564 | $\begin{aligned} & 18.9 \\ & 18.95 \\ & 18.10 \\ & 17.235 \\ & 16.364 \\ & 15.488 \end{aligned}$ | $\begin{aligned} & 0 \\ & 1 \\ & 2 \\ & 3 \\ & 4 \end{aligned}$ |
| 5 6 7 8 9 | 12.631 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 | $\begin{aligned} & 14.608 \\ & 13.723 \\ & 12.834 \\ & 11.941 \\ & 11.045 \end{aligned}$ | $\begin{aligned} & 5 \\ & 6 \\ & 7 \\ & 8 \\ & 9 \end{aligned}$ |
| 10 11 12 13 14 | 17.036 17.903 18.764 19.619 $20.46 S$ | 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 | $\begin{array}{r} 10.144 \\ 9.242 \\ 8.337 \\ 7.429 \\ 6.518 \end{array}$ | $\begin{aligned} & 10 \\ & 11 \\ & 12 \\ & 13 \\ & 14 \end{aligned}$ |
| 15 16 17 18 19 | 21.311 22.148 22.978 23.801 24.617 | 42.519 43.053 43.574 4.083 44.578 | 52.333 52.423 52.496 52.554 52.596 | 48.124 47.745 47.351 46.943 46.520 | 31.021 30.254 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 46.42 46.847 | 52.622 52.632 52.626 52.603 52.565 | $\begin{aligned} & 46.083 \\ & 45.633 \\ & 45.169 \\ & 44.690 \\ & 44.198 \end{aligned}$ | 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 52.52 52.134 52.000 | $\begin{aligned} & 43.692 \\ & 43.173 \\ & 42.641 \\ & 42.097 \\ & 41.539 \\ & 40.968 \end{aligned}$ | $\begin{aligned} & 23.166 \\ & 22.33 \mathrm{~S} \\ & 21.503 \\ & 20.661 \\ & 19.813 \\ & 18.959 \end{aligned}$ | $\begin{aligned} & 3.567 \\ & 4.483 \\ & 5.398 \\ & 6.311 \\ & 7.221 \\ & 8.130 \end{aligned}$ | 25 26 27 28 29 30 |
| $\stackrel{\text { cio }}{\stackrel{0}{2}}$ | V15 | $\bar{\nabla} \cdot \overline{I^{s}}$ | VIII ${ }^{\text {s }}$ | $\overline{I X}^{s}$ | $\overline{X^{s}}$ | $\stackrel{+}{\mathbf{x}^{\mathrm{I}}}$ | $\stackrel{\sim}{\sim}$ |

## LATITUDE。

Secular Variation in Longitude.
Argument (Long. * $\left.+\begin{array}{c}* \\ +\beta\end{array}\right)$ and (Long. * $\left.-\alpha\right)$.

| If the Declination is South change the Sign. |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| คัٌ | $\mathrm{O}^{\text {s }}$ | $\mathrm{I}^{\text {s }}$ | $\frac{1 I^{8}}{\ddagger}$ | III + | $\begin{gathered} \text { IV } \\ + \end{gathered}$ | $\begin{aligned} & \text { vs } \\ & + \end{aligned}$ | คัٌ |
| $4$ | $\begin{aligned} & 260 \text { "100 } \\ & 259.25 \\ & 258.42 \\ & 257.52 \\ & 256.42 \end{aligned}$ | 204. ${ }^{\prime} 8_{4}$ 201.92 108.94 195.91 192.81 | ¢ 94.80 90.50 86.17 81.82 77.44 | 40.1105 40.15 49.70 54.20 58.69 | 1.11 165.20 168.75 172.25 175.70 179.09 | 11 245.49 247.11 248.65 250.12 251.51 | 0 1 2 3 4 |
| 5 6 7 8 9 | $\begin{aligned} & 255.47 \\ & 254+33 \\ & 253.11 \\ & 251.81 \\ & 250.44 \end{aligned}$ | $\begin{aligned} & 189.66 \\ & 186.45 \\ & 183.18 \\ & 179.85 \\ & 176.47 \end{aligned}$ | 73.04 68.62 64.17 59.71 55.23 | $\begin{aligned} & 63.16 \\ & 67.6 \mathrm{r} \\ & 7.03 \\ & 76.43 \\ & 80.62 \end{aligned}$ | 182.43 18.41 18.71 18.94 192.11 195.22 | $\begin{aligned} & 252.82 \\ & 254.06 \\ & 255.22 \\ & 256.30 \\ & 257.30 \end{aligned}$ | 5 6 7 8 9 |
| 10 11 12 13 14 | 248.99 $2+7.47$ 245.87 244.19 242.44 | $\begin{aligned} & 173.04 \\ & 169.55 \\ & 166.02 \\ & 162.43 \\ & 158.79 \end{aligned}$ | 50.73 46.21 4 I .68 37.14 32.59 | 85.18 89.51 93.82 98.10 102.34 | 198.27 201.26 20.4 .18 207.05 209.85 | 258.22 259.07 259.84 260.52 261.13 | 10 11 12 13 14 |
| $\begin{aligned} & 15 \\ & 16 \\ & 17 \\ & 18 \\ & 19 \end{aligned}$ | 240.62 238.72 236.75 234.71 232.60 | $\begin{aligned} & 155.10 \\ & 151.37 \\ & 147.59 \\ & 143.77 \\ & 139.99^{\circ} \end{aligned}$ | 28.03 23.46 18.88 14.30 9.71 | 106.56 110.74 114.89 119.01 123.08 | 212.59 215.27 217.97 220.41 222.89 | 261.65 262.11 262.48 262.77 262.98 | 15 16 17 18 19 |
| $\begin{aligned} & 20 \\ & 21 \\ & 22 \\ & 23 \\ & 24 \end{aligned}$ | $\begin{aligned} & 230.42 \\ & 228.16 \\ & 225.83 \\ & 223.44 \\ & 220.98 \end{aligned}$ | $\begin{aligned} & 135.98 \\ & 132.03 \\ & 128.04 \\ & 124.01 \\ & 129.1 \end{aligned}$ | 5.12 0.52 4.08 8.66 13.25 | $\begin{aligned} & 127.12 \\ & 131.13 \\ & 135.09 \\ & 139.01 \\ & 142.89 \end{aligned}$ | $\begin{aligned} & 225.30 \\ & 227.64 \\ & 229.91 \\ & 232.11 \\ & 234.24 \end{aligned}$ | 263.11 263.16 263.13 263.13 262.83 | 20 21 22 23 24 |
| 25 26 27 28 29 30 | $\begin{aligned} & \begin{array}{l} 18.46 \\ 215.87 \\ 213.21 \\ 210.48 \\ 207.69 \\ 204.84 \end{array} \end{aligned}$ | $\begin{aligned} & 115.83 \\ & 111.69 \\ & 107.51 \\ & 103.30 \\ & 99.06 \\ & 94.80 \end{aligned}$ | $\begin{aligned} & 17.84 \\ & 22.42 \\ & 26.99 \\ & 31.55 \\ & 36.11 \\ & 40.65 \end{aligned}$ | $\begin{aligned} & 145.72 \\ & 150.51 \\ & 154.26 \\ & 157.96 \\ & 161.60 \\ & 165.20 \end{aligned}$ | $\begin{aligned} & 236.30 \\ & 238.28 \\ & 240.20 \\ & 242.03 \\ & 243.80 \\ & 245.49 \end{aligned}$ | 262.55 262.20 261.77 261.26 260.67 260.00 | 25 26 27 28 29 30 |
| คั๋ | $\stackrel{+}{\text { VI }}$ | $\stackrel{+}{\mathrm{VII}}$ | $\stackrel{+}{\text { VIII }}$ | IX | $\overline{\mathrm{x}}$ | $\overline{\mathrm{X}} \mathrm{I}$ | $\stackrel{8}{\square}$ |

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 $\beta$ is ufed, is to be multiplied by 10.

## LAT

Latitude of a Planct, is an angle, as PTR (Plats XVI Afronomy, fig. 1.48.) under which a planet's dittance from the ecliptic $\stackrel{P}{P}$ is feen on the carth.

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 celiptic, 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 fum.

Latitude, Circle of, is a great circle, MS T' m, paffing through the poles of the ccliptic. See Circle.

Latitude of the Moon, north ofecending, is when fhe proceeds from the afcending node towards her northern limit, or greatelt elongation.

Latitude, North defeending, is when the moon returns from her northern limit to the defcending node.
Latitude, South defcending, is when the proceeds from the defcending node to her fouthern limit.

Latitude, South afonding, is when fhe returns from her fouthern limit to her afcending node.
And the fame holds grood of the other planets. See Ascending and Descending.

Latityde, Heliocentric, of a Plawet, is its diftance from the ecliptic, fuch as it is feen from the fun.

This, when the planet comes to the fame point of its orbit, is always the fame, and unchangeable.

Latitude, Geocentric, of a Planet, is the dillance of the planet from the ecliptic, as it is feen from the carth.

This, though the planet be in the fame point of its orbit, yet is not conftantly the fame, but alters atcording to the pofition of the earth, in refped to the planet. See Helrocentric, and Geocentric.
Dr. Hailey has fome conliderations, in the Plilofophical Traníactions, which make it probable, the latitudes of fome of the principal fixed ftars, particularly Palilicium, Sirius, and Arcturus, alter in time ; whence it may be argued, the reft likewife alter, though the variation may be lefs confpicuous in thefe, becaufe they are fuppofed at a greater diltance from us. See Stars.
Latitude, Difference of, is an arc of the meridian, or the leart diltance of the parallels of latitude of two places; and it is found when thefe have the fame name, by fubtracting 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 thofe excellent perfons in England, who, about the middle and towards the clofe of the 17 th century, endeavoured to allay the contelts that prevailed between the more violent Epifcopalians on the one hand, and the more rigid Prefyterians and Independents on the other, with refpect to the forms of church governmeat and public worhip, and alfo between the Arminians and Calvinilts, with refpect to certain religious tenets. Many of them were zealouny attached to the forms of ecclefiatizal government' and worhip that were eftablifhed in the church of England, and they recommended epifcopacy with all their eloquence; but they did not confider it as of divine inftitution, and abfolutely neceffary to the conflitution of a Chriftian church; and theretore they maintained that thofe who followed other forms of government and worhip were not, on that account,

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to be excluded from their communion, or to forfeit the title of brethren. Others had no great liking for the liturgy or ceremonies, or, indecd, the government of this church, but yet, for the fake of peace and order, confurmed. As to the dotlrinal part of religion, they took the fyttem of the famous Epifcopius for their model, and, like him, reduced the fun* damental doctrines of Chriltianity, i.e. thofe doctrines, the belief of which is neceffary to falvation, 10 a few points. By this manner of procecding they fhewed that neith:r the Epifcopalians, who, gencrally fpeakng, cmbraced the fentiments of the Arminians, nor the Prefoyterians and Independents, who as generally adopted the docitrine of Calvin, lad any reafon to oppofe each other with fuch bitternefs and animofity, fince the fubjects of their debate were matters of indifference with relpect to falvation, and might be variouly explaised and underftood, without any prejudice to their eternal interefts.
The chicf leaders of thefe Latitudirarians were Hales and Chillingworth: to them may be added the refpectable names of More, Cudworth, Gale, Whitchcot, Wilkins, and Tillotfon. The firf fruits of their charitable zeal were the odious appellations of Atheilts, Deits, and Socinians, Liberally beltowed upou them by the Roman Catholics, and the more rigid of the Proteftant contending parties. However, they were afterwards raifed to the-firit dignities of the church, and defervedly held in general efleem. 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 Chriftians. Mofheim's Ecel. Hift, vol. iv. and Birch's Life of Tillctfon, P. 40\%. See Compremension.
LATIUM, in Ancient Geograpby, a confiderable divifion 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 leaft to a more confiderable extent of territory, than that to which it was afterwards reftrained. Several of the ancients have fought the etymology of Latium, in the verb latere, to conceal, and they have imagined that this name was given to the country, becaufe Saturn retired hither in order to thelter himfelf from the fury of his children. M. Gébelin, in his Oriental Alle. gories, fuggelts, that the primitive lat tignifies to conceal, and that terra alfo 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 contradiftinction to that part which was mountainous and uncultivated. The ancients dittinguifhed Latium into ancient and modern, and under thete appellations it comprehended different territories. Ancient Latium extended from the Tiber to Circeii, and was eftimated at 50 miles in length. Its inhabitants, in fucceffion, were the Aborigenes, the Pelafgi, the Arcades, the Siculi, the Arunci, and the Rutili; and befides there, the Circeii, the Volfci, the Oici, and the Aufones; and by degrees the name Latium extended as far as the river Liris. At the firit, fays Strabo, the Latins had poffeffion of it, and were not fubject to the Romans; but when thefe had vanquilhed the Æqui, Volfci, and Hernici, as well as the Rutili, the Aborigenes, the Rocci, and the Argyruici, and alfo 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$\mathrm{Zz}_{2}$
tory.

## LA T

tory, alont the coant of the Tufcan fea, fouth of the Tiber. Whder the Latin kings, it extended fouthward to the Promontorium Circeum, as we have already fated, which was 50 miles beyond the Tiber. Under the condular governnont, the territories of the Requi, Volcci, and Hernici, were annexed to this province, and the river Liris (Garigliany) was held to be the fouthern boundary. At the commencement of the Chriftian cra, Sincuffa, now Sinope, and the circumjacent territory noted for its baths, were iscluded in Latum ; fo that, in its greatelt extent, it comprehended Campagna di Romagna, and a confiderable part of Torre di Lavora. The principal rivers in this province were the Torrer and Liris; which fce refpectavely. The chicf cities and towns were Rome, Olia, Laurentum, Lavinimu, Ardea, Tibur er T'ivoli, Tufenlum or Frefeati, Gahii, now extinct, between Rome and Pranefte, Pixnelle, Alla Longa or Albano, Aricia near Alba Longa, on the Appian way, \&ec. See Italiz.

LATMíOS, or Lataus, a mountain of Afia Minor, party in lonia and parthy in Caria.

LATMUS, orimally a village of Afia, in Cilicia, on the banks of a river of the fance name, which afterwards became an cpifcopal town of Ifauria. The river had its fource in mount Latmus, and clicharged itfelf into the Latmic gulf, near the town Hcraclea. The Latmic gulf was a culf of Ionia, which commenced between the mountains Latmus and Grius, and extended from thence towards the N. W., communicating with another gule at the mouth of the Meander -Alfo, a fmall ifland fituated to the S.E. of the Latmic gulf, n ar t ) and W.N.W. of Heraclea,

LATOAN, in Geograpby, a fmall ifland is the Eaft Indian fea, near the N. cuait of Burneo. N. lat. $7^{\circ}{ }^{16}$. E. long. $117^{\circ} 21^{\prime}$.

LA'TOMIA, Aatopix, derived from the Greek $\lambda x s$, fans, and $\tau \pi \mu \omega$, I cut, properly fignifies a quarry, or place where fones are dug. See Quarris.

Thefe were anciently ufed as gaols for criminals. Dionysits had a place of this kind dug in a rock rear Syracufe, where an infinite number of people were flut up. Cicero reproaches Verres with imprifoning Roman citizens in latonise ; fo that latomia became a general name for a prifon; to proners inclofed in then were called latomarii.

Latoma, in Ancicut Geography, the name of fix fmall inatuds 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.

Latora, in $M I_{y}+$ bclogy, a geddefs of paganifm, whofe hitenry is very obfcure. Heliod makes her the daughter of Titan' Cuëus and Phobe, his fifter. The fable adds, that Apoilo and Diana were her'offgring by Jupiter, and that they advanced her to the rank of cel-ftial deities in fite of Juno. According to Herodotus, fhe wals an Egyptian dicity, the nurfe, and nut, as the Creeks reprefented her, the mother of Apollo and Diana, and was worlhipped 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 iland of Delos to ri'e up from the bittom of the fea, to fecure to Latona, perfecuted by Juno, a place where the night, without molellation, bring forth her children: but that at Argos was the moft magnificent, and celcbrated for her ftatue, executed by Praxiteles. Latona, Venus, and Diana, were the three goddeffes moft in veneration aroug the Roman women.
LATOPOLIS, in Ancient Geograpby. See Esxen.
LATOPOLITES Nomos, a dullict 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.
Latorolitles Nomos, or Hcrmonthites Nomos, another diltriet of Egypt, the capital of which was cailed the town of "Latonum," according to Ptolemy.

LATORCZA, in Geography, a river of Hungary, which rifes near the Carpathian mometains, and runs into the Theyfs, near T'okay.
LATOUCHE's Island, an ifland in the North Pacific ocean, at the entrance of Prince William's found, 13 milcs long and three broad. N. lat. Go'. E. long. $212{ }^{2} 39^{\prime}$.

LATOVICI, in Ancient Gcography, a people of Upper Pannonia.

LATOUR, in Gegrraphy, a town of Hindooftan, in the circar of Aurungabad: 25 miles W. of Aurungabad. . LA'TOWIC, a town of the duchy of Warfaw; 18 mi'es E. of Czerfk.

LATRRIA, $A z \pi \tau_{\xi s \%}$, in Theolory, a religious worfhip, due only to God.
The Romanilts fay, "They honour God'with the worfhip of latria; and the faints with the worfhip of dulia;" but the terms, however diltinct, are ufually confounded.

The worthip of latria, befides its inner characters, has its external marks to diltinguinh 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 him.
M. Dail'e feems to own, that fome of the fathers of the fourth centary aliowed the diftinction between latria and. dulia. See Adoration and Worship.

LATRIS, in Ancient Geograsply, a town of Germany, at the mouth of the Viftula. Pliny.

LATRONICA, in Geography, a town of Naples, in Bafilicata; 22 miles S.W. of 'T'urfi.
LATSCHACH, a town of the duchy of Carinthia; 14 miles S.W. of Clagenfurt.

Lat'lanzio, Gambara, in Biography, a painter of hiltory and portraits. He was the fon of a taylor at Cremona; but being more inclined to painting than the ufe of the needle, he fpent his youthful days in covering the walis and furniture of his father's houfe with drawings in charcoal, and thus drew upon himfelf the difpleafure of his parents; who evinced their diffatisfaction by the unequivocal te!? imony of the foourge.

Giulio Campo, an artift of fome celebrity, refiding at Cremona, happened one day to pafs 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 dix: years affited and encouraged him in his purfuit of the art of painting. Such was the fuccefs accompanying this act of generofity, that according to Vafari, Gambara became the belt painter of his time in Brefcia, where he took up his refidence; and where many ingenious artilts practifed painting in conjunction or compctition with him.

His principal works are in frefco, and fome are fill to be feen at Brefcia, particularly the cloiter of Sanra Euphemia, wherein he painted a feries of fcriptural and evangelical fubjects. Venice, Parma, and Cremona all poffefs tellimonials of his fkill, which adorn their churches and many of their private houfes. His ftyle is very much like that of Pordenone, an attempt to unite the colour of the Vevetian with the drawing and defign of the Florentine fchool, but it is not fo powerful. He married a daughter of Romanino, but died at the early age of 32 , by a fall from a fcaffold while painting

Trinting in the church of St. Lorenzo in Brefcia, about the year 1570 . Ridulf. Vafari.

LATTIMO, in the Glafs Trade, a name for a fine milk. white glafs. There are feveral ways of mating it, but the belt of all is this: Take four hundred weight of cryltal frit, and fixty pounds of calcined tin, and two pounds and a half of prepared manganefe; mix thefe 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 puritied; then caft 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 calciued tin; mix it weil with the metal, and let it ftand one day to purify; it will then be of a whitenefs furpaffing even that of fuose, and is fit to work into veifels. Neri's Art. - of Glafs, p. ${ }^{38}$. See Glass.

LatTiN, or Litien, a name by which we ufed to call the plates of iron covered with tin, and now ufually 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 thimefs, fo as that thay fhall readily receive the tin ; for if there be but the fmallett particle of duft on them, or only the flightelt rult in any part, the tin will never fix there.

This fmoothing of the plates is effected by fteeping them in acid water, tili 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 moft expert workman can do otherwife in many days. M. Roaumur, to whom the world owes the difcovery of this procefs, mentions feveral waters, any one of which will facceed, but the Germans themfelves ufe nothing but common water, made eager with rye. This they make a great fecret of, but the preparation is very ealy. 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 fharp and eager mentruum, excellently fitted for their purpofe. With this hquor they fll certain troughs, or tuns, and into thefe they put feveral bundles of the plates of iron : and to make the liquor more eager, and to act the better on them, they keep it in Itoves, 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, expofing it to the dew, fprinkling it with fimple water, or, which is thill better, with water in which fal ammoniac has been duffolved, feveral times a day: and in thofe 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 uied, it is always neceffary to foower them with fand as foon as it is done; and when they are thus cleaned, they muft be inmediately plunged into water, to prevent their rulting again, and they are to be left in this water till the intlant in which they are to be tinned, or, in the language of the workmen, blancked. The people employed in this part of the operation are called llanchers ; and the others, who afilit at the cleaning of the plates, the foalers. 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 ia a large iron crucible, which has the figure of an oblong pyramid with four faces, of which two oppofite ones are lefs than the two others. The crucible is beated only from below, its upper part being luted with the furnace ahl round. The crecible is always deeper than the
plate?, whicin are to b e timed, are long; there always prit them in downight, and the ten ought to fwim over them. To this purpole artituers of dherent trachs prepare platen of different fhapes, bit M. Resaumur thinhan them all (xceptionabic. But the Germans ufe mo tort of preazation of the iron, to make it rective the tim, rome than tios keeping it always theeped in water tiif the tame ; aly when the tin is molted in the crucible, they coner it with a layer of a fort of fuet, which is clually two meturn thick, and the plate mult pais through this itfure it con come to the melted tint. The firtt ute of this coverifis is to keep the tin from burning: as if aty part forould take tize, the fuet would foon moiften it, and reciuce it to its primitive ftaee again. The blanchers fay, this fuet is a compeurded matter. It is indecd of a black celour, but M. Reamur fuppofed that to be only an artifice to make i: a fores, and that it is only coloured with fro:, or the fmoke of a chimney; but he found it true fo far, that the conmen urpreyared fuet was not fufficient; for after feveral ateaspis. there was always fomething wanting to render the fuccels of the operation certain. The whole fecret of blanclans, therefore, was found to lie in the preparation of this fues; and this he at length difcovered to confit only in the firt frying and burning it. 'This limple operation not only gives it the colour, but puts it into a condition to give the iton a difpofition to be tinned, which it does furpriingly.

The melted tin mult alfo have a certain degree of heat, for if it is not hot enough, it will not thick to the iros ; and if it is too hot, it will cover it with too thin a coat, ard the plates will have fereral colours, as red, blue, and purple; and upon the whole will have a calt of yellow. To present this, by knowing when the fire has a proper degree of heat, they might try with fmall pieces of inon; but, in general, ufe teaches them to know the degree, and they put in the fron when the tin is at a difficrent thandard of heat, zecording as they would give it a thicker or thinner coat. Sometimes alfo 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 firlt time, and when lefs hot, the fecond. The tin, which is to give the fecond coat, muft be frefh covered with fuet, and that with the cummon fuet, not the prepared. Philor. Tranf. No 4 c 6 , p. 634. See Tix.

LATTYPOUR, in Geography, a town of Bengal; 20 miles N . of Kithenagur.

LATUS, in Ichibyolog', the name of a firh 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 fpecies; and its body is fomewbat rounder. It is efteemed a very delicate dilh. Rondelet. de Pifc. P. I3o.

Latus, in Anatomy, a name given by many authors to one of the mufcles of the anus, now generaily called the levator ani.

Lates Recum, in Conics, the fame with parameter. See Cosic Sections, and Parameter.

Latus Tranferffiun of the hyperbola, is a right line, intercepted between the vertices of the two oppolite fections; or that part of the common axis which is between the vertices of the upper and lower cone. See Hyremeola.

LATZKI, in Geography, a town of Aultrian Poland, in Galicia; 80 miles IW.S.W. of Lembery.

LAVA. This word, in its ftries fenfe, denotes ordy the fufed fony fubfance which iffues 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-
charged, either colle?ts mear the crater in amorphous groups, or extends its courle to various diffances. But much greater latitude (as we fhall fee hereafter) has been given to the term laza by feveral authors, for not only other volcanic cjections, to which the above deffintion cannot be applied, have been deferibed under that name, but eren fuch unaltered rocks as will be allowed by unbiaffed obfersers to have fearcely any one character in common with real woleanic productions.

Werner has divided lava into two varietics only; wiz. 1. Scorions or flagey lava (Schlackige liva), and 2. Foamy lava (Schaumige lxsi.z.)

The colour of the forious lava is greyifh-black, which paffes into fmoke.grey, yellowifh-grey, reddih-grey; green-in-grey, and through feveral fhades of this into greenifhblack. Decompofition, fulphuric and other rapours, frequently modify the principal colours, and often produce the higher tints of yellow.

It occurs more or lefs knotty and veficular, with velicles of different fize, fometimes glazed over, and empty. Internal lutte between glimmering and gliftening, feldom fhining. Fracture imperfeetly conchoidal, alfo line-grained, uneven. Is commonly opaque, fometimes faintly tranflucent on the edges. It is femi-hard, brittle, eatily frangible, and not particularly heary.

The colour of the foamy lava is generally dark greenihgrey, approaching to greenih-black. Its veficular ftructure, brittlenefs, and lightnefs are indicated by its name.

This the Wernerian fchool carefully dittinguifn from pumice; which fee.

Lava is often porphyritic, but the cryftals of hornblende, augite, \&c. are, according to Werner, wrapped up, not imbedded, in its bafis; and when they occur in the hollows or veficles of lava, are not in the form of drufes, but generally part of the cryitals projects into the cavity, while the other is included in the lava.

Though the Neptunits profefs to find characters fufficiently obvious to diftinguinh lava from unaltered rocks that might be miftaken for it, fuch as the rough afpect which it prefents both internally and externally, \& c.; yet their decifion in dubious cafes is known to be chiefly regulated by the mode of occurrence of the rock; and fubftances, that prefent regular ftrata, not feldom of very confiderable extent and comparative thicknefs, and frequently conformable to all the finuofities of the older formations, can never bc expected to find a place in their catalogue of volcanic productions.

The queftion, whether lava ever occurs in a compact ftate, involves the various controverfies with regard to the origin of bafalt, which will be treated of at large in its proper place. But as it is neceffary in this article briefly to advert to the reafons that have induced Werner, and other Nep:unifts, to exclude compact lava from their fyftems, we fhall extract the excellent obfervations given on this fubject by Mr. Kirwan, in the fecond appendix to his Mineralogy.
" By compact lava," fays this diftinguifhed mineralogit, so volcatic writers denote an earthy fubitance, which, after having been fufed, but not vitrified, becomes, on ceoling, compact, clole, a d folid. Whether this degree of folidity is fuch as totally to exclude that evidently porous and cavernous ftructure, which cellular lava prefents, is not perfettly agreed upon.
"Thofe who are guided by obfervation on modern and undifputed volcanic torrents, allow that no lava, abfolutely compact and deftitute of pores, in an extent of more than
a few fquare inches, is ever found. Thus Mr. Bergman de. fines compact lavas to be "thofe which, though not abfolutely deltiture of cavities, yet contain fo few, that they may be cut into flabs with an almolt entire furface, and polithed like marble." (3 Bergm. p. 201.) To this definition, Mr. Dolomicu, in his notes on Bergman's Differtation, makes no objection; from which we may conclude, that in a fmallexteint, fuch as that of cominon marble ीabs, they never exhibit an uninterrupted furface. This laft mentioned philofopher, indeed, having unfortunately wifhed to comprehend, in his definition of compact lava, Itony mafles, not found in modern and undifputed beds of lava, but in $f_{\text {uppofed ancient }}$ currents, found himelf much embarraffed: There is, fays he, fuch uncertainty in the characters of compact lava, that, independently of local circumflances, the moft experienced eye may be deceived. (Ifles Ponces, p. 171.) Yet thefe circumftances, not properly attended to, are thofe which have feduced him into the molt palpable miftakes.
"Gioeni, though in many inftances mifled by Dolomieu, yet acknowledges that lava, fo compact as to be totally deftitute of pores, is not found. (Lithol, Vefuv. p. 85). Padre Torre, who, independently of any fyltem, has candidly and impartially examined the products of Vefuvius, exprefsly denies the exiltence of lava deftitute 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 diftinetion; and Mr. Dolomieu acknowledges that not a fingle fpecimen of compact lava is to be found in the cabinet of prince Bifcari.
"Thofe, on the other hand, who, guided by fyftem, beftow the name of lava on flony maffes, which they fuppofe to have anciently flowed, either from real fill fubfilting, or imaginary ancient extinct, volcanoes, find compaa lava entirely deftitute of pores, very farce indeed in the fuppofed currents from modern, but in great plenty in thofe which they afcribe to their fictitious volcanoes now extinct, as well as in the very: bowels of thofe 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 ; 'ferw, however, fays he, are the vifible currents. of lava on Vefuvius, in which we meet this gradation.' It feems, he hould rather have faid, none; for, fome lines after, he tells us, that modern volcanoes have loft the power of producing any. (Lith. Vefuvo xlvii.) The detached mafles that pafs for compact lava, he acknowledges to have been ejected in their folid form by the explofive power of the volcano, and confequently are not real lavas, but rather natural ftones, torn from the fides of the mountain. (Lith. Vefuv. li.). Mr. Dolomicu tells us, that compact lavas are flones which, after having been melted, re-affume their natural ftate and appearance without any change in their external: or internal properties, or fcarce any change; and that fome are perfectly compact (that is, deltitute of pores), namely, thofe that are buried under, not other lavas, but under an entire and immenfe 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 thofe of extinct ancient volcanoes. Hence he tells us, that they are much more common in extinct volcanoes; and that in $\ldots$ tna they do not con!titute the ${ }^{5}{ }^{2}$-dth part of the whole; whereas in Vivarais and Alvergne they form whole mountains. Now molt of thefe ancient volcanoes of the Vivarais appear to me and many others, to be mere creatures of imagination, and confequently, until the fubitances they contain are proved to have bren io fufiun, no definition, grounded on the appear-

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ances of thefe fubfances, can pafs for that of real compact lava.
" In beds, however, of real undifputed lava, fome parts are found, that, having been preffed by the fuperaincumbent weight, are more compact than common porous lava; and thele, comparatively to the furmer, may be called compact ; but fcarcely more than a few fquare inches of their fubitance is deflitute of vifible pores.
"Their colour is brown, yellowih, reddifh brown, bluifh, or black, more rarely grey. Their luftre O.I. Tranfparency O.I. Their fracture earthy, or fine fplintery, more rarely foliated, and prefents fmall internal pores, if of fufficient lize, in fome part of the fubltance. Hardnefs from 7 to 9. Specific gravity 2.75 to 2.88 .
"Much circumfpection is requifite in framing a defeription of compact lava, from a view of the fpecimens brought to us from volcanic countries, as they are all collected by perfons, who take indifcriminately from real, and from fuppofed, volcanic currents, even from mountains in which no volcano ever exilted.
"To form a true idea of thefe lavas we fhould attend to the following circumiftances; 1. That the heat of molt volcanoes (I exclude thofe that for the moft part produce only vitrified fubltances) feldom reaches $100^{\prime}$ of WVedgwood; the proof of which is, that almolt all reallavas, 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 affumed as the average heat of moll volcanoes. 2. In this heat many ttones of the argillaceous genus, as trapps, hornblendes, and argillites, undergo a clange; for they alter their colour, become porous, alfume 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 decompofed. If, therefore, the argillaceous ftones 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 decompofing bitumen has molt liberty to efcape, it will tumify, burit through the liquid mafs, and form cellular lava; but, where it is more comprefled, lefs of it will be difengaged, and the lava will be compact, and refemble, in fome degree, the original itone of which it is formed. 3. Stones of the filiceous genus undergo no change in this heat, not even fhorls or feldipar; and hence, though immerfed in the fiery torrent, they cannot with propriety be called lavas, as they are not even foftened by the mixture of bitumen, as flones of the argillaceous genus are.
"Between filiceous and argiliaceous ftones there are many gradations and various mixtures, which mult occafion correfponding varieties in the effects whicle heat and various other circumftances may produce. It is fufficient here to eftablifh the principles on which moft of them may be explained. Compact lavas abound in heterogeneous fubitances which either have not been fufed, or only partially fufed or fcorched, or decompofed by heat, as feldfpar, fhorls, garnets, zeolizes, \&ce. Every volcano has fome that are peculiar to it. Thus the lavas of Vefuvius abound in that called white garnet, and which I call Vefuvian, thofe of Etna abound is feldípar, \&c.
"Hence we mult exclude from the rank of lavas all ftones which do not appear, either from their external characters or local circumitances, ever to have been foftened by heat; and confequently, all thofe detached pieces which are ejected 2t the beginning of an eruption without fufion, and many others which volcanic collectore enumerate among compact
lavas, merely from having found them in the vicinity of volcanoes. Thus Mr. Dolomieus (Lipari, p. 85.) reckons among volcanic Itones one, in the interior of which he diffinctly perceived a leaf of fea-weed. Few indeed are the flones contained in his catalogue which can be deemed really volcanic.
"All real lavas, except thofe of the vitreous kind, affeet the magnetic needle, unlefs the iron they contain be much oxygenated, as it often is in thofe of a red colour; but even thele are frequently maguctic by reafon of the fhoris embodied in them.
"The component ingredients of lavas are various, according to the nature of the original foones, and the accidents they meet with in their liquified flate. Mr. Dolomieu found them to contain from 40 to 60 per ct. of filex, from 16 to 3 of magnelia, from 5 to I 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 Traprformation and Volcano, have much contributed to invalidate the teftimony of thofe who contend for the exiftence of compact lava, and the igneous origin of many other fubflances apparently Neptunian, yet volcanills continue to claffify over and over again thofe fubftances which they confider as belonging to their domain; and it is neceffary to be acquainted as well with their mode of viewing the fubject as with that of the oppofite party. . It is with this view that we give the following abitract of the mof complete arrangement of, fo 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 "Effai de Géologie," publifhed at Paris in 1809. It is almolt fuperfluous to obferve that this arrangement fhould be confulted cum grano falis; as of csurfe almoft all the rocks belonging to the fletz-trapp formation of Werner are introduced into it, as well as other fubftances, 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. Lavas confidered auith regard to their form and external modifications.
Div. 1. Black, bomogeneous, mafive, compaa lava1. Fine-grained; from Otaheite, Staffa, the neighbourhood of Rome, Darmitadt, the Euganean mountains, Auwergne, \&c." 2. Var. of a coarfe grain, from Meiffner, the vicinity of Gottingen, Heffe Caffel, Rochemaure in Vivarais, \&c: 3. Var. of a fcaly texture; from Stolpe in Meiffen, the ifle of Bourbon, Mont Meffin in Vivarais, \&c.
Div. 2. Homogeneous compaz lava in prisms, zuith from three to nine fides (the latter rare).-1. Prifms without joints; Staffa, Expailly in Vivarais. 2. Var. with prifms tranfo verfely divided or jointed; at the Pont de la Beaume in Vi. varais, \&c. 3.Var. with jointed prifms, joints concave at one fide and convex at the other ; Giant's Caufeway, Ireland, left bank of the Volane, i\&c. 4. Var. with prifms laterally compreffed; Rochemaure in Vivarais. 5. Var. with arched prifms; Staffa, inle of Bourbon.
Div. 3. Prijmatic lava, zuitl edges and planes so regular as to appear the rejult of cry/tallization.- In pyramids of four fides, flattened, \&cc.; in Auvergne, \&c.
Div. 4. Tabular lava.- r . Var. in thick tables: from Monts Meffin, Coneron, \&c. in Vivarais. 2. Var. in thin tables; Rochemaure in Vivarais, ifle of France, ifle of Bourbon.
Div. 5. Globular-lava.-1. Vir. in folid balls; from Teneriffe. 2. Far. in hollow balls; ifle of Bourbon. 3. Var. in balls compofed of concentric layers; from Vefuvius,

## I. A V A.

Catel-Gombeto near Vicenza, Montechio Precalcino, \&c. Thefe levas are the refult of a particular kind of decompofition, which takes place in extenfive beds of compact bafaltic lavas, in which they appear as if implanted. Some grobular lavas owe their oricin to the joints of bafaltic pillars, whofe angles and edges decay, while the nuclus remains found, and appears to ifliec from out the prifm.
Div. 6. Tear-flaped liva (lares en larmes).-Small oblony mafles, imitating more or lefs the form of tears, 'They occur from the fize of a hazk-nut to that of an egg, often enclofing within their centre the fragment of a foreign body, fuch as granite, olivine, \&cc. Found on Vefuvius, in the crater of Mout-Bridl, in Vivarais, Auvergne, Eic.

Class II. Peroas lava.
Div. 1. Heary porous lava, - I. For, with large oblong pores; from Vefurus, Etna, Hecha, Vivarais, Auvergne, \&c. 2. I'ar. with large irregukar pores; in all the above places. 3. Var. with pores lefs larec, and generally round; in a partly purons, partly compact lava; from the Meifner in Heflia. 4. Var. with fmall, round, and oblong pores; in a lava remarkable on account of its hollows or depreffions, which exhibit a regular ftrusturs, and, on being broken, convey the idea of paralldograms of different lizes, arranged fide by fide, as well externally as on the internal furface of the lava: fome of thefe 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 Buurbon, is thus explained by M. Hubert:- A sreat eruption of the volcano of that illand gave origin to a valt itream of lava, which in its progrefs came in contact with a plantation of palm trees. The trees whe immediatcly fet on fire; but being foon covered by the lava, combultion ceafed, and the wood became corverted 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 $b_{y}$ contraction, and moulding itfelf over the nucleus of the coal, produced the hollows obfervable, as often as the coal is purpofety detached, or delfroyed by fome accidental caufe. 5. Var. of prifinatic tringular form, with oblong and irregular pores; from the neighbourhood of Rochefative, in Vivarais.
Div. 2. Liskt porous lava.-1. With round pores; from Vivarais, Auvergne, ife of Bourbon, Tunis, \&tco 1) esfontaines has gathered at 'Tunis fpecimens of fuch a lava, which the natives employ in the preparation of their woollen thuffs, in preference to the fullers' thille ured in other countrie:. 2. Var. with oblong pores; from Vefivius, Etna, Hecla, from Vivarais, Auvergne, \&c. 3. Var. witls irrefular curved or twited porss; from Velinvins, the ine of $330 u r b o n$, Teneriffe, Stromboli, Vulcano, Vivarais, ice. 4. Var. with decuffated pores; from the iffe of Bourbin, Vefuvius, \&e. 5. Vor. with freaked pres; from Vefuvius, Etna, ine of Bourbon, and Mount Hecla.

The light Atriated lavas, appearing in the thape of cables, ribbands, \&c. aifo belong to this clafs. In general, the porous lavas are nothing but the refult of the more or lefs active or continued develcpement of gafes produced by the peculiar rature of the lavas, and by the more or lefs violent action of fubterraneous fire.

## Class III. Scorified lavas.

A particular modification of porous lavas, produced when, under certain circumifances, the matter of which thefe confift undergoes the firlt degrees of vitrification, and becomes covered with a kind of flining varnih, which dittinguilhes them from ordinary porous lavas. Thefe fcorified lavas are found, 1 , twilted; 2 , cable-fhaped; 3 , ribband-flaped; 4 , in bunches, with round or oblong grains; 5, flalactitical,
thort elongated knobs, feparated or united. An thefe varicties of forms are found at Vcfuvius, Etna, Hecla, in Teneriffe, the ifle of llourbon, \&c.

Class IV. Lavas confulered wuith regard to their component parts, or to the differcent rocks from whichb they originated.
Div. 1. Gruniooid lava.-Thefe lavas, which, according to Faujas.' fyltem, mult have been elaborated at a great depth in the bowels of the earth, owe their origin to rocks analogons to our granite, except that quartz does not enter into their compolition; the fulftance formerly contidered by Taujas and others as quartz, having proved to be feldfpar.
A. Coarfegraised graniovid lava,-1. With bafe of a whitifh-grey colour, compofed of irregular whitifh grains of feldfpar, of a quartzy appearance, but eafily fufed before the blowpipe : a great number of minute, thin, and hexagor al lamine of black mica, diffeminated among the grains of feldfpar, and large cryitals of this fubitance, of a pearly white and parallelopipedic form, are imbedded in this quartzkefs granite. The grains of feldfpar have fuffered a littic by the fire, and the crytals are ilighty calcined. Some of them are even diffolved into capillary feparations, and pafs into a fubltance like pumice. This lava, which is ftrongly attracted by the magnet, is found at Mont-d'Or; but a fimilar variety occurs in the inles of Ponza and Lipari ; at Santa Fiora, in Tulcany, \&ic. 2. V'ar. with bafe of whitifh granular feldfpar, fpotted with dots of black mica, and hornblende of the fame colour, and in fmall cryltals with dull furface; from the Euganean hills, \&c. 3. Var. with large lamime of a fhiving bronze culoured mica, fome of more than an inch in diameter, in a rough uneven purplifh black mafs, which is melted without being glafly, and is pervaded by large pores. It is flightly attracted by the magnet. Found near Andernach. 4. Var. with bafe of reddifh granular. feldipar treaked like pumice, and of white nightly cal-
 mica, minute reddrfh garnets, which are partly fufed, and a black glafy fubltance appearing to be hormblende: it is faintly attracted by the magnet. From Santa Fiora, in Tufcany. 5. Var. with bafe of white feldrpar, in irregular rather fcaly grains, with a great quantity of needies of black hornblende, and altered garne's of a purplifin bue. Very obecient to the magnet. From Tenemfie. 6. Var of a white colour inclining to grey, compofed of a multtude of very fmall and clole grains of white feldfpar ; and of much larger grains of fhining iculy fuldfpar, wich rather pearly luftre, fome of which grains fhow a tendency to cryftllizition. Blackih, dull dots, being common hornblende altered by the iire, are diffeminated in the feldifar. Faugas mentions a fipcimen of this variety, from the Cantal, which is traverfed by a bar of black and white granite, formed of fmall grains of very pure fcldfpar, and of fmall grains of black hormblende, unaltercd by the action of the fire. 7. IFar. with blueifh-black bafe, having timall brilliant points proceecing from the fealy particles of a white llony fubltan:e, with dull fracture ; purplih red, femi-tranlparent garnets, partly flawed, partly fufed, are indiftincily imbedded both in the black and white fubftances. The former of thefe, which is compact, and fufes bifore the blowpipe into a black glafs, has all the characiers of hornblende; the latter is compaet feldfar. From the Cape de Gatte, in Spain.
B. Fine-grained granitoid lava- - 8. Var. furmed by a mixture of fmall, irregular, cloie grains of hornblende, and fmall grains and fcales of white, rather pearly fcldipar. The hornblende being predominant in this mals, it exhibits a black furface ou being broken, or cut by a faw, in which cafe it re. fembles bafalt; but when polifed, fmail white dots and lines appear, which, though delicate, are flith fufficiently vifible on
the black ground of the mafs; found on the fummit of mount Mezin, where, by the action of the atmof phere, it undergoes a ftriking alteration ; for while the particles of feldfpar at the furface become corroded and difappear, the hornblende remains unaltered and freth, projecting over the relt as black granular particles. Lavas fimilar to this, fome of them prifmatic, Mr. Fayjas pretends to have feen in the neighbourhood of Caffel, and near Gottingon. 9. Var. compofed of white feddfpar in fnall grains, rather mealy at the furface, and of a black fubftance diffeminated as dots in the mafs: the latter appears to be altered hornblende. In this mixture are alfo imbedded large white fellfpar cryftals with pearly lultre. Occurs on the right bank of the Rhine, at the foot of the Seven Moumtans, nearly oppofite Coderberg. 1o. V'or. with white grains of felsfpar, harder, frefher, and of clofer texture than thofe of the preceding variety, mixed with black horabiende, difpofed in dots, lineaments, and even as fmall prifinatic crytals, more abundant, and lefs altered, than the hornblende of Nu.9. Alfo garnct cryttals are differminated in it, but cannot be feen without the aliftance of a high magnifier. This variety is attrated by the magnet. It takes a good polifh, and is ufed for building. It is, together with the preceding, found at the foot of the Seven Mountains, where it is quarried. Large feldfpar cryitals have not been found in it. 11 . Var. compofed of fmall irregular white cryftals, difpofed in diitinct lines appearing fcaly, flining, and as rather calcined when viewed through a lens: their length is about $\frac{1}{\Gamma}$ th, their width $\frac{1}{6}$ th of an inch: they are interfected by other prifmatic indeterminable cryftals of the fame dimenfions, of an intenfe black colour, vitreous, almoft metallic external luftre, but rather dull on the furface of fracture. Alfo particles of iron mica, (for cligitte of Haüy, and of magnetic ircn-Itone, are found in this mafs. Faujas has analyzed thefe two ores of iron; according to him they are combined with titanium, and the white cryltals belong to the fpecies of the latter, called Sphene or Titane filiceo-calcaire. This variety was found, in infulated blocks, near the top of the Meifner, in Heflia. 12. Var. differing from the preceding only by the fer oligife it contains being in large laminx, marked with lines, the general difpofition of which produces frall hexahedral laminx. The fphene, which forms the bafe of this mafs, is barder, white, inclining to yellowifh; it confills of cryftalline tranflucid particles; the magnetic iron interfects the fphene in all directions, while the iron-mica is only diffeminated here and there; both thefe 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 rema:ks, that no fimilar rock is known to occur, that may be confidered as the original of this, and the preceding volcanic fubitances. He denominates them granitic, becaufe they have much the appearauce of fuch a compound.
C. Scbiffofe granitoid lava.-13. Var. compofed of minute, reddith-brown grains of feldipar, much larger, angular grains of white feldfpar, and a great quantity of frall fix-fided laminx of frining mica, diffofed in a fimilat manner as in gueifs. The white feldfpar is eafily feparated into laminm in the direction of parallel lines obfervable on it, and which are produced by the action of the fire. Sometimes fome duts of horablende are feen in the mafs; but they are of rare occu:rence. 'This is found in Lipari under the pumice defcribed by Dolomieu. 14. Var. with yeilowifh-grey, granular, dull feldfoar, intermixed with white vitreous grains of feldfpar, and much black hornblende in fmall, flender cryitais, difpofed in horizontal lines, reprefenting thin layers, and giving this fubftance a fufle appearance. From Vulcano.

Clase V. Pomplyrcillawa.
Faujas' vulcanic porphyries are compofed of a fufible pafte or bafe, in which more or lefs regular cryttals of feldipar are imbedded, often accompanisd by grans of quartz; hornblende, augite, \&cc. The bafe itfelf he confiders analogous to the " trapps of the Swedes." He fubdivides them as follows.
A. Porphyroid lava quits feldfpar ceryfals -r. Var. with black, hard, and heavs, though rather porous, bafe, and with white feldfpar crythals of loofe texture. Strongly attracted by the magnet. From mount Etna. 2. Var. with more compact bafe, of a decp violet brown colour, with a great quantity of fmall greyim-white, rhomboidal, and parallelopipedic cryftals, and alfo grains of feldipar. It is sery magnetic, and takes a good polinh. Found by Dolomieu in the Ina des Salenes, near the village Amalfa, where, according to this geologit, it appears in the form of iteps of flairs. Faujas adds that a fimilar rock is found in Auvergre, in thin tahles, which are ufed in fome villages for roafing. 3. Var. with purplin brown bafe, including white irregular teldfpar cryftals, without lufter. From Trizac, in the canton of Mauriac, Auvergne. 4. Var. with rather purplifh bafe, abounding with more or lefs regular feldfpar ci yitals of a white celour. Though rather decompofed, it affects the magnetic needle. From Marriac and fome other parts of Auvergne.
B. Porkbyroid lava suith follipar and miac.-5. Var. with rather purpling grey bale, very white irregu'ar fectfpar cryitals, and frmall fometimes fix-fided lamine of an intenfely black mica. It fometimes contains fimall cryltals of filiceo-calcareous titanium. From Leorens, part of the Cantal nountains. The bafe of this has quite a compact fellopar appearance. (6. Vrar. with grey bafe, includins white feld$f_{p a r} \mathrm{crytal}$ and and black mica, but lefs abundant than in the preceding. From Moint d'Or; occurs allo in the ifes of Ponza and Lipari, \&c.
C. Porpbyroid lava suith feldfpar and pyroxene.-7. Tar. of a deep grey bafe, with dots, lineaments and cry fals of white feldipar and black pyroxene, in fmall crytais. Sufceptibe of a good polih. From the extinct volcanoes of Campania, thie neighbourhood of Rome, Santa Fiora, \&c.

1. Porplyrois lava with cryaghls of llack pyroxene and fmall grains of green fyrowne--8. Var. with deep grey, containing a great number of cryitals of black pyroxene, and irregular dots of greenith pyrovene. From Chimborazo, where it was found by Humboldt at the leight of $18+0$ toifes. Faujas fo completely milkakes Humboldt, that but imarines the fratum of this fubfance has $18 A_{7}$ toifes in thickuefs! The fame is found near Puzzuoli; and in the ancient lavas of Vcfuvins. 9. Var. with the fame bafe as the preceling, and, like it, fufceptible of taking a good polifh, with engular grains, needius, and regular cryitals of green pyroxene. Found among the ancient lavas of Vefuvius.
E. Parplayroid lava avills bornblende and feldfper. 10. Var. with purplifh bafe, with a profution of linearnents and more or lefs regular cryltals of black homblende, irreqular grains of white feldfpar, fone of whinch have penetrated into the horablende cryftal. Found at Santa Fiora in Tufcany.
F. Porphyrcid lara witb bornlende only,-11. Var. of a blackilh-grey colour, with large cryttals of very black and fhising hornblende. From Mas de Puilfanton, near Chaunerac, in Vivarais. 12. Var. of deep reddifh-brown colour, with a profufion of brilliant needles and cryflals of hornilende. From the Peak of Tenerife.
G. Porghyroid lava witb bornblende and olivine - I 3. Var. in, which the horubiendr, in irregular fragments, conititates
more than double the weight of the mafs, in which fome pores are obfervable. The grains of olivine which it includes are iridefent. From the Peak of Teneriffe.
H. Porphyroid lava with lcuite cryfalso-14. Var. with opaque white leucites, with rather pearly luftre, the largeft of which have from three to five lines in diameter; they exhibit, when pieces of the lava are cut and polifhed, mis nute rents. The bafe in which they are imbedded is black, compact, hard, very obedient to the magnet, fufible before the blowpipe into a black, opaque glars; it takes a fine polifh. From Capo di Bove, Caprarola, and the neighbourhood of Naples. 15. Var. with large lencites of a dull white colour, fome of them tranfparent, lamellar, and here and there fufed and vitrified. The enveloping lava is of a greyinh-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 crytals, which, though they are fo friable as to be eafily reduced to powder by the preffure of the nail, have -ftill preferved their original form ; they are large and clofely grouped together. The lava which includes them is of a dull black colour, inclining to grey; it has loft part of its hardnefs, but till affects the magnet. In the midft of thefe decompofed cryitals are feen black lineaments and grains of a fubftance which appears to be that of the lava itfelf, and which was perhaps forcibly introduced into the body of the cryflals, through the rents that were produced when the mafs was ftill in a fluid Itate. Found in abuhdance in the vicinity of Viterbo. 17. Var. with white opaque leucites, having fome black points in their centre, and with irregular cryftals of black pyroxene difeminated in the lava. It is black, hard, fufceptible of a good polifh, attracted by the magnet, and fufible into a black brilliant glafs. Found in large maffes, and fometimes in prifms, at Bolfena. A fimilar variety occurs at Civita-Caltellana, and another at Aquapendente, which latter, however, includes pyroxenes of a yellowifh-green colour. IS. Var. with tranfparent, hard, leucite cryttals, of a yellowifh-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. 19. Var. with very fimall white opaque leucite cryftals, clofely grouped togeth $r$, and accompanied by much larger, irregular cryttals of black hornblende; in a black, hard, compact and very magnetic lava, from Tivoli and Aquapendente. 20. Var. with almoft microfcopic white, tranflucid leucite cryitals, fo clofely grouped together as to appear to be in contact with each other, intermixed with irregular black hornblende cryftals. Found abundantly at Bolfena, in the neighbourhood of Civita-Caflellana and of Viterbo. 21.Var. with very fmall, pellucid, white, leucite cryfals, and irregular hornblende cryitals, of a greenith colour. In a purplifh, not very hard, lava, the iron of which has acquired a degree of oxydation, whence it fhews no effect on the maornetic needle. From Viterbo. 22. Var. with large, white, -pellucid leucite cryftals, which are generally of a fcaly nature and full of minute flaws, and fometimes with fmall lineaments of a very beautiful ky -blue colour, of a cryftalline appearance. 'This fubitance, comparable to blue fapphire, or, nore aptly, to lazulite, appears to be of contemporary formation with the rel. The fame fubftance in minute particles is difcrimiuated alfo in the patte of the lava, which is compact and of a blackifh-grey colour. Befides thefe, alfo black fhining dots are obfervable in this lava; they have the appearance of having been fufed, and may perhaps be grains of pyroxene, or biack garnets. Some grains of arfenical pyrites are likewife obfervable in it. From Albano. Some-
times the leucite cryflals, in the lavas of this divifion, are accompanied by fonse mica in fmall fcales; and in the neighbourhood of Rome large nodules are found, fometimes of the thicknefs of a man's fift, and entirely compored of black cryitallized mica and leucite; the latter are clofly cnveloped by the former. and both appear to have acquired their cryflalline form at the fane period. This is not confidered by Faujas as a true volcanic fubltance.

Ciass VI. Variolitic lavas.
The palte is the fame as that of the porphyritic lavas, but inftead of cryitals, it includes globules of feldfpar.

1. Var. with pafte of a greenifh-grey colour, with numerous blackifh.grey globules, of the fize of a pea, and of a finer and harder texture than the bafe; both of them fufible. When the pafte is decompofed by the action of the atmofphere, the round fpots exlibit themfelves as projecting globules. From Teneriffe. 2. Var. with grey patte, and very fmall round fpots of a darker grey colour. This variety, which attracts the magnet, is, like the preceding, compact, and takes a fine polifh. It has a tendency to feparate into thin laminæ when ftruck with a hammer. From Vedrine, in Auvergne. 3. Var. with grey palte, inclining to greenifh; fpots like thofe of No. 1, but four times fmaller. Is ftrongly attracted by the magnet. From Pui en Velai. 4. Var. with white orbicular fpets on a grey ground ; attracted by the magnet. From Pas-de-Compain, Auvergne. 5. Var. like No. 4, but with much fmaller fpots, grouped clofer together, and lefs regularly orbicular. From PuyCreux, Auvergne. 6. Var. of a blueifh colour, with very fmall pores, and numerous white orbicular fpots of about two lines in diameter. From the crater of Mon-Brâl, in Vivarais, where it often occurs in large irregular balls, which feparate into concentric layers when ftruck with a hammer.

Crass VII. Feldfpar lavas; or lavas zuithb bafe of comipaa feldfpar.

Faujas remarks, after Dolomieu, that there are fometimes in the fame lava two different kiads of feldfpar, one of which is compact and fufible, and ferves as bafe to the other, which is more or lefs regularly cryftallized and refractory, fo that the bafe may have been ir complete fufion, while the crytals remained in their original ftate.

1. Var. Feldfpar lava of a black colour, opaque, of a very five grain and conchoidal fracture; it fufes into a white tranflucid glafs, and is ftrongly att racted by the magnet. From Catajo in the Euganean mountains, and from Vulcano. 2. Var. of a light grey colour, inclining to flef red, of a fine grain, trannucid at the edges; fufible before the blowpipe, and faintly attracted by the magnet. From one of the Ponza ifles. 3. Var. of a white colour, heavy, partly vitrified. From the Euganean mountains. 4. Var. of the fame colour, but fhining ; rather glaffy ; compofed of fmall, rather ftreaked, and fometimes fivelled fcales; and, therefore, lighter than the preseding. Is not attracted by the magnet; but is fufible before the blowipipe. From Milo, an ifland in the Archipelago. 5. Var. of greyifh-white colout, here and there with a flight fhade of red, with numerous thining fcales of mica; flldfpar rather calcined. Is not attracted by the magnet; but fufible into a femi-tranfparent glafs. From the ifle of Ponza, and from Puy-deDôme, in Auvergne. 6. Var. white, with fcales of brown fhining mica, and pellucid grains of feldfpar, more cryfalline than the bafe 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, wuith bafe of traspp.
Thele are confidered, by Faujas, as having originally be-

Tonged to rocks, whefe bate is generally the fame as that of the porphyries; and whofe globules and nodules of calcareous \{par, zeolite, calcedony, \&c. do not owe their exiftence as fuch, to infiltration, but are of a contemporaneous origin with the bafe. 'The volcanic fire which opeated on fuch amygdaloid rocks, though it has rendered them foft and flud, has but little changed their character ; but all, in the opinion of that flrenuous volcanift, bear clearly the ftamp of ignicons origin. They are fubdivided as follows:
A. Amgydaloid laza wuith calcareous globules.-1. Var. with globules of tranllucid calcarcous fpar of a ycllowith colour, of the fize of a pea; in a black, compact mafs; attracted by the magnet. From Vivarais; alfo from Vicenza. 2. Vur. with white, tranflucid, fpathofe globules, fome with a thin, hining, reddifl-brown, others with a fteclgrey coating of the fame kind, in a fimilar mafs, affecting a triangular-prifmatic form. From near Reciefauve, in Vivarais. 3. Var, with white, compact, lenticular grains, tranfucid on the edges, the largett of them of the lize of a comman lertil; in a black compat mafs, of a very fine grain. From the inf of Afcention. 4. For. with white, fpherical globules; fometimes two, three, or four of them together ; fumetimes fingle in cells that are partly empty: bafe like that of the preceding variety. From the valley of Ronca, in the Veronefe territory 5. Var. with fimilar, very frall globules, grouped clofely together, and taking up the whole of the cell; in a reddifh-brown, hard, compact tiafs, attracted by the magnet. From the fame place. 6. Var. with fmall, perfectly orbicular, globules of equal fize, in a deep-grey, compact, foft mafs, containing numeruus grains of olivine, with oxydized ochrey furface. From Vivarais. 7. Var. with white, tranflucid, fcining, radiated glebules of arragonite; in a black, hard, compaEt lava; obedient to the magnet. From the ille of Afcenfion. A fimilar one, but with larger globules, frasa near Roche-Sauve, in Vivarais. 8. Var. with the fame globules, but accompanied by grains and indeterminable crytals of black hor:blende; in a brownifh compact mafs. From near Bais, in Vivarais. 9. Var. with radiated globules, and irregular grains of arragonite, intermixed with grains of olivine. From the ife of Bourboa.
B. Amysdaloid lava wwith globules of meforype.-1. Var. with folid globules of a white filky zeolite, compofed of needles radiating fron the centre; in a black, compact, hard mafs, attracted by the magnet ; including alfo 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 fmall folid globules, of a fnowwhite zeolite, and irregular, almolt microfcopic grains of the fame fubflance, fo numerous as to conflitute lialf of the whole mals; the bafe like that of the preceding variety. From the valley of Ronca, in the Neronefe territory. A fimilar one is found near Rome, in which grains of hornblende are lodged in the very fubftance of the zeolite. 3. Var. with numerous, white, pellucid, zeolitic grains, of about the fize of a millet feed, and clofely grouped together ; in a greyifh black compact lava. From MontecchioMaggiore, near Vicenza. Similar varieties occur in the Lipari iflands, at mount Vefuvius, \&c.
C. Amyrdaloill lava with filhise.-1. With globules of white pearly ftilbite, in a black compact bafe, attracted by the magnet. From Feroc. 2. Var. with timilar globules, furrounded by a cruft of a green, rather friable, fubftance, very like the green earth of Vcrona; in a greyifh-green mafs, not attracted by the magnet. From Feroe. 3. Var. with white radiated filibite, on cryttals of calcareous ipar ; in a black mals, From Iceland. 4. Var. with white ftilbite, Yol. XX.
in indeterminably-flaped norules, in a friable, brownifh malfo From Dumbarton.

1. Amygdaloid lava with analcime-1. With irregular globules of tranfparent analcime, partly cryftallized; in a greyill-black lava, attracted by the magnet. From Mount Litna. 2. Var. with oblong globules of peilucid anakime; in a black compact lava, ftrongly attracted by the magnet. From one of the Cyclopic illes. 3. Far with globules of white compact analcine; in a greyith-black lava, appearing ratheraltered. FromMontecthio-Maykiore. 4. Var. with hollos nodules of white, dull, and opaque analcime, partly in the form of trapezoidal cryflals; in an altered lava, as it is called by our author. From Dumbarton, Scotland. 5. Var. with Imall, infulated, femi-tranfparent, greyifh, dodecaledral cryftals ; in a light grey lava refembling tripoli, and penetrated in a:l parts by numerous, very fmall, fpherical grains of anaicime, of a darker grey colour, and a little tranflucent on the edres; intermixed alfo with fome fmall cryitals of calcareous fpar.
E. Amysdaloid lava, with) farcolite, (referred by Haïy to analcime.)-1. Var. with glubules, and fometimes irregular nodules, of a reldifl ftony fubllance, fimilar to the farcolite of Thompfon; in a greyin, hard, porous, but heavy lava; the red globules accompanied by analcime, white radiated zeolite, cuboid cryttals of calcareous fpar. Fronr Montec-chio-Maggiore. 2. Var. with radiated zeolite, trapezoidal analcine, cuboid calcareous fpar, and femi-tranfparent cry 1 talline celeftine, or fulphat of itrontian, of a light blue co. lour, paffing, in fome fpecimens, into white. In a fimilar mafs, from the fame place.
F. Amygctaloid lava, with chabafe.-1. White chabafie, in a porous, black, heavy mafs, with finall, blueif, elevated, rather mamillary ípets, which are fhofphate of iron. From Val di Noto. A fimila: fubflance is found at Clermont, in Auvergne. 2. War. with fmall primitive cryftals of chabafie, in the orbicular hollows of a biack, hard, heavy, and compact mafs. From the Peak of 'Tencriffe. 3. Var. with fmall globules, and very minu'e cryftals of chabafie, in a black heavy mafs, with fliming black hornblende, and numerous grains of olivine, decompofed into a jellowifh earthy fubftarce. From Teneriffe. 4. Vcir. with primitive cryftals of chabafie, lining the orbicular hollows of a clofe black lava. From Iceland.
G. Amygdaloid lava, with calcedony.-Here M. Faujas mentions leven varieties of nodules of calcedony, fome of them containing water, (known by the name of enhydros,) others folid; found principally in the decompofed liavas of Monte Tondo, Monte Galdo, San Florianc, Mont-Main, in the Vicentine territory. To thefe he adds, by way of appendix, fome calcedonic and quartzy fubftances, which he coafiders as owing their origin to inflitration, and to which he refers the hyalite of Francfort on the Mayne. In another appendix the fame author places the mafles including the granular peridot or olivine, and which he would confider of porphyritic origin, were the olivines ever" found cryfallized in them. He enumerates feveral varieties found in the bafalts and lavas of Vivara:s, Caffel, ine of Bourbon.
Class IX. Voleanic breccias and tufirs.
A. Volcanic breccias formed of more or lefs rounded fragnents of different kinds of lavas, ferzed and enveloped by other lavas in a flate of fufion, -1. V'ar. compofed of angular and blunt fragments of black, hard, compact lawa, of rather porous hlack lava, and of grains of white feldfpar; the whole intimately united by a browninh lava, with itreaked pores. Peak of St. Michacl, in Velay ; as alfo near Roche Sanve, in Vivarais. 2. Var. with irregular fragments of fcoriform femi-vitreous lavas of a fhining black colour, cemented by a
grey friated lava, approaching hard pumice. From Vivarais, and the ille of Lipari. 3. Var. formed of numerous angular fragments of black porons lava, and fome white opraque feldfpar, cemented together by grey pumice with frall pores: from Lipari and Ifchia. 4. ${ }^{4}$ ar. with fragments of white, fometimes yellow and brownih lime-ftone, in a grey hard lava, mixed with white, tranfparent, flawed cry ttals and grains of feldfipar, fome laminx of black hornblende, filvery mica, and grains of green augite; from the vicinity of Albano, and other parts of the Roman territory. 5. Yor. compofed of large fragments of white marble, finegrained yellowihh marble, and another hard flony fubtance formed of lime and filex; in a grey lava, including much black pyroxene ; from the vicinity of Rome, and from near Vefuvius. 6. Var. compofed of fragments of white and grey marble, and rounded pieces of black hornblende; others O\& black fcaly mica; in a grey lava, mixed with particles of filvery mica, and numerous fragments of deep green pyroxene. From Ifchia. 7. Var. with large nodules of olivine, of different colours; fragments of black compaet lava, of porous, almolf fceriated lava, of the fame colour, cemented by a grey mafs formed of more or lefs comminuted detritus of feveral kinds of lava. From the Ifle of Bourbon, of Afcenfion, \&cc.
B. Volanic breccias formed by the fulden contai of free and of suater greatly beated.-I. Breccia formed of fragnents of brown porphyry, porphyry with red bafe, and cryttals of white feldfpar; 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 bare 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 feldfpar lava, with rough furface (both attracted by the magnet); of glafly blueiihgreen lava, fragments of ahh-grey pumice, fragments of a whitith, femi-tranfparent, volcanic glafs, and a colourlefs glafs ; the whole cemented by a blueilh-grey, foftifh, coarfegrained lava. From the Lipari ilands. 3. $W_{\text {ar }}$. compofed of fragments of black, rather porous, bafalt, including grains of olivine, of large fragments of a yellowifh quartzy Pand-flone with red ftripes, of fragments of grey or red indurated marle, and geodes of brown iron-ftore ; the whole cemented together by a grey lava, compofed of the more or lef's comminuted grains of the fublances that form the breccia, and of fome black pyroxene. From the Habichtfwald. 4. Var. compofed of various fragments of black bafaltic lava, intimately connęted by white and fhining calcareous fpar, fufficiently hard to allow the breccia to be cut and polifhed; fometimes the compact lava adopts the reddifh calour of ochre. From Rochemaure, Vivarais; alfo from Monte-Bolca. 5. Var. formed of more or lefs large frag. ments of intenfely black, fhining, volcanic glafs, cemented by white calcareous fpar, fufceptible of a good polifh. From Val di Noto. 6. Var. compofed of very fmall fragments of a compat, greenih-black, decompofed lava, fome of which include grains of black pyroxene; in a hard filiceocalcareous pafte, which is but little foluble in nitric acid.
C. Vulcanic tuffus, properly fo called, formed by the detritus of different fpecies of granular, pulverulent, or earthy lavas. They appear to owe their origin to various circumtlances. Firft, they may, according to Faujas, be confidered as the refult of the fudden contact of water with volcanic fire ; when, at the time of great fubterrancous convullions, a communication is fuddenly opened between the fea and the igneous gulf. Secondly, the projected pulverulent lavas,
which are fometimes carried to a great dinance, fuch as thofe which buried Herculaneum and Pompeit, or thofe which accumulate at the bottom of the fea in the vicinity of volcanocs, and may, in the progrefs of time, produce depofitions, and even more or lefs regular frrata, of tuffa. Lailly, under fome circumflances, the tuffas that were already depofited in the fea, may have been again deplaced by currents, and mixed with hhells and othcr marine productions, and fometimes even with land productions, fwept into the fea by rivers, \&c. the current may, at different intervals, have depolited thefe tuffas, as more or lefs regular layers.
I. Volcanic tuffa, compofed of white and grey, very light pumice, in fmall fragments, adhering to each other. From Pleyth, near Andernach, where it covers the quarries of trafs. 2. Var. with bafe of pumice reduced to fo fine a powder, as to appear like a clayey fubttance, ferving as a cement to numerous grains of a very light pumice, but lefs rough to the touch than that of the bafe, which, moreover, includes fmall nodules of real porous lava, of a brown colour, and fometimes colourlefs. From the fame place, where it forms a kind of trafs. 3. Var. formed of pumice in grains, and finall angular fragments of black bafaltic lava, fcaly particles of a fomewhat micaceous fchittus, cemented by a patte of pumice reduced to powder. From the fame place; where it forms another sariety of trafs, being of greater folidity, and forming beds of upwards of fifty feet thicknefs, in which fometimes charred wood is found. 4. Var. formed of very fmall grains of lava, which is partly fcoriated, of fome grains of black pyroxene, and other grains of rounded yellowifh olivine, cemented by grey and black pulverulent lava, refembling fand-flone. Is fometimes found in beds at Carliberg, in Heflia. A fimilar tuffa, of a dark grey colour, with white points, is found on an clevated part of the Cantal, in Auvergne. 5. Var. of a purplih-grey colour, and refembling, at firlt fight, a fand-ftone, but in reality compofed of the detritus of a purplifh lava, of a lefs altered compact lava, and fome grains of black pyroxene. Near Rochefauve, in Vivarais, where it forms thick beds, refting on other, tuffas, and overlaid by bafalt. 6. Var. gold yellow, dotted with white, grey, and black, compoled of fmall fragments of bafalt, yellowilh-brown friable lava, fome grains of olivine, and fmall particles of black pyroxene; alfo yellow ochrey nodules are found in it. This tuffa forms confiderable beds, one above 'the other, at Rochefauve, in Vivarais. 7. Var. of a purplifh.brown colour, with yellow ochres, white and blackilh dots, compofed of fmall angular fragments of black compact lava, which has loft fome of its hardnefs; of fmall fragments of a white marle, mised with fome iron ; of particles of porous altered lavas of an ochrey-yellow colour ; of grains of flining black pyroxene, and fome olivine in grains. It is attracted by the magnet. Found at the preceding place, where it forms conliderable fltrata, overlaid by vatt bafaltic caufeways. Alfo, in this tuffa large nodules of ochre are found. The tuffas of the vicinity of Rochc-maure, in Vivarais, are fimilar to this: as likewife thofe of the neighbourhood of Rome, of Naples, Campania, of the Euganean mountains, of feveral parts of the Vicentine territory, \&c.
M. Fayjas enumerates, at the end of this feetion, the various animal and vegetable fubflances, fhells, madrepores, and carbonized fpecies of wood, that have been found imbedded in volcanic tuffas. A fection is alfo fet apart to volcanic pitch-flones, divided into three claffes, viz. wooci, converted into pechftein, by volcanic fire ; flint, which has undergone the fame change; and porphyries converted into what iverner calls pitchltone porphyry. The places affigned to the firtt of thefe varieties are, Afferttein, near Frankfort,
and Upper Hungary; the locality of the fecond is principally Auvergne ; which is alfo that of the fpecimens of volcanic pitchitone porphyry, here enumerated. To the latt of thefe fubitances 1 Faujas refers molt of fuch laves réginites, or réfiniformes of Dolomicu, as contain cryltals of feldfpar, and feveral of which are found at Vulcano. Thefe are faid to form a tranfition into

Class X. Enamels (émauv), obfulians, and other volcanic glafis. - The prototypes of thefe are the different varieties of trapp, compact feldfpar, and porphyry, which, according as they are more or lefs fufible by volcanic fire, are, under circumitances favourable to vitrification, converted into the feveral kinds of glaffes that are found among volcanic productions.
A. Ettimels.-1. Grey, with greyifh-white, or greenifh zones, opaque; fome pores are vifible in the patte, and, with the belp of a lens, alfo cryitals of feldipar, or traces of them. From the ifle of Afcention. 2. Var. of dark-grey colour, befprinkled all over with fmall round fpots of a much lighter grey, and produced by fmall globules in the fubftance of the enamel, which, in fome places, difplays an intenfe, vivid-black colour. This fubitance, which is from the inand of Vulcano, bears diltinctly the characters of a variolitic lava converted into enamel. . 3 . Var. of a blackihgrey colour, hard, opaque, in which lome dots of fufed black pyroxene are fill vifible. From the ifle of Ponza. 4. Var. of an intenfe black colour, approaching obfidian, but more opaque, and of a rather greafy afpect. From the Peak of Teneriffe. This enamel is fometimes covered with a ruft-coloured cruft. In fome fecimens fcarcely any foreign hody is obfervable, except fome traces of white feldfpar; in others the mafs is rather lefs intenfely black and more marked with fpots of white feld!par, melted together with the enamel without having entirely loft their original tint.
B.-Real obfidian, or voleanic glafs.-1. Obfidian of a black colour, of conchoidal fracture, divifible into fharp fragments, of deep black colour, and tranflucid on the edges; thinner fragments almoft completely tranfparent, with fcarcely any traces of a fuliginous tint. It is fufible before the blowpipe into a very white, fhining, tranflucid glafs, with minute fuperficial veficles. From Mount Hecla, Teneriffe, Afcenfion, Vulcano, Lipari, Ponza, \&cc. 2. Vur. of a globular form, black, opaque, but fometimes tranfparent, and faintly turbid or fmoky. From Cap de Gates. Faujas refers this fubitance (which has been called luchs-fapphire by fome writers) to the homogeneous volcanic glaffes, becaufe it eafily melts before the blowpipe into a white enamel, and becaufe the globules are fometimes found imbedded in a greyifh enamel, approaching to lamellar pumice. Thefe globules are not always fpherical. Their fize is from that of a fmall pea to "that of a large hazlenut. They are very light, though not porous; their external luftre is unctuous. 3. Var. forming a very fine black glafs, with well defined, conchoidal fracture; and fragments nearly tranfparent 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, fubftance, which appears to owe its origin to fuch grains of feldfpar as did not experience a fufficient degree of fufion to amalgamate with the obfidian. From Cerro de las Marejas, in Mexico. 4. Var. with intenfely black ground, and well defined fracture, yielding fharpedged fragments; the whole of the brilliant mafs is filled with fmall, white, opaque, globular, and oblong fpots, clofely grouped together, and appearing like melted enamel, put rather unctuous. From the Lipari iflands. 5. Var, of
a black colour, inclining to olive-grecn, difpofed in more or lefs clongated, rather flexible, capillary flaments, often tevminated by very fmall, round, or oblong globules; fufible before the blowpipe into globutes of a greenifh-black. From the ifle of Bourbon. Lavas with fmall filiform paro ticles of voleanic glafs have alfo occurred in the ifland Vulcano. Thefe are by fome mineralogilts looked upon as filiform crytals of augite or pyroxene ; but M. Faujas fays he has fubjected them to clofer examination, and found them to be volcanic glafs.
C. Pumice fones.-The true pumice, fays Faujas, which we fhould be careful not to confound with the lightef 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. Thofe of Lipari and Vulcano are the only known volcanoes that have produced pumice in confiderable quantity: the iffe of Lipari, in particular, is the valt magazine that furnifhes aimolt the whole of the immense ftores of this fubftance, confumed for the purpofes of different arts, in almolt all parts of Europe. In fmall quantity and in infulated fragments it occurs in the neighbour. hood of feveral other volcanoes.
I. Pumice of a white colour, porous, light, rough to the touch, and fufible. From Campo-Bianco, the Eipari ifles, Valle-del-Aqua, near Otto-Jano, \&cc. 2. Var. of a filky appearance, fibrous, and with capillary lineaments. From the fame place. 3. Var. of a dark grey or black, fometimes greyilh-white colour, with twitted pores; fibrous, including, among its fibres, more or lefs indeterminable cryftals of white feldfpar, which, in fome of the fpecimens, are only feen on the rifts. From Ifchia, Procida, from the neighbourhood of Naples. At Lipari, the varietics of black punice are found in the hillock of the tomb of the Nafos. 4. Var. of a whitifh colour, fcaly, light, filvery, and femi-tranfparent. From Lipari. 5. Var. the fane, but heavy. Ibid. 6. Var. of a grey colour, light, fibrous, with blackifh, fhining, fometimes cryftallized, mica. In a pumice from Herculaneum, from the neighbourhood of Naples, from Ifchia, Procida, \&c. $7^{7}$ Light, porous, or fibrous variety, with more or lefs angular nodules, 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 fame, but whiter, with fmall thin fragments of a filvery-grey fhiftus. In the tuffa from Pleyth and other places in the vicinity of Andernach. 9. Var. with very fmall angular and irregular fragments of a vitreous, flony fubftance, of a fky-blue colour (now called Latialite, or Hailync). Amcng the varieties of pumice from Pleyth, \&c. io. Var. of a greyinh-white colour, light, with nodules of obfidian of various fizes. From Teneriffe and Lipari. ir. Var. of a dark grey, fometimes rather brownifh colour, heavier than the preceding variety; with veficles, all of which are elongated in one and the fame direction: gives out fome fparks when ftruck with'fteel. From Lipari. 12. Var. of filvery-white, compofed of fmall lamellex, or fcales. Found among the other varieties at Lipari: it is rather lighter than the common white pumice.

Class XI. Sulphur, and various faline fubfances, found fublimated in volcanoes and folfataras.

The falts are: Glauber falt, nitre, alum, Epfom falt, mineral alkali, rock folt, efflorefcent, in filaments and cubes, fal ammoniac, in rhombic, or dodecahedral cryftals, generally of a topaz-yellow colour. Alfo gypfum, and calcarcous fpar; muriate of copper, in fmall deliquefcent cryitals; red and yellow orpiment.

## I. A V

Cleass XII. Voleanic irow, vize titaniferous iron, as fand, and in fimall octahedral crytals, from various places; fpecular iron from feveral wolcanoes in Italy and France; phofphate of iron, as powder in porous lavas from Capo di Dove, Ftus, Val di Noto: or in fmall lamine, from Bouiche, in the department of Allier, \&e. ; iron pyrites, in fine grains; oxyds of iron; muriase of iron, of a yellow colour, from Vefuvius and Etua'; and iron-vitriol, found in volcanic grottos, in the illand of Vulcano.

Several interefting obfervations on the nature of lava, and the varius phenomena it prefents under different circumftances, are given by in William Hamilton, father defla 'Torre, Bohis, Tata, Breillach, Buch, and others, which will be more particuiarly noticed under the article Vozeavo.

The purpofes for which the lava of Vefuvius, Etna, and other volcanoes is employed, are particularly thofe of building and paving. Alfo the ancients made ufe of it for thefe purpofes, as appears from the prefence of Vefuvian lava in the architectural remains and pawements fotind in Herculaneum and Pompcio. That of Etna appears to be fill more generally ufed for building, fince, according to Ferrari, there is not a houfe in its neighbourhood that is not conftructed of it. The rapid progrefs in the rebuilding of Catania was, in a great meafure, owing to the facility with which the building materials were procured. Alfo mill-ftones are made of the lava of Etua, m:any of which are exported to Calabria and Malta; and it has even been manufagured into cammon balls.

LAUACA, in Geography, a fmall illand near the S. coaft of Sardinia. N. lat. $39^{\circ} 4^{\prime}$. E. long. $8^{\prime} 3^{\circ}$.

LAVACRUM, in Botany, a name given by fome authors to the common wild teafel, or dipfacus fylvefirit major, Ger. Emic. Ind. 2.

## LaUADEROS. See Lavatoni.

LAVAGNA, in Geograpby, a fataport town of Genoa, at the mouth of a river of the farne mme, which rifes in the Apennines; is miles IV.N.W. of Brugnato.

LAVAL, a city of France, and capital of the department of the Mayenne, fit:!ated on the river Mayeane. The number of inhabitants is ellimated at If, 154 ; the ealtern divifion containing 6658, and the canton $15,555,07$ a territory of $x_{45}$ kiliometres, in 9 communes; and the weltern divifion comprehending 7496, and its canton 15,000 , on a territory of $122 \frac{1}{2}$ kilionetres, in 6 communes. In the town and its envirens are manufactures of linen, which yield a confderable commerce. N. lat. $48^{\circ} 5^{\prime}$. W. long, $0^{\prime} 4 \mathrm{I}^{\prime}$.

LAVAMUND, a town of the duchy of Carinthia, on the Drave; the fee of a bifhop, fuffragan of the archbifhep of Salzburg; 24 miles $\mathbf{E}$. of Clagenfurt. N. lat. $46^{\circ}$ 44' E. long. ${ }^{1}{ }^{\prime} 37$.

LAVANDULA, in Botany, Lavender; fo called from the Latin word lavo, to wafh or befprinkle, alluding to its ancient ufe in baths or fomentations, or to that of its diftilled water in more modern times. Linn. Gen. 290. Schreb. 386. Willd. Sp. Pl. Vo 3. 60. Mart. Mill. Dict. v. 3. sit. Hort. Kew. ed. 3. v. 3.382. Sm. Prodr. Fl. Grace. Sibth. v. 1. 399. Juff. 113. Tourp. t. 93. Lamarck Illuftr. t. 50. Grertn. t. 66. (Stxebas ; Tourn. t. 95.)-Clafs and order, Didjnamiaz Gymnofpermia. Nat. Ord. Verticillata, Linn. Labiata, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, ovate, ob fcurely toothed at the orifice, fhort, permanent, with a braciea at its bafe. Cor. of one petal, ringent, reverled; tube cylindrical, longer than the calyx; limb fpreading; its larger lip turned upwards, cloven, fpreading ; the other directed downwards, in three roundifh, nearly equal, égtnents. Stam. Filaments four, within the tube of the corolla,
fhort, pointing downwards, two of them fhorter than the relt ; anthers Imail. Pif. Germen four-cleft; Alyle threadflaped, the length of the tube; ttigma of two obtufe co. hering lubes. Perio. nome, except the calyx, which proteets the fceds, its mouth being clofed. Seeds four, obovate. Eff. Ch. Calys ovate, obfcurely toothed, attended by a bractea. Corolla reverfed. Stamens enclofed in the tube.

Obf. The Stactius of Tournefort differs from his Iaavandula, in having the flowers ranged in many rows on the fpike, and the whole crowned with an ornamental tuft of hloral leaves.

Six fpecies are defcribed in the latelt edition of Linnzus, eight in Willdenow, all of them admitted into the new Hortus Kewenfis, but the laft in the litt erroncoufly. The reft are for the molt part known and eiteemed in every garden or green-hcufe. All are flurubby, with blue or purplifh, fragrant, fpiked flowers, and their foliage is likewife aromatic, generally of a grey or hoary-green, narrow, eithę fimple or compound. The fpike is fupported on a longifln, naked, fquare falk.

1. L. Spica. Common Lavender, or Spike. Linn Sp. Pl. 800. Woodv. Med. Bot. t. 55. (Lavandula; Ger. em. 583, 584. f. I-3. Rivin. Monop. Irr. t. 54. f. r, 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 feent when dried. To be "laid up in lavender" is become proverbial for any thing ftored up with peculiar care. The effential oil and dittilled water are fo gencrally ufed in perfumery, as to be no unimportant articles of commerce. The compound fpirituous tircture, or lavender drops, is a popular cordial, very. commodious for thofe who wifh to indulge in a drani, undel the appearance of ant elegant medicinc. This plant varics in the breadth of its laves', from linear to lanceolate, inclining to obovate; hence the old writers defcribe and ligure two kinds. The flowers are occafionally white, which allo they have not omitted to notice.
2. L. Stiechas. French Lavender. Linn. Sp. Pl. 800. (Strechas arabica; Rivin. Monop. Irr. t. 55. St. five Spica hortulana; Ger. em. 585)-Leaves linear, revolute, hoary. Spike clofe, crowned with a coloured leafy tuft. Bracteas fomewhat three-lobed.-Native of Spain, Greece, the fouth of France, and the north of Africa. It will not bear our winters without the fielter of a greenhoufe. The leaves are much fmaller than in the fermer, more ftrongly revolate. Spiles uninterrupted, fhort, and thick, on but fhortifh flalks, their bracteas more or lefs dif. tinetly three-lobed, purplifh and woolly; thofe which crown the top of the fpike, greatly dilated, wavy, undivided, of a beautiful purple, much paler than the flowers; ravely wanting.
3. L. viridis. Madeira Lavender. L'Herit. Sert. Angl. 19. Ait. Hort. Kew. n. 3. Hoffm. and Link Lufit. v. x. 91. t. 4.-Leaves linear, revalute, rugofe, villous. Spike clofe, crowned with a leafy tuft. Bracteas undivided. Native of Madeira, from whence it was fent to Kew by Mr. Mafton in 1777. It differs from the laft in its rugofe, green and villous, not hoary, leaves, its undivided bracteas, and its green, not purile, crown of the fpike.
4. L. dentata. Tooth-leaved Lavender. Linn. Sp. Pl. 8:. Curt. Mag. 400. t. 40I. (Strechas folio ferrato ; Ger. em. 586.)-Leaves linear, finely pinnatifid, pectinate. Spike clofe, with a leafy crown. Native of Spain, the north of Africa, and fome parts of the Levant, not of Greece.The very neatly-toothed leaves diltinguifh this fpecies Its fpikes ftand on long ftaiks, and are crowded, pale, with all the brafleas large, coloured, and fomewhat membranous, a fers

## L. $\triangle$ VANDULA.

Few at the top being rather the largef, and deftitute of flowers, as in the two lalt. The corolla is often white. This is one of the fpecies that has been longett cultivated in England, having been preferved in the dwelling-houfe before green-houles or thoves were invented.
5. L. pinnata. Pinnated Lavender. Linno fil. Diff. 9. t. I. Am. Acad. v. 10. 52. t. 2. Curt. Mag. 401. t. 400. Jacq. Mifc. v 2. 318. Ic. Rar. t. ro6.- Leaves deeply pinnatifid; their fegments wedge-fhaped, obtufe, nearly entire. Spike linear, fomewhat branched.-Native of Madera, from whenee Mr. Maffon fent it in 1777. The leaves are finely hoary, with little fcent, elegantly pinnatifid, and diltinguithed by their obtufe wedge-like fegments. The Jibiks ftand on very long ftalks, and are much more flender than any of the former, often compound. The bradeas are imbricated, uniform, ovato-lanceolate, pointed, coriaccous, not membranous, llightly coloured, and there is no leafy crown at the fommit. The corolla is of a delicate blueifh-purple, like the Common Lavender, but larger and more fhowy.
6. L. multifilla. Cut-leaved Canary Lavender. Limn. Sp. Pl. 8ou. (L. folio multilido; Rivin. Monop. Irr. t. 54 f. 3. Strechas multitida; Ger. em. 585.)-Leaves doubly pinnatifid, hoary. Spike ovate, mofly fimple. Bracteas woolly, elliptical, with diftant ribs, - Native of Spain, Barbary, and the Canary illands. One of the fpecies longelt cultivated in England, though it requires protection in winter. The Hortus Kewenfis marks this plant as bierto nial, and we have a French fecimen marked anoual. It has certainly more of an herbaceous than fhrubby appearance. The leaves are hoary, doubly and very deeply pinnatifid, with decurrent fegments, whofe extremities are acute, and in fome meafure elliptical. Spikes rather ovate and thick, very rarcly, if ever, producing a fmall branch or two from the bottom. Bratleas membranous, broadly elliptical, bcIprinkled with wool, furnifhed with three ftrong ribs, equally difant 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. no 7. (L. folio longiori, tenuiùs et elegantius diTecto ; Tourn. Init. 198. Comm. Rar. t. 27 .)-Leaves doubly pinuatifid, with linear fegments, nearly fmooth. Spike linear, moftly branched and interrupted. Bracteas firioothin, ovate, with approximated ribs.-Native of the Cazaries, long known in gardens. The flem is fhrubby. Leazes with finer, more linear, and greener fegments than in the laft. The narrownefs and branching nature of the Jpikes more accord with L. pinnata than with mullifda, with which latter this fpecies has long been confounded. The brateas alfo molt refemble thofe of pinnata, but are more membranous, and far lefs hoary. Their ribs generally three, fometimes five, are always clofer together than in multifida.

The eighth fpecies of Willdenow, L. carnofa, Linn. fil. Diff. 9. t. 2. Am. Acad. v. 10. 52. t. 3. (Katu-Kurka; Rheede Hort. Mal. v. 10. İ9. t. go.), found by Koenig on dry walls and rocks at Sadrafs in the Eaft Indies, and fent to Kew in 1788 by fir Jofeph Banks, where it is kept in the Aove, being a tender biennial, is moft certainly not a Lavandula, but a Plectranthus, as its habit, and the large deflexed upper fegment of its calyx, both evince. See Plectranrifus.

Lavandula, in Gardening, comprifes plants of the flarubby evergreen kind, of which the fpecies cultivated are, the common lavender (L. ficica); the French lavender (L.. ftrehas) ; the tooth-leaved lavender (L. dentata).; and the Canary lavender (L. multifida).
The firit fort has varieties with narrow leaves with blue
flowers, and with white flowers willi broad leaves, and desarf lavender.

It may be remarked that this \{pecies is the common lavender; but the narrow-leaved variety with blue fowers is the fort cultivated for its flowers for medicinal purpofes.

And that the broad-leaved fort has much fhorter and broader leaves, and the branches are fhorter, more compact, and fuller of leaves; it continues feveral years without prose ducing flowers ; and when it does, the leaves on the floweringttalks approach nearer to thofe of the common lavender, but are ftill broader; the ttalks grow taller, the fpikes are loofer and larger, the flowers fmaller, and appear a litte later in the fealon.

The fecond kind has varieties with white flowers; and with purple flowers.

The fourth fpecies has a variety which rifes with an upright, branching, fquare taik, four feet high; the leaves longer, and cut into narrower fegments than the Spatiila plant ; they are of a lighter green, and almolt finooth; the naked flower-ftalk is alfo mach longer, and termmated with a clufter of fikes of blue flowers; at two or three inches below thefe are two fmall fpikes, one on each lide; the flowers are fmaller than thofe of the firit fort.

Method of Culture-- All the forts are readily increafed, by planting lips or cuttings of their young fhoots in the fpring: With the firft two forts, a quantity of flips or cuttings fhould be taken off in the early fpring, as March or April, from three or four, to fix inches long, flripping off the under leaves, then planting them in a fiady border, four inches afunder, giving a good watering, and repeating it occafionally in dry weather. When the plants are well rooted in fummer, they thould be tranfplanted 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 firlt fort is intended to produce flowers for economical purpofes, it thould be planted in rows, two or three feet afunder, and about the fame dittance in the rows, or in a fingle row one or $t$ o feet afunder, along the edges or divifions of garden-grounds, in a fort of edging or dwarf hedge; in either of which modes the plants grow freely, continuing in root, ftem, and branches feveral years, and produce abundance of fikes of flowers annually for gathering in the latter end of fummer; the culture afterwards is principally to cut down any remaining decayed: flower-ftalks in antumn, pruning or cutting away ang diforderly out-growing branches at top and fides, and digging the ground occafionally in fpring or autumn along the rows of plants.

In regard to the fecond fors, it may alfo often be raifed from feeds, which fhould be form in a bed of light earth in the early fpring, and raked in evenly with a light hand: The plants rife in about a month, when, if there be dry weather, water fhould be given; and after they are three. inches high, they fhould be pricked out in beds, half a foot apart, watering them as they require, until frefly rooted, They fhould itand here till the following fpring, and then. be thinned out, and planted where they are to remain.

The third and fourth forts may be increafed by flips and cuttings, planted in pots, in the early fpring months, and placed under frames, due water, and fhade from the midday fun, being given till they are rooted; when a little advanced in growth, tranfplanted into feparate fmall pots, and managed as other green-houfe exotic plants.

The two firlt forts are ufeful for their fine fpikes or flowers, as well as ornamental in affemblage with other fhrubby plants, in the borders and clumps of pleafuregrounds; and the two laft forts in the green-houfe collection
with other plants. Thofe defigned for firubberies or other fimilar places, being previoully raifed to fome tolerable buthy growth, and a foot ligh or more, flould be planted either in the early autumn, or in the fpring, difpofing them lingly at proper ditlances in the fronts of the clumps, borders, \&c. Sde Lavindea.

Lavandula, Lavereler, in the Maleria Mfedica. The common lavender, or lavandula ípica, was formerly confidered, fays Wuodville, as a fpecies of Nardus, and appears to be the pfeudo-nardus of Mathiolus and Pliny. This plant, which grows fponaneounly in many of the fouthern parts of Europe, appears from Turner to have been cultivated in England previoufly to the year 1568 . Thefragrant fmell of the flowers is well known, and to molt perfons is agreeable; to the talte they are bitterifh, warm, and fomeqwhat pungent : the leaves are weaker, and lefs grateful.
The thowers and fummits of the narrow-leaved or common lavender are, in a very eminent degree, cephalic and nervine. They are often employed as a perfume, and medicinally as mild ftimulants and corroborants, in palfies, vertigoes, lethargies, and tremors of the limbs, both internally and externally:

The flowers are fometimes ufed in the form of a conferve, into which they are reduced by beating them, while frefh, with thrice their weight of double relined fugar. Water extracts by infution hearly all the virtue both of the leaves and Howers: in dillillation with water, the leaves yield a fmall portion of effential oil; but the flowers, in their moft perfect mature fiate, about one ounce from fixty. Woodville obferves, that in order to obtain the largeft quantity of effential oil from thefe and molt other flowers of this kind, they fhould be allowed to grow to their full maturity, and be dried for fome time. This oil is of a bright yellow colour, a very pungent talke, and poffeffes, if carefully dittilled, the fragrance of the lavender in perfection: it is given internally from one drop to five, and employed in external applications for itimulating paralytic limbs, and for detroying cutaneous infects. It is alfo faid, that if Spongy paper be dipped in this oil, and applied to the parts, it immediately kills the pediculi inguinaies. Rectified fpirit extracts the virtue of lavender more completely than water. The fimple fpirit of lavender, prepared by pouring a grallon of proof fpirit on two pounds of the frefh gathered flowers, adding water fufficient to prevent empyreuma, macerating for 24 hours, and ditilling a gallon by a getatle fire, is richly impregnated with the fragrance of the flowers. More compounded fpirits, in which other aromatics are joined to the lavender, have been dittinguifhed by the name of Englifh or palfy drops: the college of London ( 1809 ) directs three pints of the fimple fpirit of lavender, and one pint of firits of rofemary, to be digetted on half an ounce of cimamon, 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 ftraining; the college of Edinburgh, to the fame quantity of both fipirits, orders one ounce of cinnamon, two drams of cloves, half an ounce of nutmegs, and three drans of red fanders. Thefe preparations are taken internally on fugar or in any convenient vehicle, from ten to one hundred drops, and ufed externally in embrocations, \&c.

The medicinal virtue of lavender refides in the effential oil, which is fuppofed to be a gentle corroborant and Itimulant of the aromatic kind; and is recommended in nervous debi1 lities 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 ftimulant to the nervous fyttem; and smong the others of this order, named cephalics, the la-
vender has a very good and perhaps the beft title to it." And he further fays, "it appears to me probable, that it will feldom go farther than exciting the encrgy of the brain to a fuller impulfe of the nervous power into the nerves of the animal functions, and feldom into thofe of the vital. It was, however, with great propriety, that profeflor Murray diffuaded its ufe where there is any danger from a thimulus applied to the fanguiferous fyltem. It is however fill probable, that lavender commonly itimulates the nervous fyitem only, and therefore may be more fafe in palfy than the warmer aromatics, efpecially if the lavender be not given in a fpirituous menftruum, or along with heating aromatics, which however is commonly done in the cafe of the fpiritus lavendule compofitus." The officinal preparations of lavender are the effential oil, a fimple fpirit, 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 diftillation almoof thrice as much effential oil ; but the flavour of the oil and of the plant itfelf is much lefs grateful: the oil is likewife of a much darker colour, inclining to green. This oil, mixed with $\frac{3}{4}$ ths of rectified fpirit, or oil of turpentine, was the "Oleum fpicæ," formerly highly celebrated as an application to indolent tumours, uld fprains, difeafed joints, \&ic. See Oil of Spike.
LAVANGE, in Geography, one of the Virgin illands in the Weft Indies; three miles S.E. from the ifland of St. Thomas.
LAVANSAARI, an illand of Ruffia, on the coaft of Livonia, So miles from the capital, four miles and a hale long, and two broad, furrounded on the N.W. fide by iflets and fhallows, having three tolerable harhours, and occupied by about 40 families. Some patches of foil are cultivated, and in the middle of the ifland is a fmall lake.

LAVANT SEE, a lake of Stiria; mine miles E: of Neumarck.
LAVARA, in Ancient Geograply, a town of Hifpania, 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 diftrict of Nérac. The place contains 928 , and the canton 9482 inhabitants, on a territory of $182 \frac{1}{3}$ kiliometres, in 13 communes.
LAVARETUS, in Iclithyology, the name of a fmall fifh called by fome the gang $f \mathrm{f} / \mathrm{h}$, and the rhingau, and by Marcgrave the curimata. It leems of a middle nature, between the trout and herring kind, and is caught in valt quantities, in the months of March and April, in feveral of the lakes in Germany, and is pickled, and fent to different parts of the world. It feldom grows to more than four inches long.

## Lavaretus. See Salmo Lavaretus.

Lavater, Jonn Gaspard Christian, in Biogra. ply, was born at Zurich in 1741. He was intended for the Proteflant miniitry, and entered upon holy orders in 1761. He acquired an early reputation by the eloquence of his pulpit difcourfes, and the zeal and benevolence with which he fulfilled the duties of his functions. He felt an early propenfity to read the human countenance, and frequently exercifed the pencil in fketching fuch features as had made a particular impreffion on him; which he fudied with great attention. Accident led him to the ftudy of phyliognomy ; ftanding at a window with Dr. Zimmerman, he was led to make fome remarks on the fingular countenance of a foldier that was paffing by, which induced the phyfician to urge him to purfue and metbodize his ideas. He accord-
ingly began the purfuit, and in procefs of time, with the natural progrefs of an enthufiaftical mind, acquired not only a fondnefs for the ftudy, but a full conviction of the reality of the phyfiognomical fcience, and of his own great difcoveries in it. In 1776, he publifhed the firlt fruits of bis labours in a quarto volume, entitled "Fragments." He took in them a wide range of inquiry, and carried his ideas of phyfiognomy beyond the obfervation of thofe parts of the countenance which exhibit to a common eye the impreffions of mental qualities and affections, and maintained, as a leading pofition," that the powers and faculties of the mind have reprefentative figns in the folid parts of the countenance." Two more volumes appeared in fucceffion, which prefented a moft extraordinary affemblage of curious oblervations, fubtle and refined reafoning, delicate feeling, and philanthropical and pious fentiment, together with a large admixture of paradox, myfticifin, whim, and extravagance. The whole is illuftrated with a great number of engravings; many of which are highly finifhed and dingularly expreflive. The work was foon tranflated into the French and Englifh languages, and for a time became the favourite topic of literary difcuffion. The work now is rarely referred to except for the plates; the fcience itfelf is gone into utter neglect. Lavater is well known for a work entitled "Aphorifms on Man," of which an Englifh trauflation was publifhed in 18mo. in the year 1788. He was a zealous Chriltian, and tranflated into the German language " Honnet's Enquiry into the Evidencez of Chriftianity." His popularity as a preacher and paftor was extremely great at Zurich, where the people exhibited to him tokens of the higheft refpect and the molt affectionate seneration, and he was applied to by perfons of all ranks as the arbiter of controverlies among them. His moral character was exemplary, and his ardent zeal for doing good was fcarcely at any time furpaffed. No man was ever a more determined oppofer to tyranny and intolerance in every fhape; he had the true Swifs zeal for liberty. This noble firit rendered him a friend to the French revolution at the outfet, but when the republican culers began to difplay a fyltem of rapine and extortion, and to extend this even to Switzerland, he was the boldelt of their antagonits. When Zurich was itormed in 1797, he rufhed into the flreets, and received a fevere wound in the breall from a Swifs foldier, on whom he had conferred important benefits. From the effects of this he never entirely recovered; but the activity of his mind was unfubdued till a fhort 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 thefe were an indefatigable placability, and an inexhauftible love for his enemies. Monthly Mag. Ann. Regiter.

LAVATERA, in Botany, fo named by Tournefort, in the Memoirs of the Academy of Paris for 1 106 , after Dr. Lavater, a phyfician of Zurich, who is faid to have written nothing on the fubject 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. Juff. 272. Cavan. Diff, SG. Lamarck. Illuftr. t. 582. Gxertn. t. 136.-Clafs and order, Monadelphia Polyandria. Nat. Ord. Columnifera, Linn. Malvacea, Juff. Gen. Ch. Cal. Perianth double; the outer of one leaf, three-cleft, obtufe, fhorteit, permanent; inner of one leaf, cut half way down into five fegments, fharper and more erect, likewife permanent. Cor. Petals five, inverfely heart-fhaped, flat, fpreading, their lower parts attached to the tube of the filaments. Stann. Filaments numerous, united
below into a tube, feparating loofely at its top and fides, anthers kidney-fhaped. Pif. Germen fuperior, orbicular depreffed; Atyle cylindrical, fhort; ftigmas feveral, from feven to fourteen, brittic-fiaped, as long as the flyle. Peric. Capfules numerous, equal in number to the thigmas, of two valves, opening inwards, ranged in a depreffed circle round the columnar receptacle, at length deciduous. Seeds folitary, kidncy-fhaped.

Eff. Ch. Calyx double; the outer threcocleft. Capfules. numerous, ranged in a circle, fingle-feeded.

One of the moft handfome of the malvaceons order, at lealt of thofe found in Europe, to which quarter of the world, and the north of Africa, the whole genus is confined; for the Linnzan $L$. americana is no other than Sida abutiloides of Jacquin, and Willdenow, n. 48 . Light fpecies, exclufive of this, are detailed in Syft. Veg. ed. It ; Willdenow has twelve, feven of which are fhrubby, five herbaccous and moftly annual.

In the firt fection are
L. arborea. Sea Trec-Mallow. Linn. Sp. Pl. 972. Cavan. Diff. t. 139. f. 2. Engl. Dot. t. 184r.-Stem arborefcent. Leaves downy, plaited, with feven angles. Flowerttalks axillary, cluftered, fingle flowered.-Found upon rocky cliffs on the fouth-weft coaft of England and caft coaft of Scotland, as well as in other parts of Europe, flowering in July and Auguft. It is naturally biennial, though of a flrubby habit and above fix feet high, for it bloffoms but once, though ic will, in a garden, fometimes furvive many winters before that event takes place. The flen is round and thick, branching at the top chicfly, where it forms a leafy head. The leaves are alteruate, ftalked, pliable and downy, of feven fhallow crenate lobes. Flawers numerous, axillary, purple, very like thofe of the common Malva fyvefris, but rather more handfome.
L. triloba. Three-lobed Tree-Mallow. Linn. Sp. Pl. 972. Jacq. Hort. Vind. v. I. 30. t. 74.-Stem fhrubby. Leaves rounded, crenatc, fomewhat heart-fhaped, firghtly threelobed. Stipulas heart-fhaped. Flower-thalks aggregate, fingle-flowered.-Found on the coatts of Spain and France. With us it is a greenhoufe plant, not eafily kept nor much valued, being far more beatuful on its native rocks, where the light hoary green of its copicus foliage, is prettily contralted with the large, very delicate, rufe-coloured foskers. The broad fipulas are remarkable.
L. maritima. Soft Sinsle-flowered Tree-Mallow. Gouan. Illuftr. 46. t. 2x. f. 2. (Althæa frutes Clufii; Ger.em. 933*) -Stem flirubby. Leaves rounded, crenate, bluntly angular, foft and downy. Stalks axiliary, folitary, fingle-flowered.Native of Spain and the fouth of France. Linnæus did not diltinguifh its fynonyms from the latt, though it differs abundantly in the rruch greater foftnefs of the liaves, want of fipulas, and the folitary fower-foulks. The flowers are large and elegant, of a light.purple with dark claws. We have feen this fpecies bloffoming in Mr. Angeritcin's fine confervatory at Blackleath, but it finds no place in the Iftedition of Hort. Kew. or the 5 th 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-4talks axillary? fingle-flowered.-Native of Hungary, 'Tartary, Germany, \&c. about hedges; a hardy perennial in our gardens, flowering from July to Septenber, and propagated exher by root or by feed; yet as Curtis obferves "it is rarely met, with in any of our collections;" poflibly becaufe the trimefris is preferred. The flems are fews ereet, three or
four feet high, clothed with fhort foft hairs. Laaves falked, dependent, but flightly downy. Flowers on long folitary ftalks, with large, pink, veiny petals, inverfely heart-flaped, their linufes "puckered" as Curtis fays ; but this is not reprefented by Jacquin in his wild plaut, and is perlaps an in. dication of luxuriance only.
L. cretica. Small-flowered Lavatera. Linn. Sp. P1. 973. Jacq. Hort. Vind. v 1. 15. t. 4 I , -Sten herbaceous, rather hairy. Leaves acutely five-lobed. Flower-talks axillary, aggregate.-Native of Crete, cultivated by Miller in 1768, and we believe ftill preferved in Chelfea garden, coming up fpontaneoully from feed, the root being annual. There is nothing to recommend it to gencral admiration, the flowers being far lefs ornamental than the wild Malva fylvefris, which the plant refembles in herbage. We have a fipecimen from the Goettingen garden named Lavatera fylveffis of Link.
L. trimefris. Spanilh 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 fmocthith, heart-fhaped, angular ; the lower ones rounded. Flower-ftalks folitary, fhorter than the leaves.- Native of Spain, France, and the Levant, a hardy annual in our gardens, where it is raifed without trouble, producing abundance of large, pink or white, very fhowy bloffoms, all fummer long. The fem is branched, two feet high, rough in the upper part efpecially, with fimple deflexed Jairs. The leaves are nearly fimooth on the upper fide, more or lefs downy beneath, all heart-fhaped; the upper ones molt angular, the lower more sounded, but ttill rather lobed. Flower-falks hairy, fhorter than the leaves.
L. punciaht. Dotted-flalked Lavatera. Allion. Auctuar. 26. Willd. n. 11. (Malva folio varie; Bauh. Prodr. 137. 2. 137.)-Stem herbaceous, rough with ftarry points. Lecaves downy; the lower ones rounded, the upper hattate. Flower-talks folitary, elongated.-Native of the country about Nice, according to Allioni, who firft, among modern botanifts, determined this very diftinct fpecies, but did not advert to Bauhin's fynonym, which Linnæus had referred to the preceding, but which, from the excellent figure and defcription, we have no hefitation in applying to this. $L$. pungala is an annual, diftinguifhed from the lat by its ftarry pubefcence, much more downy foliage, and much finaller purple flowers, on longer and more flender ftalks. The leaves alfo grow on long foottalks, and differ greatly in fhape, the lower ones being heart-fhaped, fhort and rounded, fightly lobed; fome higher up deeply and fharply five-lobed; but molt of the upper ones haltate; all are crenate. The caly $x$ is foft and downy.

Lavatera, in Gurdening, comprehends plants of the herbaceous perennial kinds, of which the fpecies moft generally cultivated are the Cretan lavatera (L. cretica); the common annual lavatera (L. trimeftris) ; the great-flowered lavatera (L. thuringiaca); the tree lavatera or mallow (L. arborea) ; the downy-leaved lavatera (L. olbia); the three-lobed lavatera (L. triloba); and the Portuguefe lavatera. (L, lufitanica.)

The firtt fort varies with red flowers, with white flowers, and with purple flowers.

The fecond kind has likewife feveral varieties.
Method of Culture.-The firt two, or annual forts, are readily increafed, by fowing the feeds in a light foil in the places where the plants are to remain, or in pots, in the foring feafon, as about the latter end of March, in patches of four or five in each, giving them water occafionally when the weather is dry. When the plants have attained a little growth, they mould be thinued out to one or two of the ftrongelt plants. When any are to be removed to other
places, it fhould be done at this period, and with a little carth about the roots, due water and fhade being given; but they fellom fucceed well by tranfplanting.

All the other fhrubby peremial forts may likewife be increaled by fowing the feeds, and managing the plants in the fame mamer. Molt of thefe forts will not laft more than two years in this climate, unlefs the foil be dry, when they contime 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 greenhoufe during the feverity of the winter feafon.

Thefe plants are highly ornamental in different parts of pleafurc-grounds. The annual forts have great beauty, in their flowers being large, numerous, and conficuous, and are proper where large thowy flowering plants are required. The peremnial kinds are alfo fuitable for large borders and firubbery compartments, having large, ftraight, upright, durable flems, terminated by branchy bulhy heads, and very large foft foliage; that form a variety in affemblage 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, inftituted in memory of the day when the worfhip of Cybele was transferred from Phrygia to Rome, and celebrated on the twenty-fifth of March.

LAVATORY, or Lavadeno, a name given to certain places in Chili afd Peru, where gold is got cut of earth by wafhing.
M. Frezier gives us the following defcription of the lavatories of Chili: they dig deep into the earth, in fuch places as they have reafon to expect gold in ; and, in order to facilitate this digging, they turn a flream of water upon the fpot, loofening the earth as much as poffible all the time, that the current may have the greater effect, and tear up the earth more ftrongly. When they are got to the earth they want, they turn off the ftream, and dig dry-
The earth that they now get is carried on mules, and difcharged into a bafon, made fomewhat in the manner of a fmith's bellows, into which a little rivulet of water runs with a great deal of rapidity, diffolving the paris 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 bafon, and mix with a fine black fand, where they are alnoft as much hidden as they were before in the earth. See Hifory of Gold.

Sometimes they ind very confiderable pieces in lavatories, particularly fome pieces of 24 ounces oach. There are feveral lavatories where they find thefe pepitas, or pieces of virgin gold, of a prodigious fize. Among others, they tell of one that weighed $5: 2$ ounces, bought by the couns de la Moncloa, viceroy of Peru.

Nine or ten leagues to the ealt of Coquimbo are the lavatories of Ardacoll; the gold of which is 23 carats fine. Their work here always turns to great probit, excepting when the water fails them. The natives maintain that the earth is creative (creatrix); that is, it produces gold continually; becaufe, after having been wathed fixty or eighty years, they find it impregnated afrem, and draw almoft as much out of it as at firft.

LAVATRIS, in Ancient Gecgraply, a piace of Great Britain, mentioncd in Antonine's 5 th Iter, fituated between Cataractoni or Cataract, and Verteris or Bough, and fuppofed to be Bowes in YorkRhire.

LAVAUR, in Geography, a town of France, and chief place of a diftrict, in the department of the Tarn, before the revolution the fee of a bihop; 18 miles N.E. of Tou-

## I. $\Lambda$ U

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Thonfe. The place contaius 6237, and the canton 1 y, 730 in . halnitats, on a territory of $252 \frac{1}{2}$ kiliometres, in 22 communcs. N. lat. $43^{\circ}$ frt. E. long. $1^{\circ} 53^{\prime}$.

CAUBACH, a town of Germany, in the priscipality of Solms Lambach; to miles N.E. of Mentz. N. lat. $50^{\circ} 32^{\prime}$ F: long. 8: $59^{\prime}$.
LAUPAN, or Lrbas, a town of Iufatia, on the river Qucils, furrounded by a wall and fume battions. The trade of the place in cloth and liuen is conliderable; 13 mikes ES.E. of Gorlitz.

LAUCHA, a town of Sxxony, in Thuringin, on the Unftrutt; 32 miles N.E of Erfurt. N. lat. $51^{\circ} 14^{\prime \prime}$. E. long. $1 \mathrm{I}^{3} 47^{\prime}$.

LAUCHHEIM, a town of Germany, belonging to the Teutonic knights; 10 miles W. of Nordlingen. N. lat. $4^{3} 5^{3} 50^{\prime}$ E. long. $10^{\circ} 14^{\prime}$.

LAUCHSTADT, a town of Saxony, in the territory of Merfcburg ; 4 miles $W$. of Merfeburg. N. lat. $5 \mathrm{I}^{\text {² }} 25^{\prime}$. E. long. $12^{\circ} \mathrm{I}^{\prime}$ 。

LAUCKISSIEN, a town of Prufia, in the circle of Samland; 25 miles E.N.E of Konighberg.

LAUD, Whliam, in Biggraply, archbifhop of Canterbury, the fon of a clothier of Reading, in Berkfhire, was born in October 1572, and having received his grammar learning at the fchool of that town, he was fent to the univerfity of Oxford in $\times 589$, where he was entered of St. John's college. Of this college he was admitted a fellow, and at the proper perinds he took his degrees. In early life he was efteemed by all who knew him as a very forward, conlident, zealous perfon. He was ordained deacon in 1600 , and in the following year he took prien's orders, and read a divinity lecture in the college. It was about this time that he maintained the conftant and perpetual vifibility of the church of Chrit, derived from the apoltles to the church of Rome, and continued in that church till the reformation. In $160{ }_{3}$, he was chofen proctor of the univerlity, and in the fame year he was appointed chaplain to Charles Blount, earl of Devonihire. In 1604, he took lis degree of bachelor of divinity, and in the exercife which he performed on this occafion he maintained the necoffity of baptifm; and that there could be no true church without diocelan bifhops. From the drift of his difcourfe he was fuppofed to be frongly inclined to popery. Dr. Abbot had already been his antagonilt, and on this nccafion he mgde no fcruple of charging him with being a Papitt in the molt public manner, fo that it was fcarcely fafe to be confidered his friend and companion. In the fear $1605, \mathrm{Mr}$. Iand married the carl of Devonfhire, his patron, to Penelope, the late wife of lord Rich, who had been divorced from him for adultery. In juftification of himfelf, he contended that the innocent and guilty might lawfully marry again, after a divorce had been obtained. The part which 3ie took in this affair expofed him to much cenfure from the public, gave great offence to the fovereign, and made fo deep an impreflion on the mind of Laud, that he ever afterwards obferved the anniverfary of the marriage as a day of falting and humbliation. His firl preferment in the church was to the vicarage of Stamford, in Northamptonfirice, in the year $x 60 \%$, which led to other lituations of more value and importance. In I6ri, he was elected prefident of St. John's college, and very foon after was appointed one of lis majelty's chaplains. He had now great hopes of riling with rapidity to the higheft honours, but his expectations were fo completely difappointed, that in the year 16 r a he had determined to withdraw from the court. By the perfuafion of Dr. Neile, bifhop of Lincoln, he was induced to semain there another year; to keep up his feirits the pre-

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Late gave him a prebend in the church of lineoln, and, in the following year, the archdeaconry of Huntingdon. In 16,56, the king prefented 1)r. Laud to the deanery af Gloucelter, and at the fame time required hiun 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 fhould make their humble reverence to God not only at their firlt entrance into the choir, but at their approaches to the holy table, which he had removed from the middle of the church to the ealt end of the choir. Thefe changes gave great offence to many perfions on account of their fuperfliticus tendency, particularly to Dr. Mites Sniith, biflop of Glouceiter, who from that moment would never enter the church again fo long as lie lived. Laud now began to take an active past againt the Puritans; and he was a;fo very defirous to bring the church of Scotland to an uniformity with that of England: with this view lie attended the king in a journery to Scotland, but nothing was grained by the expentive tour, excepting that the king faw his commands neglected, and his authority contemned. Unon his return he was made a prebend of "Weftmintter, and in the following year he was nominated to the bifhopric of St. David's, chiefly through the interelt of the lord-keeper Williame, at the inftigation of the favourite Buckingham, to whom Laud had recommended himfelf. In the year $\mathbf{1 6 2 2}$, bifhop Lauid held a conference with Fifher, a Jefuit, before the marquis of Buckingham and his mother, in order to confirm them both in the Proteflant religion, with refpect to which they were then wavering. From this time a clofe in: timacy fubfilted between Laud and Buckingham, who made the bifhop his confeflor and counfellor ; and when he went with prince Charles into Spain, left him as his agent at court, with whom he maintained a frequent correfpendence. In the courfe of this, he mfinuated fome heavy charges agraind his friend, the lord-keeper Williams. This circumftance occafioned a fertled enmity between the two bihops, Williams accufing Laud of the deepelt ingratitude on that account. Laud correfponded with the duke of Buckingham during his journey to France, to bring about a merriage between the princefs Henrietta-ilaria and king Charles I. Supported by Buckingham's favoar, to whom he is charged with having rendered himfelf too fubfervient. bilhop Latud gained the confiduce of the new king, and it was baid that thefe two men flopped up both the king's cars from any other doctrines in clurch or ftate, but what was infufed by them. Laud was defired by king Charles to make out a lilt of the eminent divines with their principles and qualifications, that from this lift he might delect his chaplains, and others fur proxnotion in the church. Land quickly gave in his lift, of whom his friends had the mark O againt their names, for " orthodos," but thofe whom he did not delight to henour, he branded with a 1 , fignifying, that they were Puritans, and, as fuch, ought not to be trulted with any power whatever. At the coronation in 1626, Laud officiated as dean of Weftmintter, by the king's appointment, in the room of billop Williams, who was in difgrace. In the fame year he was tranlated from St. David's to the bifropric of Dath and Wells, and was alfo appoinsed dean of the chapel royal. In 1627 he was fiworn a member of the privy council, and, in 1628 , tranflated to the fee of London. By the advice of Laud all ecclefiaftical"preferments were given away, and the whole country was almoft entirely governed. Upoa the affaffination of the duke of Buckingham he prerailed on the king to fend to the judges for their opinion,

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" whether,

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"whether, by law, Felton might not be racked :" they returned a decided opinion, "t that he could not be racked by the laws of England." Bihop Laud was the molt active and leading member of the high-commifion court, the arbitrary and fevere proceedings of which were juftly odious to the nation. For an initance of the extreme rigour and cruelty of their proceedings, we refer to the article Leighton, a learned Scotch prelate, who was fentenced to itand in the pillory, and to have his cars cut off, and his nofe flit, and then to be imprifoned for life, on account of a book which he had written. No fooner was the favage fentence paffed, than bifhop Laud pulled off his cap, and gave God thanks for it. In the year $163^{\circ}$, bifhop Laud was elected chancellor of the univerfity 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 almoft all the known languages of the world, procured at an immenfe expence. In 1631, bifhop Laud undertook to repair and beautify St. Paul's cathedral, which he accomplilhed in a very magnificent ftyle; but to raife the money which was expended, he reforted to fo many oppreffive and unjuftifiable methods, that ii became the common proverb, that St. Paul's was repaired with the fins of the people. Laud thewed great zeal in obtaining the utmolt deference to all the external rites and ceremonies of the church, and he caufed the feveral churches, in which he took in intereft, to be adorned with all kinds of pictures, images, and altar-pieces, all which circumitances led the people to fufpect, that he was too much inclined to the papal religion, if he were not already a Papilt in his heart. This fufpicion was thill ftrengthened by his declaration, that in the difpofal of all ecclefialtical preferments, he thou'd give a moft decided preference to fingle men, fuppoling 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-houfe. While in Scotland, he took every opportunity of urging the clergy to conformity with the church of England, but in this he was completely unfucceffful. Almolt immediately after his return, Abbot, the archbifhop of Canterbury, died, and Laud was initantly appointed his fuccefior. He was, almoft at the fame moment, offered a cardinal's hat, which he declinec', but upon what grounds he refufed the honour is not known, though various motives have been affigned. He now carried matters very high, drove many of the French and Dutch Proteftants, to whole anceltors Edward VI. had given an afylum, out of the kingdon: and either imprifoned or filenced many worthy clergymen, who refufed to read the king's declaration for allow. ing lawful fports on Sundays after divine fervice. He was itill more fevere againft thofe who were any ways fufpected of puritanical principles. Some of them, by an exertion of arbitrary power, were fined, imprifoned, and even whipped, and kept to hard labour. Laud was, in 1635 , nominated to other high offices, among which was the office of a comminfioner of the treafury. He now procured the lord treafurer's Itaff for his friend Dr. Juxon, the bilhop 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 archbifiop was almoft conftantly engaged, they will be found in other articles of this work. (See BAstwick, Prynve, $\hat{S N C}^{\text {.) }}$ 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 10: there till exifted in the country the printing prefs, by meand of which his proceedings and charater, and the arbi-
trary meafures of the court, were expoled to the whole nation, in a fecret manner. He accordingly procured a decree to be made in the flar-chamber, which ordained, that the number of printers fhould be limited; and thofe who were allowed to follow the profeffion, fhould not be allowed to print any books of divinity, law, phyfic, philofophy, or poetry, till they had been licenfed by the archbimop of Canterbury, or the bifhop of London for the time being; upon pain of very grievous penalties. Thefe proceedings, though they might be ufeful to the court for a fhort time, created fo many enemies to the exifting flate of things, that there was great danger of fome fudden convulfion. Many of the beft men in the country, to avoid perfecution, retired to America for an afylum, and a multitude of others would have followed their example, had not the archbihop obtained an edict to prevent any one from leaving the kingdom without a licence for that purpofe. This was a degree of feverity fcarcely paralleled in the Chriftian world, but it anfwered no good end, for the people took a general difguft, and almolt the whole of England was filled with Puritans. Laud did not confine his arbitrary meafures 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 refiltance which led to the renewal of the folemn league and covenant, fubfcribed by king James, and the whole nation in the year 1590. The attempt made in $\mathbf{3} 637$, to force on the Scotch the new liturgy, was the firl ftep which called forth the open oppofition of all ranks. The king at firlt raifed a powerful army to reduce the covenanters to fubmilion, 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 Proteftant nobility and foldiers were not zealounly affected in his caufe, that he found himfelf compelled to feek for a general pacification. It was foon difcovered that the idea of war was not abandoned, but only deferred, and that the Englifh court were refolved to fubdue the fpirit of the people in Scotland. Laud and Strafford were the advifers of this refolution, and to raife fupplies, application was made to the Englifh parliament, which, after an interval of twelve years, was fummoned to meet at Weftminfter for that purpofe. The commons not only refufed to comply with the defires of the crown, but appointed committees to confider the grievances under which they laboured. The king wifhed them to commence with a fublidy bill, which they refufed; he at length diffoled the parliament, in great anger, before a fingle act was paffed. All the engines of arbitrary power were fet to work to raife money for the war, and thofe who refufed to comply with the demands made upon them were fined and imprifoned. The greater part of the odium of thefe oppreffions fell upon the archbifhop, of whom the populace exprefied their deteftation in the molt open way that they dared. On one occafion, viz. on May gth, 1640, a paper was pofted up, exhorting the London apprentices to attack the palace at Lambeth, but the archbihhop having had timely notice of their intentions, fruftrated their defigns, and difperfed the multitude, amounting to the number of 500 perfons. 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 ftill more againft the archbifhop. Another circumftance which contributed to encreare the number of the archbimop'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 refufed till. their grievances were redreffed. At length the neceffities of the ftate obliged the king to call a new parliament, and,
as foon as it met, the canons and conflitutions of the late convocation came before the houfe of commons. Thefe, being difcuffed, 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 fubject, and matters tending to fedition, and of dangerous confequence." In the courfe of the debates the archbifhop's character was warmly attacked, and in fome of the fpecches he was charged with the treafonable defign of fubverting the religion and laws of the country. On the next day articles againft the archbifhop, prefented by the Scotch commiffioners, were read in the houfe of lords, and then reported to the houfe of commons, in a conference between the two houles. The refentment of parliament broke out into a flame, and a motion was made and carried that he had been guilty of high treafon. Upon this, Denzil Hollis, fon of the earl of Clare, was immediately lent up to the bar of the houfe of lords, to impeach him in the name of the Commons of England, to inform their lordhips, that, in convenient time, they would bring up the particulars of their charge, and to sequeft, that in the mean time he might be committed to fafe cuftody. His grace being now commanded to withdraw, he requefted leave to fay "that he was heartily forry fur the offence taken againft him, but humbly defired their lordhips to look upon the whole courfe of his life, which was fuch, that he was very fure not one man in the houfe of commons did believe, in his heart, that he was a traitor." He was now committed to the cuftody of the gentleman ufher of the black rod; and on the 26th of February, fourteen articles were brought up from the Commons by fir Henry Vane, the younger. Hie was then committed to the T'ower, and in his paflage thither he had to undergo the loud and deep curfes of an enraged populace. One of the firft fteps taken againft him was levying upon his property a fine of twenty thoufand pounds, for his proceedings in the convocation held in 1640. In June 1641, he refigned the chancellorthip of the univerfity of Oxford, and in the following October, the houfe of lords fequeftered his archiepifcopal jurifdiction. His confinement in the Tower was very fevere, and he began to feel in his own perfon fuch fufferings as muft bring to his recollection what he, in the day of his power, had inflicted upon others. After an imprifonment 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 firft time, brought forward. Many of the charges were ill fupported, and much of the evidence was trifing and irrelevant. It fufficiently appeared, hovever, that he had laboured to extend the royal prerogative and the ecclefiatical power, to a degree that was utterly inconfiftent with the liberties of the people; that he had been zealous in enforcing the illegal claim of flipmoney; that he had committed perfons to prifon, and punifhed them without law; and that he had been guilty of many arbitrary, illegal, and cruel actions. Archbifhop Laud defended himfelf with uncommon fpirit, eloquence, and acutenefs, and with extraordinary prefence of mind. His counfel in their defence endeavoured to thew, that if the charges were true, they did not amount to treafon by any ctablifhed law of the kingdom. This juflification had its weight, and the lords, who were flaggered with the plea, deferred giving judgment, till the Commons thought fit to bring in a bill of attainder, which was, after much delay, paffed. To ftop the confequence of this, the archbifhop prefented the king's pardon under the great feal, but it was over-ruled by both houfes. By this bill the archbifhop was condemned to fuffer death, as in cafes of high treafor, and
all the favour he could obtain was to have lis fentence altered from hanging to decapitation. He met his death with great firmnefs on 'lower hill, on the roth of January. being then in the feventy-fecond year of his age. Mr. Hume, in fpeaking of the learning and morals of archbiftop Laud, fays" he was virtuous, if feverity of manners, and abltinence from pleafure, could deferve that name. He was learned, if polemical knowledge could entitle him to thar praife." In his government of the church, it has been juftly obferved, he difplayed a total want of charity toward; thofe who made the lealt oppofition to the ductrines and ceremonies eftablifhed by authority ; and under his countenance, the ftar-chamber wore all the horrors, and exercifed all the cruelties, of an inquifition. In ftate affairs his counfels were high and arbitrary, and he was very active in pro. moting thofe meafures which ultimately proved his own ruia. and that of the king. He was in fome cafes 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 invefted the univerfity with many: new privileges. He procured a charter for the town of Reading, founded in it an hofpital, and endowed it with a revenue of zool. per annum. The archbifiop publifhed fome fingle fermons, which have been reprinted fince in an oetavo volume. He printed a conference between himfelf and the Jefuit Fifher. His diary has been printed fince his death; and in the year 1700, was publifhed "An hiftorical Ac. count of all the material Tranfaetions relating to the Univerfity of Oxford, from Archbifhop Laud's being elected Chancellor, to his Refignation of that Office;" written by himfelf. His letters to Gerard John Voffius were printed in London in 1690 , and fome others may be found at the end of Dr. Parr's Life of archbifhop Uther. Biog. Brit. Toulmin's Edit. of Neal. Hume.
LAUDA, in Geograpby, a town of the duchy of Wurzburg, on the Tauber; 28 miles S.S.W. of Wurzburg. Alfo, a town of the duchy of Warfaw; 20 miles S.E. of Gnefna. It is called Laudica.

LAUDAMNAT, a town of Bengal; 12 miles S. of Nattore.
LAUDANUM, a name given by the chemifts to certain preparations, chiefly extracts of opium, on account of their excellent qualities; the word being derived from laudare to praife.
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 ftraining. It is obferved, that the degree of narcotic power of this preparation is nearly the fame as that of the ordinary tincture of opium, from which it differs, in having the extract for its balis, ia the addition of aromatics, and in the vehicle employed. The extract of opium, it is fuppofed, produces lefs confequent affeation of the brain and nervous fyttem than crude opium, and the fame effect feems to be further obviated by the atomatics which are joined to it. This is a compofition 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 ftill in ufe, and it poffeffes fuch advantages by the modification of opium it affords, as to jultify being reftored to the Plarmacopcia. See Opient.
LAUDAVA, in Geography, a town of Pruffia, in the palatinate of Culm ; 20 miles N.E. of Thorn.

LAUDER, a royal borough, in Berwickfhire, Scotland, is fituated on a river of the fame name, about 22 miles to the fouth of Edinburgh, and 24 from Berwick. It is

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now only a place of a mean appearance, and entirely dentitute of trade. Formerly, however, it was a place of very coifiderable note. It was conitituted a royal borough at a very early period, and for many years was dittinguithed as the refidence of royalty, and the feat of the Scottiin parliament. In the reign of king James III., when the parliament was convened to confuit upon the means of repelling the Englin invafion, the nobility were fo enraged at the conduct of the favourite mininiter, tir Robert Coclirance, that they hung him and his alfociates over Lauder bridge, in prefence of the king and his army. This town has five f.irs during the year. It joins with Haddington, Salburgh, Dunhar, and North Berwick, in fending a reprefentative to parliament. Near the town, on the filde of the river, is Laviderfort, built hy Edward I. of England, and now the principal feat of the earl of Latiderdale. In this mantion are feveral noble apartments, rich in ftucco work. One of them is very carefully preferved, as a curious example of the tailt of the age in which it was made. Many veltices of ancient Pititinc camps can fill he diftinctly traced in this neigh. bourliood. Several tumuli, alfo, are vilible on Lauder-Mwir, 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 riling 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 Spankli, Englifh, and Scottilh coins have likewife been diforered in different fields in this vicinity. The foil in the parifl of Lauder is light and fandy, and in a high ftate of cultivation. The country rifes gradually from the river, on both fides, to hills of a moderate height, which afford excellent pallure for sheep. Copper ore las been difcovered in different fpots, but is not rich enough to admit of being wrought with any. profpect of advantage. Slate is allo in plenty, but of an inferior quality. Adderlones and arrowpoints of fint, commonly called elf, or fairy arrosus, and feveral other itones of the moft fanciful thapes, are found here after hcavy rains. The whole parith, according to the parliamentary returns in 1800 , contained $3+9$ houifes, inhabited by ${ }_{7} 750$ perfous. Sinclair's Account of Scotland, vol. i. by the Rev. Dr. James Ford.

LAUDI Spinituall, Ital. the molk ancient melodies that can be found in Italy, fet to Italian words. It was the opinion of Father Meneitrier (furr les Drames en Mutique) that hymns, canticles, and mytteries, in the vulgar tongues of Europe, had their origin from the pilgrims who weit to the Holy Land. St. Francis d'Affife, born 1 182, is mentioned by Creccimbeni, and other Italian writers, among the firlt pious perfons of that country wlo exercifed their genius in compofing hymns and fpiritual fongs, called Lauuli, in the form of canzonets. Le Laudf, which were likevife Ealled lalde, lodi, cantici, or canticles, are compofitions in praife of God, the Virgin Mary, or the faints and martyrs. They refemble hymns as to the fubject, but not the characier and verificiction : hymns having been originally conttrusted on Greek and Roman models; but the laudi, or fpiritual fongs, are entirely of Italian invention.

A fociety for the performance of thefe religious poems was inftituted at Florence fo early as the year $\mathrm{I}_{3} 10$, the members of which were called laudgh, and lisudifit. In the fifteenth century this fpecies of facred poetry was very much eltemed and practifed, as is manifelt by the various collections that were made of them, one of which was printed 14 $4^{4} 5$. It the next century feveral volumes of them were publifhed, among which there are many poetical compolitions on facred fubjects by Politian, Bembo, Lodovico Martelli, and other eminent poets. (Quadrio, Storia d'Ogni Poef
rol. ii. p: 466.) In the spth century, though their favour was fomewhat diminihed, jet, befides a large volune compofed by Serafno Razzi, and publifhed by the nuthor, 1608 , there were many collections of thefe fpiritual fongs printed.

Crefcimbeni tells us that the company of laudfifi of St. Benedict, at Florerce, went to Rome during the time of the grand jubilee, in the year 1700, and fung through the ftreets in proceflion feveral laudi that were swritten by the celebrated Filicaia. In molt of the ancient collections, the melodies were prefixed to each of thefe fongs. They were at firlt little more than chants, and without bafe. However, according to the commentary on lwacaccio, by Sanfovino, publifhed at Venice, $15+6$, they were afterwards fung in many different parts. "There are in Florence," fays hee, "feveral Ichools of artizans and mechanics, among which are thole of Orfanmichele, and Santa Maria Novella. Every Saturday after nine v'clock thefe affemble in the church, and there ling 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 tinimes the fettival. And thefe fingers, who are called laudef, have a preceptor, whom they denominate their captain or leader."

This company flill fublifted in 1770, when we frequently heard them ling their hymas, through the theets, in three parts, and likewife in their church, accompanied by an organ. Of the antiquity of this intitution, as a MS, volume of Laudi Spirituali, which we found in the Magliabecchi library at Florence, is an indifputable proof, the preface, and a fpecimen of thofe ancient melodics, bearing date MCCCXXXVI. have been inferted in the General Hiltory of Mufic, vol. ii. p. $32 \%$.

LAUDICOENI, among the Romans, formed of laus, praife, and cana, fupper or entertainment, applauders, or perfons who, for a reward, attended the rehearfal of plays and urations, in order to raife, or join in the acclamation. See Acclamation and Applause.

LaUDON, Gidmox Envest, baron, in Biograply, was delcended from a refpectable family, origimally from Scotland, a branch of which fettled in Livonia, and there purchafed aneftate at 'lotzen, where the fubject of the following article was born in 1716. He difplayed, at an early age, a Itrong inclination for a military life, and being inftructed with this view, he entered, at the are of fifteen, into the Ruffian army as a cadet, and, in 1733, he was at the taking of Dantaic, where the king of Poand had fought refuge, in confequence of the diturbances which then prevailed in that country. He ferved three campaigns under count Munich againtt the Turks, and was prefent at the taking of Azof, Oczakow, and Chotzim. On the relloration of peace, he faid fome time at Peterfburgh, in hopes of higher promotion, but being difappointed in his expectations, he went to Vienna, and was appointed by the emprefs queen to a command in the corps of Pandours, then raifed by haron Trenk, and with thefe he proceeded to Bavaria. While he belonged to this corps he was feverely wounded, and taken priloner 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 ftudy 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 feveu years' war, which commenced in 1756 , he performed the molt noble exploits, which we cannot in this place give in detail. Towards the close of that war, he de-

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termined to make an attack on Schweidnitz. The night ap. pointed for the execution of this plan was the 3 oth of Scptember. Every preparation being made, Laudun barangued his foldiers, forbade them, under the feverelt penalties, to plunder the town, and promifed, in cafe of their obedience, to diltribute among them the fum of 100,000 rix-dollars. The guards exclaimed with one voice, "No, gencral, lead us on to glory, we do not want money." At two in the morning the fignal was given, and the firlt aflault made, and in four hours laudon was in poffeflion of the whole fortrefs. Although this achievement had been undertaken without the order of the Aulic council, the emprefs congratulated the victor in a letter written by her own hand, and fent him her pieture fet round with diamonds. On the conclution of peace in 1763 , the gencral retired to his eftates in Bohemia, but in 1760 the emprefs appointed him a member of the Aulic council of war, and in the following year he was elected a member of the equeltrian order of the empire, and in 1769 he was made commander-in-chief in Moravis. In 1770, when Frederic the Great paid a vilit to the emperor Jofeph at Neuftadt, the principal officers were invited to dine with the two monarchs. As the company were about to place themfelves at table, his Pruffian majelty faid to Laudon, "come general, and fit near me, I would rather have you by my fide than oppolite to me." In the war of Bavaria, in 1778 , he was promoted by the emperor to be field-marfhal, and entrutted to the command of the Auftrian army, which anounted to 50,000 men. The plans which he formed to wounteract the defigns of the enemy were worthy the reputation which he had before acquired. After the peace, Laudon again retired to his ettates, from whence he was again called, on the breaking out of the Turkith war, in $1 \% \$ 8$. He had the command of the grand army when it was refolved to reduce Belgrade; the archduke Francis was to be prefent at the liege, and the emperor, in a letter to Laudon, faid, that "his nephew could not be in a better fchool than under his Gideou." The attack commenced on the 15 th of September, and on the 3 oth it was determined that the place fhould be carried by florm. The affault began about nine in the morning, and at one the outworks were in poffefinon of the befiegers. The fortrefs till refufed to capitulate ; but, after a dreadful bombardment, by which moft of the enemy's canuon were filenced, the place furrendered. In confequence of this achievement, he was appointed generaliffimo of the whole Auttrian army, an office which had been conforred on no perfon fince the time of prince Eugene, and which gave him an unlimited controul over all the Auffrian generals, and even oyer the Aulic council of war. On his rezurn 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 Jofeph, 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 fuppreffion 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 themfelves to be invincible. The molt flriking feature in the character of Laudon was that dauntlefs prefence of mind, combined with daring intrepidity, fo eflential to the hero, and which can turn to the belt advantage any unexpected opportunity that occurs. Jofeph II. had a bult made of him, to be erected in the hall of the Aulic council of war, with the following infeription, "Gideunis Laudoni, fummi calfrorum prefecti, femper itrenui, fortis, felicis militis, et civis optimi exemplum, quad duces militefque imitantur, Jofephus II. Ange in ejus effigie proponi
voluit, anno $1-83 .{ }^{-1}$ After the capture of Betgrade, the cmpror took frum the lanily repofitory of the houfe of Aultria the large ftar of the Therefan order, and fent it to Laudon, with permiflion for him to wear it on his breaft; though by the llatutes it could only be worn by the grand matter of the order. Gen. Liog.
1.AUDS, Launes, the fecond part of the ordinary office of the breviary, faid after matins, though, heretofore, it ended the office of the night.

The laudes confitt principally of pfalms, hyonns, \& $\mathbf{c}$. whence they took their mame, from laus, laudis, praife.

LAVELANET, in Gcograply, a town of France, in the department of the Arricge, and chief place of a canton, in the diftrict of Foix ; 12 zniles N.E. of Tarafcon. The place contains 1200 , and the canton 12,83 I inhabitants, on a territory of $32-\frac{1}{2}$ kiliometres, in feven communes. N. lat. $42^{\circ} 56^{\prime}$. E. long. $1^{\circ} 55^{\prime}$.
LAVELLO, a town of Naples, in Daflilicata, the fee of a biflop, fuffragan of Bari; fix miles N . of Venofa.

LAVEN, a fmall ifland near the E. coatt of Luçon. N. lat.-14 12'. E. long. $124^{\circ} 6^{\prime}$.

LAUENAU, a town of Weitphalia, in the principality of Calenberg ; 15 miles N. of Hameln.

LAUENBURG, a town of Hinder Pomerania, and chief town of a lordhip of the farre name, fituated on the Lehe; $3^{6}$ miles W. of Dantaic, N. lat. $54^{\prime \prime} 32^{\prime \prime}$. E. long. $174^{2}$.-Alfo, a town of Germany, in the duchy of Saxc 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. $53^{\circ} 22^{\circ}$. E. long. $104^{\prime} 8^{\prime}$. See Sixe-Lavembergo.

LAVENDER, in Agriculture, a fmall fhrubby plant, fometimes cultivated in fields near large towns for the fpikes of flowers, which are either fold in fmall buadles, or diftilled for lavender-water, and the eflential oil of the plant.

The common fpike lavender is molkly employed with this intention. According to fome the method of cultivating it is by planting the flips or cuttings of the young fhoots, after being itruck, in rich fhady borders or nurferies the preceding fpring, about September or October, in rows, two, three, or more feet diltance 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 autum, and the plants retained in order by proper pruning. And as they decay from age or other accidents, they are replaced from the nurfcries; the nips of fuch plants as are wearing out being made ufe of for the purpofe. The fyikes of flowers 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 Atill-houfe, or other places, in proper bafkets. When, for didiliing, the lower parts of the ftems are then cut off and the heads put into the 1till.

But this plant, when cultivated in the feld, fould, ac-cording to others, lave 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 dips or cuttings of the young thoots or branches fhould be provided, and planted at once by means of a dibble, in rows of not mure than two and a half or three feet apart, and one and a half or two feet diftant in the rows, cloting the moull well about them. 'They afterwards require to be kept clean by means of the hue, and to have the monld brought up to them occationally, particularly in the auturn, and the dead atems or leaves cleared away.

They will moftly afford foikes of flowers in plenty in the fecond fummer, after being thus planted out.

Lavender fuceeds bef where the foil is rather of a dry quality, and not too lliff. In fome parts of the fouthern diftricts near London, it is grown in the fields with much profit.

In the Agricultural Survey of Berkflire, it is flated, that the late field-marfhal 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 fouthweftern afpect. 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 ftrongly marked by the luxuriance of the plants they refpectively bear."

It is of fuch importance to keep crops of this fort perfectly clean, that three men are conttantly employed in weeding this plantation; who, occafionally, ufe fmall hand-hoes, but not much, as they are liable, without great care, to break and injure the plants. When the flate of the weather will not admit of this fort of butinefs being done, they go over the plantation with large fhears, and clip off all the ftalks which were left by the lavender cutters.

Hot fummers are very favourable to the productivenefs 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 Wettphalia, in Calenberg, on the Wefer; 15 miles N.W. of Gottingen.

LAVENHAM, a market-town and parifh in the hundred of Babong, and county of Suffolk, England, was formerly coniderable 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 cheefe on the 1oth of October, and another for horfes on Shrove Tuefday. Six capital burgeffes, chofen for life, conflitute the governors of the town, and by them all the inferior officers are appoisted. The land here is of that fort called Borough-Englifh, whereby all heritable property defcends to the youngelt fon, or, in default of iffue, to the youngelt brother. The town itfelf is agreeably fituated on the banks of the river Brell, from which it rifes in a gentle acclivity, and confifts of nine freets or divifions, and a market-place, with a ftone crofs in the centre. At the fouth end flands the parih-church, one of the fineft fpecimens of ancient ecclefiaftical architecture in the county. This noble building was probably founded towards the clofe of the fifteenth century. Its walls are built of freeftone, interfperfed with very curious decorations of fint-work. On every fide they exhibit a variety of arms of noble perfona es, who probably obtained that diftinction 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 exquifite workmanfhip, as to vie with any in Henry Vlith's chapel. This town has, likewife, a meeting-houfe for Diffenters, two charity-fchools, and two Sunday-fchools, one of which is fupported by the Diffenters. In the parliamentary returns for 1800, the houfes are ftated to amount to 339 in number, and the inhabitants to 1776 perfons.

LAVENI., in Botany, a genus formed by the late Dr. Solander, and adopted from his manufcripts by profeffor Swartz, of the Cotula Verbefina, and Verbefina Lavenia of
their common preceptor Linnæus. The name is of unknown origin, and fulpected by profeffor Martyn to be vernacular in Ceylon. It firft appears in the fupplement to Ray's EFifloria Planlarum, v. 3. 217 , on the authority of Sherard, for the fpecies latt 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 Adcnofemma, given to the fame plant by the claffical Fortter, and contructed of $\alpha d \eta y$, a gland, and $\varsigma \varepsilon \mu \mu \alpha$, a crown, the feed being crowned with three glands inftead 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. (Adenoftemma; Forft. Gen. t. 45: Juff. 184.)-Clafs and order, Syngenefia Poly-gamia-equalis. Nat. Ord. Compofite difooidea, Linn. Corymbifera, Jull:

Gen. Ch. Commion Calyx ovate, fomewhat imbricated, confiting of from 10 to it lanceolate, equal, permanent fcales. Cor. compound, uniform, of from 15 to 20 equal hernaphrodite florets, which are funnel-fhaped, dilated at the bafe, the limb in five regular fpreading fegments. Stam. Filaments five, thread-fhaped, fhorter than the tube; anthers oblong, flattifh, didymous, flightly cohering laterally. Pjf. Germen oblong; ftyle thread-fhaped, longer than its own corolla, deeply divided; ftigmas flattifh, club-hhaped. Peric. none, except the permanent fpreading calyx. Seeds rather club-fhaped, flightly rugged, vifcid with glands. Crown of three awl-fhaped brifles, glandular at the tips. Recept. naked.

Eff. Ch. Receptacle naked. Seed-down of three briftles, glandular at their tips. Calyx ovate, flightly imbricated. Style divided.

Obf. Forter defcribes the florets as bearded or downy on their upper or inner furface.
I. L. decumbens. Decumbent Lavenia. (Cotula Verbefina; Linn. Sp. Pl. 1258. Mant. 473. Chryfanthemum fylvaticum repens minus, chamrdryos folio, flore luteo nudo, femine roftrato; 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 heartfhaped, obtufe, obtufely ferrated.-Native of the inland cool and fhady woods of Jamaica. Root annual. Stem dew cumbent or proftrate, from nine to eighteen inches long, throwing out roots from the lower joints, fimple, except now and then a fhort axillary fhoot or two, leafy, nearly fmooth, bluntly quadrangular. Leaves oppofite, ftalked, an inch or more in length and almoft as broad, heart-fhaped, nearly fmooth, blunt, unequally and bluntly ferrated, threeribbed, often cut away clofe to the lateral ribs at the bafe. Flowers few, terminal, convex, yellow, fcarcely fo large as a pea, on long, flender, in fome degree panicled, talks.
2. L. ereila. Upright Lavenia. (Adenoftemma vifcofa; Forft. Prodr. 54. Verbefina Lavenia ; Linn. Sp. Pl. 1271. Swartz. Obf. 312. Eupatoriophalacron ferophularix aquaticx foliis oppolitis ; Burm. Zeyl. 95. t. 42. Yu-tumba ; Rheede Hort. Mal, v. 10. 125.t.63.)-Stem erect. Leaves elliptical, pointed, fharply ferrated; tapering and entire at the bafe.-Native of Ceylon, the coalt of Malabar in fandy ground, and the Society ines. Root annual, of many pale fibres. Stem a foot high, erect, fomewhat branched, leafy, fquare, rough with afcending briftles. Lesaves ftalked, oppofite, the uppermoft lefs exactly fo ; all of a broad elliptical figure, tapering much at each end, three-ribbed, rough, two or three inches long, entire at the bafe, broadly and acutely ferrated upwards. Flowers on fhortifh, hifpid, hoary; axillary ftalks, accompanied by linear braiteas, and

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confifing of fewer florets than the preceding, of a palifh blue colour, and externally downy.

LaVENSAR, in Geography. See Lavansars.
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 Wettphalia, in Calenberg ; nime miles E. of Hamelno-Alfo, a town of Saxony, in the margravate of Meiffen; iS miles S. of Drefden. N. lat. $50^{\circ} 42$. E. long. $13^{\circ}+6^{\prime}$.

LAVENZA, a fea-port of Italy, in the department of the Apennines, with a harbour at the mouth of a fmall river; feren miles S.E. of Sarzana. N. lat. $44^{\prime} 3^{\prime}$. E. long. $10^{\circ} \mathrm{I}$.

LAVER, in Botany, perhaps from the verb in lave, aluding to its being wathed up on the thore. Sce Vlata.

Laver Bracd, a fort of food made of a fea-plant, otherwife called the oifler-green, or feediverzeort. it is faid to be ufd in the county of Glamorgan, and other parts of Wales.

Laver, in Scripture Ififlory, a facred utenfil placed in the court of the Jewih zabernacle, confiltung of a bafon, whence they drew water by cocks, for wafhing the hands and feet of the officiating prietts, and alfo the entrails and legs of the victims.

LAVERNA, in Aitiquit;, the goddefs of thieves and cheats amung the Romans, who honourd her with public worhip, becaufe fhe was fuppofed to favour thofe who wifhed that their defigns might uot be difcovered. Varro fays, that the had an altar near one of the gates of Rome; hence called Porta Lavernalis.

LAVERNICK, in Geographly, a town of Pruffia, in the territory of Culm, on the Drebentz; 44 miles E. of Culm .
LAVEZZO, a name given by the Italians to a Aleatitic ftone, of which veffels are made; called allo 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. $49^{\circ}$ S $^{\prime}$. E. long. $11^{\circ} 13^{\prime}$.

LAUFFEN, a town of the archbifhopric of Salzburg, on the Salza; 11 miles N.N.W. of Salzburg. N. lat. $47^{\circ}$ $54^{\prime}$. E. long $12^{\circ} 52^{\prime}$.

Laveren, a sillage and caftle of Switzerland, which gives name to a bailiwick, in the canton of Zurich, near the Rhine, where is a celebrated cataract; 2 miles below Schaffhaufen.

Lauffen am Neckar, a town of Wurtemburg, on the Neckar, furmerly imperial; 16 miles N. of Stuttgart. N. lat. $49^{\circ} 5^{\circ}$. E. long. $9^{1} 8^{\prime}$.

Lauffen, a town of Pruffia, in Natangen; 15 miles S . of Bartenitein:-Alfo, a town of Auftria, where the diet was beld under Frederick 1 .; 18 miles $S$. of Gemunden.

LHUFFENBURG, a fortified town of Germany, and one of the four forell-towns of the late Auftrian Swabia, fruated on botb fides of the Rhine, over which is a bridge; and at this place there is a fall in the river: 26 miles W. of Schaffhaufen. N. lat. $47^{\circ} 36^{\prime \prime}$. E long. $8^{\prime \prime} 4^{\prime}$.

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 Barfch; 16 miles N. of Soleure. The place contains 740 , and the canton 7513 inbabitants, on a territory of $172 \frac{1}{2}$ kiliometres, in 21 communes. N. lat. $47^{\circ} 32^{\prime}$. E. long. $7^{\circ} 20^{\prime}$.

LAUGEON, a Lown of Meckley; 42 miles W. of Munnypour.

LAUGERIA, in Botany, named by Jacquin, in honour of Robert Laugier, profefor of botany and chemiftry in the univerfity of Vienaa, whot the botanic garden there was

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firn eftablifhed. Jacq. Amer. G4. t. 177. f. 21. Linn. Gen. 102. Schreb 140 . Willd. Sp. Pl. v. I. roSi. Mart. Mill. Dict. v. 3. Juff. 20G. Clafs and order, Pentandria AIomagnis. Nat. Ord. Rubiaces, Juff.

Gen. Ch. Cal. Perianth fuperior, of one leaf, tubular, finall, deciduous, unequal at the orifice. C'or of one petal, falver-fhaped; tube very long; limb in fie obovate fegments. Stam. Filaments five, very fhort; anthers linear, long, within the tube. Pijl. Germen nearly ovate, inferior; Ayle thread-fhaped, rather longer than the tube; fligma capitatc. Peric. Drupa roundifh, umbilicated with a finail depreflion. Sect. Nut roundifh, with five furrows, and from two to five cells.
Eff. Ch. Corolla falver-fhaped, five-cleft. Sitamens within the tube. Drupa inferior. Nut of five cells.

Obf. Vahl fuggelts that this genus might with propriety perhaps be united to Guetharda; fee that article.
I. L. odorata. Linn. Sp. Pl. 276. Jacq. Amer. 64. (Edcchi; Loef. It. 259.271. 306.)-Leaves elliptic-lanceolate, pointed, nearly fmooth. Stem fomewhat fpinous. Clufters panicled. Nut with five cells. - Native of South America: obferved by Jacquin in expofed buhhy places on the fea flore, about the Havanah and Carthagena. T'he flom is fhrubby, ten feet high, erect, branching, the brancles oppofite and widely fpreading. Leaves opjofite, on fhort ftalks, 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 fént by him to Linnæus, from the Vienna garden, has zumerous hairs on the leaves, efpecially at the rib and edges, and its fooffalks, like the twig itfelf, are very hairy. Stipulas axillary, oppofite, lanceolate, recurved. Cluffers axillary, panicled, lax, as lung 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 flighteft hak. ing of the bufh.
2. L. lucida. Swartz Ind. Occ. v. r. 475. Vahl. Symb. v. 3. 40. t. 57.-Leaves oblong, obtufe, membranous, fhining. Clufters forked. Nut with two cells.-Native of bufly places, in the warmer parts of Jamaica, as well as in St. Lucia and Santa Cruz. A jerub with round, fmootb, fpreading branches. Leaves two or three inches in length, oblong, with a blunt point, fhi:ing, firooth on both fides. Stipulas axillary, orate, acute, deciduous. Clufers from the bofoms of the upper leaves, fo as to appear terminal, folitary, rarcly oppofite, the leng:h of the leaves, eitter timply forked, or twice divided, widely fpreading. Ficzers neariy feffile in a fimple row on each branch of the clufter, with $\mathbf{3}$. folitary intermediate one, whitifh, fragrant. Frait black, its nut of two unequal cells. Dr. Swartz thinks this may be the Ipstaraguapin of Loef. It. 270, with the defription of. which it agrees in many refpects, but he never obferved any fpines on his L. lucilla. We have, neverthelefs, no doubt of their being one and the fame fpecies.
3. L. cortiacea. Vahl. Eclog. v. 1. 26.- ".Leaves ellipticovate, rather coriaceous, fmooth on both fides, bluntifin. Spikes twice divided. Flowers tetrandrous." - Found on. the fummits of mountains in the ifland of Monterrat, where it was probably found by Von Ruhr. A /brub.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. L. tomempofa. Swartz Inç. Occ. v. 1. 477." Leaves ovate, acute; downy beneath. Clulters forked. Nut of two cells." - Native of flrubby places in the weftern part of Jamaica, A fmali tres, thrise the height of a man, with fubdivided.

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fubdivided downy brancles. Leaves fhining and fmooth above, filky and foft beneath. Flower's whitifh. It bloffoms in autunn, and refembles a Tournefortia in habit and inflorefcence. Swartz.

LAUGHER, a name given to a particular fpecics of pigeon, callied by Moore the columba ridens. It is about the fize of the common pigeon, and much of the fame make ; but it has a very bright pearl-colonred eye, almoft white, and is a mottled red, or blue. They are faid to be brought from Jerufalem, and the country thereabouts. When the cock of this fpecies courts the hen, he has a guttural cooing, not unlike the guggling of a bottle of water, when poured out haltily; and after this he always makes a noife not unlike laughing, from the fingularity of which he has obtained his name.

LAUGHI, Lis, in Geograply, a fief of Piedmont, which takes its name from a mountain; formerly held immediately of the empire, ceded, in $17+6$, to the king of Sardinia, or duke of Savoy, and now amexed to France.

LAUGHTER, an action or paffion peculiar to man.
Authors attribute lqughter to the fifth pair of nerves, which lending branches to the eye, ear, lips, tongue, palate, and mufcles of the cheek, parts of the mouth, precordia, \&c. there hence arifes a fympathy, or confent, between all thefe parts; fo that when one of them is acted upon, the others are proportionably afected.

Hence a favoury thing feen or fmelt, affects the glands and parts of the mouth, a thing feen or heard, that is thameful, affects the check with blahtes; on the contrary, if it pleafe and tickle the fancy, it affects the precordia and mufcles of the mouth and face with laughter; if it caufes fadnefs and melancholy, it likewife affects the precordia, and demonitrates itfelf by cauting the glands of the eyes to cmit tears.
Laughter, according to Hobbes, is "a fudden glory, arifing fron a fudden conception of fome eminency in ourfelves, by comparifon 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 folely from the perception of oddity, with which the paffion is occafionally, not neceffarily, combined. See Ridicule.

L'AUGIER, Mowsigxor, in Biography, principal phyfician to the imperial court at Vienna in 1772; the molt intelligent and beit informed critic, among mufical dilettinti, with whom we ever converfed. He had been in France, Spain, Portugal, Italy, and Conltantinople, and was perfectly well acquainced with national ityles of mufic, and the peculiar merits and defects of individual compofers throughout Europe. This gentleman, in defpite of uncommon corpulency, poffefed a mott active and cultivated mind. His houfe was the rendezvous of the firlt people of Vienna, both for rank and genius, and his converfation was as entertaining as his knowledge was extentive and profound. Among his other acquirements he had arrived at great ikill in practical mufic, had a moft refined difcriminating tafte, and could give, vocally, fpecimens of the national melody, which he had heard swith philofophical ears wherever he had been; in fine, he was a living hiftory of mufic. In Spain he had been intimately acquainted with Dominico Scarlatti, who, at fevents ${ }^{-}$three, compofed for him a great number of harplichord leffons, the chief of which had never been printed. The book in which they had been tranfcribed contained forty-two pieces, among which were feveral /losv movements, with which, for want of foltinuto and expreffion, in the old harpfichords, he feldom enriched his works. Thefe leffons were compofed in 1756 , when Scarlatti was too fat to crofs his hands, as he ufed to do; fo that thefe are not fo diffecult
a, his more jurenile works, which were made for his pupil and patronefs, the late queen of Spain, while the was infanta of Portugal. M. L'Augicr ufed to relate, that the emprefs queen Therefa had been a very notable mufician, and that fome years ago he had heard lier fing very well. In the year 1739 , when fhe was only twenty-two ycars of age, and very handfome, the fung a duo, with old Scnetino, at Florence, fo well, that by her voice, which was then a very fine one, and graceful and itceady manner, the fo much captivated the old man, that he could not procced without faedding tears of fatisfaction. Her imperial majefty had fo long been a performer, that fhe one day, in pleafantry, told the old Faultina, the wife of Haffe, who was then upwards of feventy, that the thought herfelf the firlt (meaning the oldeft) virtuofa in Europe; for her father, at a rehearfal, brought her on the court ttage at Vienna, when fhe was only five years old, and made her fing a fong.

Metaftalio, in a letter to Farinelli, calls M. L'Augier Monfignore; the phyfician of the pope, and we fuppofe the imperial phyfician is qualified with the title of Monfignore, my lord. The imperial Laurrat tells Farinelli, that Monfignor L'Augier is charmed with him, with his heart, and with his conduct. And fporting with his rotundity, he fays, "he often vilits me, in fpite of his immeafurable corpulency, and mounts to the altitude where I relide, with the lightnefs of the molt fim dancer. I thall, for your fake, embrace as much as puffible of his majeltic circumference." This extraordinary perfonage, with a mind proportioned to his body, died at Vienna in 1774, to the great lofs of fociety in that city, and of found criticifm and good tafte.

LAVLANO, in Geography, a town of Naples, in Principato Citra; 27 miles E. of Salerno.

LAUJAR, a town of Spain, in Grenadas is miles N.W. of Almeria.

LAVIGEN, a town of Norway, in the diocefe of Dron-theim; 24 miles N. of Drontheim.

LAVIGNON, a name which the fifhermen of the vicinity of Rochelle give to a fhell-fifh, which is ufed for food in that place, and is probably a fpecies of Solen. It is common on the ceaft of Poitou, and has a very thin pair of thells for its covering, and which never can fhut clofe, in the manner of the cifter or mufcle, or other common bivalve fhells: the filh, therefore, always buries itfelf in the mud by way of fecurity. The fhells are very fmooth and polifhed, efpecially on the infide, and they are naturally white. This colour they always retain within, though their outer furface is often inged black by the mud.

They are often baried five or fix inches deep in the mud, but it is always eafy to know where they are, beeaufe they mult keep a frice 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-fith. When the thells of this filh are opered to their utmoft width, it is eafy to fee a fort of arm with which each is furnifhed, in the manner of the common mufele, for its progreflive motion. This part ferves them to bury themfelves in the mud, and to raife themfelves out of it again, when they are inclined to feek a new habitation; into which they make their way in a more fpeedy manner than would eafily be thought.
When the creature is plunged to its proper depth under ground, it receives the benefit of the water abore, by means of two pipes, or probofcides, which have each a double aperture at their ends. Thefe take in water, and throw it out again, alternately, for the ufes of the animal, and either of the two is indifferently qualified to anfwer either purpoife. The fin has a power of leagthening, or fhortening thefe

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pipes at picafure, and, when it pleafes, takes them wholly iuto the fhell. Mem. Acad. Par. 1710.

LoAVIN, in Ornithology, a name given by the people of the lhilippine illands to a fpecies of hawk, a bird of great beauty, being variegated all over with yellow, black, and white. They call it alfo ficub.
LAUINGEN, in Gcography, a town of 13avaria, in the principality of Neuburg, on the Danube, fuppofed to have been a Roman colony; lix miles above Hocktlett. N. lat. $4^{8^{\circ}} 3^{32^{2}}$. E. long, $10^{2} 22$.
LAVINGTON, East, or Murkel Leavington, a markettown and parifh in the hundred of Swanborough, and county of Wilts, England, is fituated at the northern termination of Salifbury plain. It was formerly called Steeple, or Staple, Lavington, and was a confiderable town; having acquired the nane of Cheaping, or Market Lavington, from its great corn market, which was eftablinhed early in the fifteenth century, but is now much decreafed, as the chief refort of the dealers is to Devizes. Eaft Lavington is $89^{\circ}$ miles from London; the markets were on Monday and Wednefday. The population, as recturned to parliament in 1800 , was 918 ; the number of houfes $16 \%$. Bihop Tanner, the celebrated author of "Notitia Monaltica," was born in this town in $167+$.
$W_{f} f$, or lBilhop's Lavingion, is a parih within two miles of the foregoing, but is fituate in the hundred of Whorlfdon; it was returned, in 1800, as containing 21+ houfes, and 998 inhabitants. Britton's Beauties of Wilthire, 8 vo.

LAVINIUM, in Ancient Geography, a fmall town of Latium, exactly S. of Rome, and eight miles S.E. of Lanrentum, near the fea-coalt, on the rivulet Numicus, between the mouth of which, and the J'iber, 压neas is fuppofed 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 liis 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 ftrong enough to refilt the affaults of his enemies, who were jealous of his power, he built another on an eminence, E. of the firft. See Lanuvius.
LAVINO, in Geography, a town of Italy, in the Milanefe; 18 miles W.N.IW. of Como-Alfio, a town of Naples, in the Molife; 24 miles N.E. of Molife.

LAVIS, a town of Tyrn, at the cunion of the rivers Lavis and Adige; cight miles $N$. of Trent.

LAVIT de Lomigne, a town of France, in the department of the Gers, and chicf place of a canton, in the diltrict of Lectoure; 12 miles E. of Lectoure. The place contains 1330 , and the canton 7695 inhabitants, on a territory of $193^{\prime}$ kiliometres, in 15 communes. N. lat. $43^{\prime 2} 57^{\prime}$. E. long $1^{\circ}$.

LAUKAS, a town of Sweden, in the government of Wafa; 124 miles E.S.E. of Wrafa,

LAUKOWITZ, a town of Bohemia, in the circle of Bolella:\% ; 10 miles N.N.E. of Junr-Buntzel.

LAUNAY, Peteh, in Biography, was born at Blois in the year 1573, and having conliderable family interelt, he obtained, in early life, a poof under goveroment, and was made fecretary to the king.. Thefe honours he willingly renounced, in order that he might devote his time to the ftudy of the facred writings. His works prove how diligently he followed his new profeffion. He acquired the refpect and efteem of the French Proteftants, and he was chofen deputy to all the fynods of his province, and to almoft every national fynod which was held in his time. He died in 3662, at the age of eighty-nine years. His works are paraphrafes on the Vol, XX.
books of Proverbs, Ecelefiaftes, the prophet Danich, all the epirtles of St. Paul, and the Apocalypfe, which were publifhed at different periods. He publifhed likewife "Remarks on the liable, or an Explanation of the different Words, Phrafes, and Figures of the facted Writings:" and "A Treatife on the Lord's Supper."

LAUNCE, in Jchlbyology, se Ammonver.
LAUNCEGAYS, in our Old Writars, a kind of offenfive weapons now difufed, and prolibited by the ftatute 7 Rich. II. cap. 13. Many of the commentators on our ancient laws profefo themfelves unable to explain what kind of weapoons thefe were. Grofe fuggells, that the term launcegay may be a corruption of the words lance afigue, is tharp or pointed lance; and if the intention of the acts be conlidered, it will jultify, in adegree, this fuppofition; as they were evidently framed to prevent thofe violent affrays that frequently arofe among the gentry of that time, commonly attended by a numerons fuite, who, if armed with mifchievous weapons, might have filt much blood. A lance fit for war was, perhaps, termed fharp, or pointed, in oppofition to a blunt or tilting lance. See Lavice.

LAUNCESTON, in Geography, a populous borough and market-town in the hundred of Eart, 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 ealtern fide of the county. Its ancient name was Dunheved, the Swelling Hill ; but the prefent appellation, according to Burlafe, figuifies the "Church of the Cafle." The cafle is the moft 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 fortrefs of great ftrength. and importance. The principal entrance was from the fouth-weit, through a fortified paffage upwards of an hundred fect 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 fmaller gate, with a round arch, opening into the bafe court, which formed a fquare of 136 yards, furrounded by thick walls and fortified with a deep ditch. At the fouthowelt angle was a very ftrong round. tower, whence a terrace extended to the keep or citadel at the fouth-eaft angle of the court. This confifted of an immenfe artificial hill, nearly ninety feet in perpendicular height, about 300 feet diameter at its bafe, 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 confilts of three wards, and is furrounded by a circular wall. The thicknefs of the outer wall, or parapet, is about three feet; the fecond wall is fix feet from the former, nearly four times the thicknefs, and confiderably higher. About eight feet within this wall is another, ten feit thick, and thirtytwo feet high from the floor of the inclofed area, the diameter of which is about eighteen feet. In the bafe court formerly Itood the county gaol, a fpacious affize court, a chapel, and other buildings; but thefe haveall been taken down, except the gaol, which retains its fituation near the bottom of the hill. The building of this cafte has been generally attributed to William, earl of Moreton and Cornwall, in the time of William the Conqueror; but this opinion is probably erroncous, as the fyle of workmanfhip exhibited in feveral parts of the remains, is apparently of a much earlier date.. The walls of the kecp, in particular, have every appearance of. being confiderably more ancient; and from a retrofpective view of events that have occurred in this county, the conjecture appears to be fully warranted that the foundation of the cafle is as remote as the time of the Britons... The er:

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in which the town was founded, or, at leaf, began to afo fume a regular form, is better determined; this was about the year 900 . No remains of the original buildings are now cxtant. On the north fide of the town was a priory of Auguttinc monks, faid to have been eftablifhed by Warlewalt, bifhop of Exeter. As stlis town was a principal refidence of the carls of Corawall for many years after its foundation, its confequence contiaually increafed, and many liberties and privileges were granted to its inhabitants. Soon after the conquelt a weekly market was eftablifhed op Sunday; in the reign of king John, the towninecn paid five marks for the removal of the ruarket to Thurfday, but it has fince been changed to Sturday. In the reign of Henry III. Launcellon was made a free borough by the king's brother, Richard, earl of Poietiers and Cornwall; he alfo granted the inlhabitants fome additional immunities, which were confirmed by feveral fubbequent charters; and in the reign of R*hard 11. the affizes were ordered to be held at Launcelton, and "no where elfc." This regulation was obferved till the firt year of George I. when an act was paffed empowering the lord chancellor to appoint any other place in the county. Since that period the winter allizes only have been hicd here; thofe of the fummer having been removed to Bodmin. By a charter of Philip and Mary, granted in 155 , which enumerates and confirms the various prior clarters, the government is velled in a mayoor, recorder, and eight aldermen, who, with the free burgeffes, have the right of electing the parliamentary reprefentatives. The whole number of voters is about twenty. This borough made its firlt return in the twenty-third of Edxard I. and had a may yor 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 fquare blocks of granite, moft of which are enriched with carved ornaments, esecuted in a very fingular manner. At the welt end is a lofty tower; and a figure of the Magdalen, in a recumbent poffure, is placed in a niche at the ealt 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 conflituted a parifh church, and was again rebuilt in the time of Henry VIII. The town was formerly furrounded by a wall, of which fome parts filll remain. The flreets are narrow; but the houfes are well built ; on the fouth fide is a fortified gateway, containing an apartment ufed as the town gaol. The children of the poor are educated in two charity-fchools maintained by voluntary fub. fcription; and a frec-.chool founded and endowed by queen Elizabeth. Launcefton is diftant from London 213 miles; has a.weekly market on Wednefday, belides that on Saturday already mentioned, and fix annual fairs ; the return to parliament in the year 1801 flated the population to be 1483 , the number of houres 226 . The houfes of this town are connected with thofe of Newport, which is a burough, though apparently only part of Launceiton. See NewP)

About two miles north of this town is Werrington, a feat of the duke of Northumberland. Polwhele's Hillory of Co.n.xall, to. Beauties of England and Wales, vol. ii.

LaUNCH, in Ship Building, is the nip or defcent wherenn the flip is built, alfo the whole machinery ufed in bunching.

To facilitate the operation of 1aunching, the fhip, when fle is firft built, is fupported by ftrong plafforms, laid with a gradual inclination to the water, on the oppofite fides of hier keel, to which they are parallel. Upon the furface of this decliviey are placed two correfponding ranges of plarks, which compofe the bafe of a frame, called the cradle, whofe
upper part envelops the flip's bottom, to which it is fecurely attached. Thus, the lower furface of the crade, conformiug exactly to that of the frame below, lies fat upon it, lengthways, under the oppofite fides of the fhip's bottom; and as the former is intended to fide downwards upon the latter, carrying the fhip along with it, the planes or faces of both are well daubed with foap and tallow. The neceflary preparations for the launch being made, all the blocks and wedges by which the flip was formerly fupported. are driven out from under her keel, till the whole weight gradually fubfides upon the platforms, which ate accerdingly called the ways. The fhores and flanchions, by which he is retained upon the flocks till the time of launching, are at length cut away, and the fcrews applied to move her, if necefliary. The motion ufually begins at the inftant when the fhores are cut, and the fhip flides downward along the ways, which are generally prolonged under the furf face of the water to a fufficient depth, to foat her as foon as fhe arrives at the farthelt end thereof. When a fhip is to be launched, the enfign, jack, and pendant, are always boitted, the laft being difplayed from a faff ereled in the middle of the fhip. Ships of the firlt rate are commonly conltruted in dry docks, and afterwards floated out, by throwing open the flood-gates; and fuffering the tide to enter, as foon as they are fiwinhed. Falconer.
LAUNCHING, the att of conveying the fip into the water after fhe is built.
Lauxcuiso-Draft of Water, the depreffion of the flip. when firft launched below the water's furface.
Lavecruxg-Planks, form the upper furface of the platform on each fide the fhip, wherevn the buldgeways fide in the aet of launching the thip.

LAUNDER, in Mineralogy, a name given in Devosfhire, and other places, to a long and hallow trough, which receives the powdered ore, after it comes out of the box, or coficer, which is a fort of mortar, in which it is powdered with iron pefles.

The powdered ore, which is wafhed into the launder by the water from the coffer, is always fineft neareft the grate; and coarfer all the way down. See Bupple and Drefing of Ore.
LAUNDRY, as if Lavanlerrie, Fr. the room in which clothes are walhed; or, in a more reftricted and appropriate fenfe, as the term is ufed in the fubfequent article, it denotes the place where clothes are mangled, dried, and ironed. Under this head we flall include the suyfb-bonfe, as it is neceffarily connected with the laundry. Wafling and getting up linen are employments of great importance in moff families, and they have engaged the attention of many ingenious mechanics, who have contrived various waflhing-machines for the abridgment of labour and expence in this department of domeltic economy. Moft of the machines hiitherto ufed are objectionable on many accounts, but principally becaufe they operate by frizion, inltead of preffiure. When the linen is properly prepared for walhing, 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 fultains in aetual ufe. Hence it follows that the beft method of cleanling foul linen is, firtt, to prepare it for the operation by foaping it where neceflary, and putting it into foak for at leat twelve hours. This will loofen the filth, and decompofe the greafe and other matter with which it is foiled, and it will then be readily removed by alternately foaking, and fquezezing or preffing. The defideratum, therefore, is, to conltruct a macline that would, by a rotative motion, or an up-and-down froke, (like pumping) alternately prefs and faturate the lisen with

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the fuds, and lattly with clear water. The niachine that comes neareft to this, of any that has fallen under our notice, is oñe invented by Mr. Gould.

We fhatl now deferibe a waflothoufe and laundry, confruped upon fcientilic principles by Joln Bentley, efq. the pref:nt polfeffor of Highbury Houle, near London, being the completelt of the kind we have met with.

The wallh-houfe is 24 feet long, nine feet broad, and eirht feet high. It is furnithed with a filtering machine, a ciftern for filtered water, tivo coppers, a copper cullender, a jack with pullies, fix wafling tubs, a fone fonk, a table; a wringing machinc, and a pump of hard water.

The floor is rouzh Yorkflaire-fone, laid upon a fliarp current. Over twothirds of the roof is a lead cikern containing 40 hogtheads of rain water, fupplied from the adjoining buildings. The other third of the roof is conical, furmounted with a cylinder for a fleam-vent, which opens and fhuts at pleafure. When open, befides emitting the iteam, it adnuits both light and air. The ciflern for filtered water holds 200 gallons, and fupplies, by pipes and cocks, the copper tubs and link.

The firft copper is fixed fo that the top of it is level with the bottom of the ciftern, 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 fupplies with hot water. The tubs, coppers, and fink, are fupplied with cold water from the ciltern. Each of the tubs lias a brafs plug at bottom, to difcharge the foul water. A ninc-inch board runs along the front of the tubs and fink on the ground, to prevent the fplafhing of the water when difcharged. Each tub is furnifhed with a fmall wooden ftrainer 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 ftick (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 fupplied with both hot and cold water, there are only fix cocks to the whole, one cock fupplying two tubs, by means of a fcrew-joint in the nozzle, which turns at pleafure to either tub. There is alfo a fcrewjoint between the key and pipe in each cock, by which means it can at any time be repaired without the affiltance of the plumber.

The filtering machine performs its operation by afcent. It has three cocks in one pipe: The uppermoft 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 cleanfing the machine when faturated with filth, which is accomplifhed by only turning the cock, and will, in a few minutes, be as clean as it was at firit, the mud, \&c. being difcharged at the third or middle cock, which alfo ferves to draw unliltered water when required. Under the ciltern is a receptacle for coals, and under the filtering machine a place for pails and mops. Both cilterns have a furplus wa-ter-pipe to prevent running over, and in which are allo plugs to difcharge 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 Inen, \&c.

The laundry adjoining the wafh-houfe is is feet fquare, and II feet in higight. It has two windows in front. The foor is level, of rubbed Yorkthire-ltone, laid upon brick pie:s,
to keep it perfeetly free from damp. It is furnified with one of Baker's harge mangles; an ironing board 12 feet by three fret, with four large drawers for the ironing-ckoth, iron-kolders, \&c. with room for the clothes-bafkets underneath; a ftove or drying-clofet, eight fect by fix feet; a furnince for heating the clofet and the irons, and a place for coals under the ffoor, clofe by the furnace. The clofet contains four wooden horfes, cach with five rails or bars. Each horfe runs in and out of the clofet upon two fmall iron wheels, upon an iron rail-way. One horfe holds fix flirtz, or a proportionable quantity of other linen, and the whols will dry off as much and as fpecdily as fix women can walh in fucceffion. It hardens the linen after being irned, and is alfo ufeful for airing feather beds, \&ec. The linen, whiltt drying, is kept free from froke and duit, and there never can be any fleam in the room.
The furnace for heating it is fimilar to thofe under coppers or in a hot-houfe, immediately over which, before it enters the flue to the clofet, is an iron oven for heating the irons. The flue is continned round the bottom of the clofet, and carried up the end of the building. The top of the horizontal part of the flue is of calt-iron plates; iron being a good, and brick a bad conductor of heat. A few incles above thefe 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 accideut 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 clofet, there is an opening 15 inches fquare, communica:ing with the external air. The cieling of the clofet is in the form of a hopper, termirating in a funnel of the fame diameter ( 15 inches) as the external air-vent. Both thefe vents are furnithed with a fliding door, which opens and fhuts, as required, by pulley cords.

The primciple upon which it acts is by heating it to a वंegree fufficient to excite a Itrong evaporation from the wet linet, and carrying off the moilture by means of the two vents. During the time of its acquiring this heat, both the vents, and alfo the horfes, are lept clotely fhut, fo that the clofet is nearly air-tight. As foon as the proper degree of heat is obtained, both the vents are to be opened, when a ftrong current of air rufhes in at the lowelt, carrying up all the vapour from the linen through the upper vent or funnel, when the dryi ig will be vary fpeedily completed. The linen is then removed, a fref fupply put in, and the opera* tion repeated as before, beginning by clofely thutting all up.
Befides the difpatch and economy attending this wafh-houle and laundry, the health and comfurt of thofe employed in them are greatly promoted, by being entirely free from the pernicious effects of damp vapour, and in not being incommoded by any extra heat in hot weather.
Since this article was written, the gentleman above mentioned has made a coniderable improvement in the wafhhoufe. He has conftrutted an apparatus for performing the operation by fleam. Although it is not yet (December ISII) quite completed, it is fufficiently fo to have afcertained by experiment, that cvery feccies of awbite linen may be better cleanfed this way than it is poflible to do it by the hands, or any machine hitherto invented. - We fay cuzbite linen, becaufe the operation proves to be fo powerful, that it difcharges the colour from all dyed and printed articles that have been tried with it.

At the end of the walh-houfe a frong iron-boiler is fixed, three feet dix inches long, one foot eight inches wide, and two feet nine inches dep, with fittings up the fame as thofe for ftc an--ngines, viz. a feeding-pipe with regulator, a 3 C 2
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mereury gauge-tube, a three-inch fteam-tube, two obfervation cocks, a fafety valve, and a difcharging pipe. From the Iteam-tube, a pipe of $1 \frac{1}{2}$ inch bore is continued the whole length of the building; and from this main Itean-pipe, others of fmaller dimenfions, from $\frac{3}{8}$ to $\frac{3}{4}$ inch diameter, are laid on the different theaming veffels. Thefe may be either of wood, tin, or copper; but the latter is certainly belt, for the action of Itean is fo powerful, that it will foon render both wood and tin uflefs. They mult be fitted 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 difcharge the foul water. The procefs is as follows: Soap the linen where it is very dirty, and pitt it to foak; then place the linen upon the grating in the itean veffel; cover it up, and turn on the theam. The difcharging cock mult be occafionally opened, to draw off the condenfed ftean; and when it is found to conie off perfectly clear, which it will do in half an hour, or lef's, the operation is finifhed, and the articles will come out perfectly clean, and mott beautifully white.

By this fimple and eafy procefs, the drudgery of wafhing 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 lalt double the time it otherwife would do: for as there is neither preffure nor friction, it cannot be injured in this procefs.

Wafhing by fleam has been practifed, but never before by this method. The way it has been dose has been by fleaming the linen in the fuls. 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 mult be had recourfe to, before the liner is made thoroughly clean. But by this new procefs, the linen being put into the fteaming velfels, without any other liquur than it retains on being taken out of the foaking tubs, every particle of matter which is diflodgced from it intlantly fubfides to the bottom of the veffel, and never can again come in contact with the linen. Our readers mult excufe the prolixity of this article, on account of its great innportance and ufefulnefs in domeflic economy to every fanily.

Note- -The boiler above defcribed alfo heats an hot-loufe in an adjoining garden, befides boiling a copper, and thus does the work of fix fires.

LAUNOY, Joun de, in Biography, was born at Valdefie, a village of Lower Normandy, in 1603 . He received the early part of his education at Conftance, whence he was fent to the univerfity of Paris, where he purfued his Itudies -with great diligence for live or fix years. In 1636 he was ordained prielt, 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 moft eminent characters ; but on his return to Paris, he applied with great intcufenefs to his ftudies, and compofed a valt variety of works on fubjects relating to hiltory, criticifm, and eccletiaftical difcipline. At his own houfe he formed a kind of literary fchool, for the difculfion of topics that tended to the improvement of the mind. He was an able defender of the rights of the -Gallican church, in oppofition to the pretentions of Rome. He attacked feveral falle traditions with great intrepidity; and he contended fo forcibly for expunging the names of feveral falfe faints from the calendar, that he was called the banifher 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 fufpected the whole martyrology; and he examined all the faints one after another, in the fame manner as they do the nolility in lrance:" By the freedom which he exercifed in his writings, he provoked againtt him an hoft of enemies; and he was obliged, at the intimation of the king, to difcontinue his affemblies, which were held at his own apartments. He met with an excellent friend in the abbe d'Ellrees, who prefented him with a very valuable prefernent in the clurch, which he foon religned, chooling to live contented on a fmall income rather than endure the cares of bufinefs. He faid that it was nuch more difficult for a Chriftian to make a right ufe of riches, than to live without them. He died in his $75^{\text {th }}$ year, in 1678 . His works are very numerous, and have been collected and publifhed in ten volumes, folio. Of one of his pieces, viz. "De Auctoritate negantis Argumenti," Bayle fays, had he publifhed nothing elfe, he would have eftablifhed his fame as a benefactor to the republic of letters, by a thoufand fine hints which it contains for dillinguifhing truth from falfehood in hiftorical matters. He was a perfon of great fimplicity, a good friend, difinterelted, and laborious; an enemy to vice, void of ambition, charitable and beneficent, and ever obferving the fame tenor of life. Bayle. Moreri.

LAUNY, or Laux, in Geography, a town of Bohemia, in the circle of Saat\%, on the Egra, on the road from Leipfic to Prague; 9 miles E.N.L.. of Saatz. N. lat. $50^{\circ}$ $20^{\prime}$. E. long. $13^{\circ} 54^{\prime}$.

Lavoisier, Anthony Lawrence, in Biggrapey, a diftinguilhed clemical philofopher, was born at Paris, on the 13 th of Augult $17+3$. His father, who was a man of opulence, fpared no expence in bettowing upon him the advantages of a liberal education; and he difplayed very early proofs of the extent and fuccefs of his studies, efpecially in the circle of the phytical fciences. In the year 1764, the French government propofed a prize queftion, relative to the belt method of lighting the ftrects of a large city. Lavoilier prefented a differtation on the fubject, which he difcuffed upon the molt enlarged and philofophical 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 conflantly one of the molt active and ufeful aflociates. A bout the fame time, he was occupied in experimental refearches on a variety of fubjues: fuch as the analy fis of the gypfum found in the neighbourhood of Paris; the cryflallization of falt ; the properties of water; and in explorings the phenomena of thunder, and of the aurora borealis: and he dittinguifhed himfelf by feveral differiations on thefe and other topics, practical and fpeculative, which appeared in different periodical works. In the Memoirs of the Academy for $1 \%{ }^{2} 0$ were publifhed his obfervations on the nature of water, and on the experiments which had béen fuppofed to prove the poffibility of its converfion into earth. He proved, by a careful repetition of thefe experiments, that the earthy depolit, left after repeated diftillations of water, procceded folely from an abrafion of the veffels employed. Lavoifier performed feveral journies into various parts of France, in company with M. Guettard; in the courfe of which he collected a fore of materials for a lithological and mineralogical hiltory of that kingdom, which he ingeniouny arranged in the form of a chart. Thefe materials were the bafis of a great work on the revolutions of the globe, and on the formation of the ftrata of the earth : two interefting iketches of which were printed

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printed in the Memoirs of the Academy for the years $17 \neq 2$ and $1787^{\circ}$

In fact, M. Lavoifier devoted his whole time and fortune to the cultivation of the feiences, the boundarics of which he feemed, by fuch an union of zeal, talent, and wealth, deflined to extend. About this period, a new mine of experimental refearch, which promifed the molt curious and interelling refults, had been opened out by the genius of 1)r. Black, and already purfucd with much fagacity and induftey by Dr. Priettley.-We allude to the difcovery of the properties of certain acriform fubitances, gafes, or (as they have been called) factitious airs, which had hitherto efcaped the attention of chemical inquirers. M. Lavoilier, ttruck with the beauty and importance of thefe difcoveries, entered into the fame field of refearch with all the feientific ardour by which he was characterized: and here the advantage of his ample wealth was manifelt; for he conducted his experiments upon a large fcale, with coflly iultruments of the molt improved conltraction. The refult of this courfe of experimental inquiry he gave to the world in 1574, 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 aëriform fluids, but alfo feveral original experiments, remarkable for their indrenuity and accuraey.

The exiltence of a gafeous body, in a fised or folid itate, in the mild alkaties and alkaline earths, which, when expelled from thefe fubitances, aflumed an aërial form, and left them in a caultic tate, as well as its production during the combuttion of fuel, had been demonitrated by Dr. Black; and Bergman had thewn that this air poffefied acid properties. Dr. Prielley had allo fubmitted it to various experiments in the year ${ }^{1} 767$; but no progrefs had been made in afcertaining the real conltituent parts of this acid gas, or fixable air. 'The honour of this difcovery was left for Lavoilier; who, in 1772 , by expofing a piece of charcoal, inclofed in a glafs veffel, to the action of a lens, difcovered that part of the charcoal was confuned, that a diminution of air had taken place in the receiver, and that the refidue poffeffed the properties of the lixable air:-whence he concluded that charcoal was one of the conftituent parts of this gas. The combutible rature of the diamond having been alrendy proved by Macquer, d'Arcet, and others, Lavoifier was induced to fubmit this fubitance to the fame treatment as the charcoal in the former experime:.t; and he found that precifely the fame refults took place: whence he inferred, that there cxifted a great analugy between charcoal and diamond. Both thefe conclufions have been amply confirmed by fubfequent experiments: ther were in every refpect important; and feen, together with the facts previoufly known, of the production of acids by the combultion of fulphur and phofuhorus, to have given the firlt hint to Lavoifier of his fubfequent general theory of the formation of acids.

Lavoifier now turned his experimental refearches to the fubject of the calcination (as it was then termed, from its apparent fimilarity to the procefs of making lime) of metals. It had already been fhewn by Rey and Humberg, that metals acquire an augmentation of weight during calcmation. This additional weight was attrisuted by the latter to the fixation of heat and light ; but was fuppofed by the former to proceed from the fixation of a part of the air. M. Laveitier publifhed the refilt of his inveltigation of this curious fubject in ry74, in a memoir on the calcination of tin in clofe veffels, th which he demonitrated the following very important facts. He fhewed, 1 , that a given quantity of air was requilite for the calcination of a given quantity of tin; 2 , that a part of the air is abforbed during this pro.
cofs, by which net only the Dutk, isut the wergite of the air is diminithed; 3, that the weight of the tin is increafed during the fame procefs; and, A, that the weight acquired by the tin is exactly equal to that which is loft by the air.

Thus by a few limple, accurate, and well-chofen experiments, Lavoilier had apparently arrived at the legritimate inference, that during the procefo of the formation of acid, whetler with carbonaceous matter, fulphur, or phofiphorus, and alfo during that of the calcination of metals, an abforption and hixation of air take place, and thus he gained a glimple of principles, in tho viev of which his fingular fagacity in deviling experiments, and his accuracy in exceuting them, would in all probability have alone colfucted him (1) thafe brilliant refults, to which the active genies of 1) r . Prictley fo materially contributcd. The fy yelhetic proof. only of this union of air with the bafe had been as yet afcertained: but Dr. P'riefley firt furnifhed the analytic proof, by diftevering the combination; a difcovery which at once advanced the natcent theory of Lavoilier, and, in his hands, became the fource of more than one important conclufion. In Alegult 1774, Dr. Priellee difcovered, that by heating certain metallic calces, efpecially the calcined mercury, (the precipitate per fe. as it was then called, a quantity of air was feparated, while the mercury refumed its metallic form; and this air, which he found was much purer than that of the atmofphere, he called, from the theory of the time, dephlogijficated air. The fucceeding winter he spent at Paris, and communicated to Lavoilier, and the other philofophers there, his recent difeovery: and the importanse of this intelligence to the views of Lavoilier was manifett in a memoir pubilithed by him in the following year, 1775, on the nature of the principle which combines wihh metals during their calcination. In this paper he fhewed, in conformity with the experiments of Dr. Priefley, that the mercurial precipitate per fe, by being heated in a retort, gives our a highly refpirable air, ( (ince called ooyycon, ) and is itfelf reduced to the metallic fate; that combultible bodies burn in this air with increafed brilliancy; and that the fame mercurial calx. if heated with charcoal, gives out not the pure air, but fixed air:-whence he concluded that fixed air is compofed of charcoal and the pure air. It has, therefore, fince been called carbonic acil.
A fecond very important confequence of Dr. Prieftley's difcovery of the pure or vital air, was the amalyfis of the air of the atmofphere: which was accomplifhed by Lavoificer in the following manner. He included fome mercury in a clofe veffel, together with a known quantity of atmolpheric air, and kept it for fome days in a builing flate: by degrees a fmall quantity of the red cals was formed upon the furface of the netal; and when this ceafed tu be projuced, the contents of the veffel were examined. The air was found to be diminifhed both in bulk and weight, and to have been rendered altogether incapable of fupporting combuftion or animal life: part of the mercury was found converted into the red calx, or precipitate per. $\sqrt{c}$; and, which was extremely fatisfactory, the united weight of the mercury and the precipitate exceeded the weight of the original mercury, by precifely the fame amount as the air had loit. To complete the demonfration, the precipitate was then heated, according to Dr. Priellley's firt experiment, and decompofed into fluid mercury and an air, which had all the properties of vital air ; and this air, when mixed with the unrefpirable relidue of the original air of the receiver, compofed an elaitic fluid poffelfing the fame properties as atmof pherical air. The vital air was afterwards made the fubject of various experiments in refpect to the calcination of metals, to the combultion and converlion of fulphur and phofphorus into

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acids, sec. in which proceffes it ivas found to be the chief agent. Hence it was named by lavoifier oxyyen (or generator of acids), and the unrefpirable refidue of the atmoPphere was called $a \approx o t$, (i. e. incapable of fupporting life.)

The new theory thus acquired farther fupport and confiftency: oxygen appeared to be one of the moll active and inportant agents of chemiftry and of nature; combultion, acidification, and calcination, (or, as it was now called, oxydation, the calces being alfo termed oxyds, i. e. fonething approaching to, or refembling acids, were proved to be procefies ftrikingly analogous to each other; all according in thefe points, that they produced a decompofition of the atmofpheric air, and a fixation of the oxygenous portion in the fubilance aciditied or calcined.

Time alone feemed now requilite to ellablifh thefe decerines, by exemplifying them in other departments of chemisal refearch. In the year $1 / 7,7$, fix menoirs were communicated to the Academy of Sciences by Lavoifier, in which his former experiments were comfirmed, and new advances were made to a confiderable extent. Our countrymen, Black and Crawford, in their refearches refpecting latent heat, and the different capacities of bodies under different circumitances, had laid a folid foundation, on which the doctrines of combultion, refulting from the foregoing experiments, might be perfected, and the caufe of the light and heat connected with it might be explained. The firft mentioned philofurther, Dr. Black, had hiewn, that a folid, when it is made to affume a liquid form, and a liquid, when it affumes the form of vapour, abforls 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 Lavoilier, during the procefs of -ombuftion, the oxygen, which was previoufly in a gafeous ftate, is fuddenly combined with the fubtance burnt into a liquid or folid. Hence all the latent heat, which was efential to its gafeous flate, being inftantaneoufly liberated in Jarge quantity, produces flame, which is nothing more than very condenfed frec heat. About the fame time, the analogy of the operation and necefiity of oxygen in the function of refpiration, with the preceding lyyputhefis of combuftion, was pointed out by Lavoilier. In the proce?s of refpiration, it was found that, although atmofpheric air is inhaled, carbosc acid and azot are expired. This animal operation, faid Lavoifier, is a fpecies of flow combuttion: 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 extenfion of the analogy appeared, the fubject of animal temperature is till under many obfcurities and difficulties.

The phenomena of chemiftry, however, were now explicable upon principies more fimple, confittent, and fatisfactory than by the aid of any former theory; and the Lavoifierian doctrines were every where gaining ground. But there yet romained a formidable objection to them, which was derived from a circumitance attending the folution of metals in acids; to wit, the production of a conliderab'c quantily of inflammable air. If fulphuric acid (formerly called vitriolic acid, or oil of vitriol) cumffis only of fulphur and oxygen, it was faid, and bar iron is nothing more than this metal in a fimple fate, how dues it happen, that when thefetwo fubtances, with a little vater, come in contaft, they flould produce a large quantity of inflammale air during their re-action? This objection was unanfwerable, and appeared to be fatal
to the whole theory: But it was mof opportunely converted into an argument in its farour, by the great difcovery of the decormpolition of water, made by Mr. Cavendifh ; who refolved that clement, as it was formerly efteemed, into exygen and inflammable air. The latter has fince, therefore, been called bydrogen, or generator of water. This experiment was repeated with full fuccefs by Lavoifier and his aftociates in 1783; and the difcovery was farther eltablified by a fuccefsful experiment of the fame chemitts, carried on upor a grand fcale, in which, by combining the oxygen with hydrogen, they produced water, and thus adding fynthefis to analyfis, brought the fact to demonftration.

This new view of chemical phenomena, together with the immenfe accelfen of new compounds and fubitances, which the labours of modern experimentalifts had brought to light, appeared to demand a correfpondent alteration in the nomenclature. Accordingly, a committee of fome of the ableft of the French chemitts, of whom Lavoifier was the moft confpicuous, undertook the arduous tafk, and produced a regular fyitem of nomenclature, derived from the Greck language, which, although far from being faultlefs; and notwithlanding much oppofition with which it was at firft treated, has become the univerfal language of chemical fcience, and has been adopted even in pharmacy and medicine. His work, entitled "Elemens de Chymie," which was publihed in 1789 , was a model of fcientific compofition.

We have hutherto viewed M. Lavoifier principally as a chemical philofopher, in which character he has tounded his great claims to the refpect and admiration of pollerity. But the other arts and fciences are indehted to him for confiderable fervices which lie rendered them, both in a public and private capacity. In Frasce, more than in any other country, men of fcience have been confuited in matters of public concern; and the reputation of Lavoinier caufed him to be applied to, in $I_{7} 76$, to fuperintend the manufacture of gunpowder, by the enlightened minitler Thurgot. By the application of his chemical knowledge to this manufacture, he was enabled to increafe the explofive force of the powder by one fourth; and while he fuppreffed the troublefome regulations for the collection of its materials from private houfes, previoully adopted, he quintupled the produce. The Academy o! Sciences received many fervices from his hands. In addition to the communication of furty papers, relative to many of the molt importent fubjects of philofophical chemiltry, which were printed in the twenty volumes of Memoirs, from 1772 to 1793, he moll actively promoted all its ufeful plans and refearches, being a member of its board of confultation, and, when appointed to the office of treafurer, he introduced order into its accounts, and economy into its expenditure. When the new fyttem of meafures was propofed, he contributed fome new and accurate experiments on the expanfion of metals. The national convention confulted him with advantage concerning the beft method of manufacturing affignats, and of fecuring them againft forgery. Agriculture carly engaged his attention, and he allotted a confiderable tract of land on his eftate in the Vendome, for the purpofe of experimental farming. The committee of the conitituent affembly of 179 I , appointed to form an improved fyftem of taxation, claimed the alfiflance of his extenfive 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 affembly, under the title of "Richefies Territoriales de la France," and was eftcemed the molt valuable memoir on the fubject. In the fame year, he was appointed one of the commifioners of the national treafury; and be introduced

## L A V

Into that department fuch order and regularity, that the yroportion between the income and the expenditure, in all the branches of government, could be feen at a fingle view every evening. Thlis fpirit of fyltematic and lucid arrangement was, indeed, the quality by which he was pecularly dillinguifhed, and its happy influence appearcd in every fubjeet which occupsed his attention.

The prisate life of this diftinguifhed perfon was equally eftimable with his public and phlofophical character. He was extremely liberal in lis patronage of the arts, and encouraged young men of talents in the purfuit of fcience. His houfe became a vafl laboratory, where philofophical experiments were inceffantly carrying on, and where he held converfaziones twice a week, at which all the votaries of learning and fcience, foreigners as well as Frenchmen, affembled. In his manners M. Lavoifier was mild, affable, and obliging ; a faithful friend and hufoand, a kind relation, and charitable to the poor upon his eftates; in a word equally claiming efteem for his moral qualities, as for thofe of his underitanding.

The time was arrived, however, when diftinetion 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 a'moft certainly fatal. All thofe efpecially, who had held any fituation under the old adminiftration, particularly in the financial departments, were facrificed during the murderous reign of Robefpierre, to the popular odium. Lavoifier was icized and thrown into prifon, upon fome charges fabricated againit himfelf and twenty-feven other farmers-general. During his confinement he forefaw that he fhould be ftripped of all his property; but confoled himfelf with the expectation that he would be able to maintain himfelf by the practice of pharmacy. But a more fevere fait awaited him: he was capitally condemned, and dragged to the guillotine, on the 8 th of May, 5794.

The name of Lavoifier will always be ranked among the moft illultrions chemitts of the prefent age, when it is confidered what an extenfive and beneficial influence his labours have had over the whole fcience. It has been faid, indeed, that if he be effimated on the fcore of his actual difcoveries, not only Scheele and Prieftley, and Cavendifh, but many more, will itand before him. But he pofferted in a high degree that rare talent of difcernment, by which he detected analogies, which others overlooked, even in their own difcoseries, and a fagacity in devifing and an accuracy in completing his experiments, for the purpofe of elucidating every fuggeftion which he thus acquired, fuch as few philofophers \&ure poffefled, No one who did fo much, probably ever made fo few unfucceffful or random experiments. It was the fingular perficuity, fimplicity and order to which he reduced the phenomena of chemiltry, that claimed for his theory the general reception which it met with, and occafioned the abandonment of thofe doctrines which prejudice and habit confpired to fupport. Subfequent difcoveries, however, and wnore efpecially thofe numerous facts which the genius of Mr. Davy has lately brought to light, through the medium of that moft powerful agent of decompolition, galvanifm, have rendered feveral modifications of the Lavoifierian theory neceffary, and bid fair to produce a more general revalution in the language and docirines of chemiftry.
M. Lavoifier married, in 177 I , the daughter of a farmergeneral, a lady of pleafing manners and confiderable talents, who partook of ber hurband's zeal for philofophical inquiry, and cultivated chemittry with much fuccefs. She engraved with her own hand the copper plates for his laft work. Mad. Lavoifier has fince given her hand to another eminent philo.

## I. $\wedge U$

fopher, count Rumford. Gen. Biog. IIutchinfon"s Bioz. Med.
LAVONIA, in Georrafhy, a town of Naples, in Calabria Citra; 8 miles W.S.W. of Roffano.-Alfu, a quwn of Calabria Ultra; 14 miles W. of Squillace.

Lavora, or Thrma in Lavora, a fertile and delightful province of Naples, diverfified with hills and plains, lying between $40^{\circ} 36^{\prime}$ ald $41^{\circ} 45^{\prime} \mathrm{N}$. lat. ; anciently 'Terre Laboria, Campania, and Campus Laboricus, and in the midude ages the Caftellany of Capua. It received its prefent name in rons from Richard II., prince of Capua, on account of the fitnefs of the foil for every kind of culkivation. This province is populous, and abounds in corn, wine, oil, and other productions of Italy. It is bounded o: the N.IV. by Campagna di Roma, on the N. and IE. by Abruzzo Citra and Contado di Molife, on the S.E. and S. by Principato Ultra and l'rincipato Citra, and on the IV. by the Mediterranean ; being 90 miles from N.W. to S.E. and $30-45$ in breadth; and in 1779 it contained $1,210,089$ inhabitants. It is watered by the rivers Garigliano and Voiturno; the former, which is a placid ftream, rifes in Abruzzo Ultra, and falls into the fea below Trajetto; the latter defcends from the A penninss, pafies by Capua, and lofes itfelf in the gulf of Grota. 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 Perfia, in, Chufittan; 50 miles E. of Toltar.

LAURA, a town of Ruffia, in the government of Mofcow; 36 miles N.E. of Mofcow.
Laura, a town of Hindooltan, in the circar of Nagore ; 20 miles W. of Catchwana,

Laura, Azvpz, primarily fignifying village, fireef, or hamlet, a name given to the refidence of the ancient monks. Authors cannot agree about the difference between a laura and a monaftery : fome pretend, that a laura was a monaftery, wherein there lived at leaft a thoufand 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 apurtment; but the laure were a kind of villages, whereof each houfe was inhabited by one or two monns at the molt ; fo that the houfes of the Chartreux feem, in fome meafure, to reprefent the ancient laure, and thofe of the other monks proper monafteries., The term laura was only underttood of the religious places in Egypt, and the Eaft, where their houfes ftood apart from each other, and were not joined by any common cloitter, the monks that inlabited them only meeting in public once a week.

LAURADIO, in Geography, a town of Portugal, in the province of Eftramadura, on the S. Fide of the Tagus, 6 miles S.S.E. of Libbon.

LAURAGAIS, the name, before the revolution, of a fmall country of Fravec, in Upper Langredoc, of which Caltelnaudary was the capital.
LAURANA, a fea-port of Iftria, with a finall harbour. in the gulf of Quarnero; 8 miles S of Caftua. N. lat. $45^{\circ} 28^{\circ}$ E. Elong. $14^{\circ}{ }^{17}$.

LAURE,

## I. A U

LAURE, a town of Portugal, in the provinee of Alantejo; 30 miles W. N.W. of Evora.

LAUREAT, POET, is a well known office in the king's houfhold. Sir toln Hawkins obferves, that there are no records which afcertain the origin of the inftitution of tise 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, mamed Henry de Avranches, who is fuppofed to have lad an appointment of a hundred fhillings a year, by way of falary or ttipend. In 1341 Petrarch was crowned with laurel in the Capitol by the fenate of Rome; afterwards lirederic ILI. emperor of Germany, gave the laurel to Conradus Celtes; and ever fince the counts palatine of the empire have claimed the privilege of folemnly invelting poets with the bays. Chaucer, who was contemporary with Petrarch, and acquanted 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 anmual allowance of wine. We read of perfons under the fame title in the reigns of Edward IV. Henry V'II. and VIIl. and of James I. who, in 1655 , granted to his laureat an annual penfin of 100 marks. In the year 1630, this penfion was augmented, by letters patent of Charies I. to $100 \%$ per ammm, with an additioual grams of one terfe of Canary Spanilh wine, to be taken out of the king's thore of wines yearly. Hawkin's Hilk. of Mulic, vol. iv. p. 13.

LAUREATION, a term in the Scottifh univerfitics, ufed for the act of taking up the degree of a malter of arts, to which the fludents are admitted after four years' ftudy in the univerfites.

LAUREL, in Butany and Gardring. Sce Lacres and Prexles.
Laurel, Common or Cher"., Ptanus laurocerafus, in the Materia Medica, is a native of the Levant, and has been long cultivated in Britain. The leaves have a bitter Ityptic tafte, accompanied with a flavour relembling that of bitter almonds. The fiowers alfo have a dimilar flavour. The powdered leaves, appliid to the nottrils, excite fineering, but lefs powerfully than tobaceo. Whe kerncl-like flavour of the leaves has caufed them to be ufed for culinary purpofes, efpecially in cuftards, pudings, blanc-mange, $\mathcal{E c}$. and as the proportion to the quantity of milk is inconliderable, this has been done withont any noxious effect. However, as the poifonous quality of this laurel is now indubitably proved, the public fhoild be cautioned againlt its interal ufe. The firit and principal proofs of the deleterious effects of this veretable upon mankind were communicated to the Royal Society by Dr. Madden of Dublin, in a " letter giving an account of two women being poifoned by the limple ditilled water of laurel-leaves, and of feveral experiments upon dogs, by which it appears that this laurel is one of the moit dangerons poifuns litherto known." He mentions alfo the cafe of a genteman, who by milake drank a quantity of this laurel walcr, and died in a few minutes, complaining of a viulent difurder in his ftomach. (See Phil. Trand. $N^{0}$ q18. 426 , vol. $x 2 x$ vii.) The cafe of tir Theodofius Boughton is more recent. His death in 1780 was afcribed by an Egylifh jury to this poifon. In this cafe the active principle of the lauroceraifs was concentrated by repcated diftillations, and given to the quantity of an ounce. It has been found by the experiments of Mad. den, Mortimer, Nicholle, Langrifh, Vâter, Fontana, and others, that to brute animals this poifon is almoft intiantaneoufly mortal. Thefe experiments alfo thew, that the laurelwater is deftructive to animal life, not only when taken sato the komach, but atfo on being injected into the inter-
tines, or applied externally to different organs of the body. The mont volatile is the moft active part of the laurocerafus; and from jts fenfible qualitits we may be led to judgu, that an analogrous principle feems to porvade many wther vegetable fubitances, efpecially the kernels of drupaceous fruits; and in various fpecies of the Amygdalus, this fapid principle extends to the flowers and leaves. It is obfervable, that it is much lefs powerful in its action upon human fubjects than upon dogs, rabbits, pigeons, and reptiks. To poifon man, the effential oil of the lauroccrafus muit be feparated by dillillation, as in the fpirituous or common lauret water; and unlefs this is flrongly imbued with the oil, or given in a large dofe, it proves innocent. Dr. Cullen remarks, that the fedative power of the laurocerafus ads upon the nerrous fyltem in a different manner from opium and other narcotic fubilances, whofe primary action is upon the animal functions; for the lantocerafus does not occafion fleep, nor dues it produce local inflimmation, 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 adrocates. From Limareus we learn, that in Switzerland it is commonly and fuccefsfully ufed in pulmonary complaints. Langrifh mentions its efficacy in agues; and as Bergiens found bitter almonds to have this effect, we may from analogy conclorde, that this power of the laurocerafus is well ellablifhed. Baylies found that it pofteffed a remarkable power of diluting the blood, and from experience, recommended it in all cales of difeafe fuppofed to proceed from too denfe a flate of that fluid; adducing particular inftances of its efficacy in rheumatifm, athnia, and in fchirrous 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 $3^{\circ}$ to +0 drops three or four times a day." Woodville's. Med. loot.

Latidel, Alevandrian, in Botany. See Ruscus.
Laulel, Druaff, of America. See Kapma.
Lauliel, Seafide. See Pintllantitus.
Lautil, Spruce, or Spurge. Sce Dipine.
Lacral Mountains, in (ieoryaphy, a range of mountains: W. of the Alleghany ridge, and part of the Alleghany mountains ; extending frorv 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. $38^{\prime} 30^{\prime}$. W. long. $81^{\circ} 19^{\prime}$. About lat. 36 , in a fpur of this mountain, is a fpring of water 50 feet dcep, very cold, and, as it is faid, blue as indigo. The lands, within a fmall diftance of the Laureli momtains, through which the Youghiogang river runs, are in many places broken and flony, but rich and well timbered; and in fome places, and particularly on Laurel creels.: they are rockj and mometainons. From the Laurel mountain to Monongatela, the lands for the firt feven miles are good, level, and fit for farming, interfperfed with finc meadows : the timber', white-oak, clefnut, hickory, Sic. Morfe.

Latiel Rizer, a rivery of Kenticky, which runs intothe Cumberland, $N$. lat. $3.6^{\circ} 34^{\prime}$. W. Iong. $83^{\circ} 50^{\prime}$.

LAERELS, pieces of gold coined in the year 1619, with. the king's bead laureated, which gave them the name of: laurcls ; the twerty-hilling pieces of which were marked: with XX , the ten 1hillings X , and the five flilling pieces. with V .

LAUREMBERG, Peter, in Biograply, a learnedphyfician, was born at Rollock, where his father was profeffor of medicine and miathematics. Peter took the degree of doctor in the univerlity of his native place, and afterwards
travelled into France, and fettled for fome time at Montauban, where he taught philofophy in r6in. In 1614, however, he was at Hamburgh, and was profeffor of natural philofophy there until 1620 ; when he returned to Roftock, and was appointed profeffor of poctry in 1624. He died in this city on the 13th of May, 1639, at the age of 54. He left feveral works; thofe on anatomy, however, were efteemed by Riolan as of very indifferent worth. They are, "Difputationes Phyficx," Roftock, 16ı6. "Ifagoges Anatomicæ Grecx Interpretatio," Hamburgh, 1616. "Proceftria Anatomica," ibid. 1619. "Laurus Delphica, fen, Confilium quo defcribitur Methodus perfacilis ad Medicinam," Leyden, 1621. "In Synopfin Aphorifmorum Chymiatricorum Angeli Salx, Vicentini, Notre et Animadverfiones." Roftock, 1624. "Porticus Efculapii, feu, geralis Artis Medice Conlfitutio," ibid. 1630. "Apparatus Plantarius primus, \&c." Francfort, 1632. "Paficompfe nova, id eft, delineatio Pulchritudinis," Leipfic, $1634^{\circ}$ "Anatomia corporis humani, five Collegium Anatomicum duodecim difputationibus comprehenfum," Roft. 1636.

William Lauremberg, the father of the preceding, who died in 1612 , left an "Effay on the malignant, petechial Fever," Roftock, 1605 ; and the following polthumous works: "De Curatione Calculi," Leyden, 16i9. "Botanotheca, five Modus conficiendi Herbarium vivum," 1626 : and "Hitoria Defcriptionis Aelitis, five Lapidis Aquilx," 1627. His younger fon, John Lauremberg, likewife was a phyfician, and author of feveral 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 publifhed 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. Io. 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 monaftery of St . Laurence d'Oulx, in Dauphiné.

This congregation is faid to have been founded by St, Benedict. It was deftroyed by the Vandals, and continued uninhabited till the middle of the inth century. In 105\%, Odo, count of Savoy, gave it to one Gerard, and his canons. This donation was confi:med in Ic65; by Cunibert, bifhop 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 provoit, and exercifes a fpiritual jurifdiction throughout his provofthip.
Laurence, Bay of St., in Geograpby, a bay on the E. coaft of Ruffia, at the entrance of Beering's ftraits. N. lat. $63^{\circ} 47^{\prime}$. E. long. $188^{\circ} 15^{\prime}$.

Laurence Creek, a river of Kentucky, which runs into the Ohio, N. lat. $38^{\circ} 30^{\circ}$. W. long. $83^{\circ} 36^{\prime}$.

Liaurexce Ifland, a fmall ifland in the gulf of Florida, near the coaft of Eaft Florida. N. lat. $25^{\circ} 36^{\prime}$. W. long. $80^{\circ} 22^{\prime}$ 。

Laurence Ifland, an ifland in the Pacifio occan, on the coaft of Ruffia, near Tfchukotfloi Nofs; about three leagues in circuit. N. lat. $63^{\circ} 47^{\prime}$. E. long. $188^{2} 15^{\prime}$.

Laurence, Gulf of St., a part of the North Allantic osean, fituated between the illand of Newfoundland, Labra-

VoL, XX.
dor, Canada, Nova Scotia, and the ifland of Cape Breton; 个?O miles in length, and 150 in breadth. This is the eftuary of the river of the fame name, and is generally frozen froms December to A pril. 'This nobl- gulf is clofed by the ifland of Newfoundland, and by numerous fand-banks, particularly hy that which is called the Great Lank. N. lat. $47^{\circ} 51^{\prime}$. W. long. ' $57^{\circ}$ to $615^{\prime}$.

Laurence, Harbour of Sto, a bay on the S. coaft of Newfoundland, fituated N.W. of the entrance into liacentia bay.

Laurence Key, a fmall inand in the bay of Honduras, near the coaft of Mexico. N. lat. 16 . W. long. 89 ' $48^{\prime}$.

Laurence Kirk, a town of Scotland, in the county of Kincardine, in which have been lately ettablifhed manufactures of lawns, cambric, \&c. In 1790 it was crected into a burgh of barony, with the privilege of a markct. 'The population in 1801 was $1215 ; 7$ miles W. of Bervie.

Laurence, or Lawurence, Riter of St., the largeft, or at lealt the fecond, river in North America, being not lefs than 90 miles wide at its mouth, and navigable for flhips of the line as far as Quebec, a dittance of 400 miles from the fea. 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 fhips drawing fourteen feet water. During the whole of its courfe to King fton 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 neceflary to lighten the batteaux, if heavily laden. Mr. Weld fuggefts, that at each of thefe places it is poffible to conitruct carals, fo as to prevent the trouble of unlading any part of the cargoes of the batteaux ; 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 ftream that iffues from lake Ontario. From Ontario to Montreal it has the name of Iroquois, and afterwards it aflumes the name of St. Laurence. This river cannot, conformably to geographical ufage, be traced beyond lake Ontario, to lake Supcrior; much lefs, with Mr. Weld, to lake Winipic, which, according to the beft maps, has no communication with the fea of Canada, or the connected lakes Superior, Michigan, and Huron. The length of the St. Laurence may be reckoned about 700 Britifh miles, its chief characteriftic being its breadth. Mr. Weld has made feveral obfervations on the importance of this river to the commerce of North America. The time required to afeend this river, from Montreal to Kingfton, is commonly found to be feven days, but with a flrong and favourable wind the voyage may be performed in lefs time, and with an adverfe wind it will of courfe require longer time. The paffiage downwards is performed in four or five days, according to the wind. The current is fo ftrong, that a contrary wind feldom lengthens the paffage in this direction more than a day. The channel of this river, in ftead of having been impaired by time, like thofe of many others, and that of the Miffifippi in particular, is found to be confiderably better now than when it was firf difcovered; and there is reafon to imagine that it will improve ttill more in procefs 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 remore banks of ground and of loofe ftones in the river, and thus to deepen its leed. To this purpofe, it is obferved, that the channel on the N. fide of the ifland of Orleans, immediately below Qnébec, which, in the year 1720 , was not deep enough to admit a

## L $A$ U

Pallop of fmall fize, except at the time of high tides, is at prefent of fufficient depth for the largett veffels, and is the channel moft generally ufed. This river, in its courfe, 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 comparifon of the St . Laurence with other rivers, connecting the lakes with the Atlantic ocean, that this river opens a fhorter paffage than any of the others, and that the portages are fhorter than in any of the other routes; they are allo fewer, and goods may be tranfported in the fame boats the whole way from Montreal to the lakes. Befides, the St. Laurence witl, 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 conftantly fupplied from that immenfe refervoir of water, lake Ontario, it is never fo low, even in the drief feafon, as not to be fufficiently deep to float laden batteaux.

The fcenery along various parts of this river is very fine, as it winds for bundreds of miles through a rich country, diverfified with rifing grounds, woodlands, and cultivated plains. The attention, in going down the river, is particularly attracted by the beautiful difpofition of the towns and villages on its banks. All the houfes have a neat appearance at a diftance; and in each village, however fmall, there is a church: the churches are kept in good repair, and moit of them are covered, according to the cuftom of the country, with tin, which, from the manner in which it is put on, never becomes rufty.

LaURens, Andrew du, or Laurentius, in Biosraphy, a French phyfician, was born at Arles. He was a difciple 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 interef was appointed chancellor of the univerfity of Montpellier, phyfician to the queen, and ultimately (in 1606) firft phyfician to the king, Henry IV. He died in 1609 . He left feveral works, the principal of which were upon anatomical fubjects, and were more remarkable for elegance of ftyle, than correctnefs in the detail of facts. His "Hiftoria Humani Corporis et fingularum ejus partium anatomica," folio, 1600 , was often reprinted, and tranlated into French by Heliot, in 1741. The figures of this work are chiefly copied from Vefalius. He publifhed alfo "Difcours de la Vue, des Maladies melancholiques, des Catarrhes, et de la Vieilleffe," ${ }^{1596}$, which was tranflated both into Latin and Englifh. Gen. Biog. Hutchinfon Biog. Med.

Laurens, in Geography, a diftriat of South Carolina, lying between Enoree and Saluda rivers; about 31 miles long and 22 broad, containing 12,809 inhabitants, of whom 1919 are flaves.

Laurexs Court-houfe, a place in the above county, 20 miles from Bufh river, 32 from Newbury, and 40 from Greenville ; in which is a poft-office.

Laurexs, Sto, a fmall ifland in the Indian fea. S. lat. $9^{\circ}$ $35^{\prime}$. E. long. $52^{\circ}$.

LAURENT, St., a town of Hifpaniola, 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 Mor-tagne.-Alfo, a town of France, in the department of the Jura; i2 miles N. of St. Claude.-Alfo, a town of France, in the department of the Lower Seine; feven miles N. of Rouen.-Allo, a town of France, in the department of the Aude; four miles E. of La Graffe.-Alfo, an ifland in the Pacific ocean, near the coalt of Peru, at the entrance of the harbour of Callac.

## LA U

Launent 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 Eaftern Pyrenécs; nine miles S.W. of Cerat.

Laurect de Chamouffet, St, a town of France, in the department of the Rhone, and chief place of a canton, in the diftrict of Lyons; 15 miles W. of Lyons. The place contains 1255 , and the canton 10,978 inhabitants, on a territory of $1 \$ 2 \frac{1}{2}$ kiliometres, in 14 communes.

Lavrest-fur-Gorre, St., a town of France, in the department of the Upper Vienne, and chicf place of a canton, in the diftrict of Rochechouart; 15 miles W.S. W. of Limoges. The place contains 2313 , and the canton 13,519 inhabitants, on a territory of $26 ;$ kiliometres, in nine communes.

Laureat de Médoc, Sto, a town of France, in the department of the Gironde, and chief place of a canton, in the diftriet of Lefparre; 50 miles from Lefparre. The place contaius 549 , and the canton 3706 inhabitants, on a territory of $65 \frac{1}{2}$ kiliometres, in fix communes.
Laubext 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. Florent.

Laurext 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 dee: partment of the Meufe; 12 miles N. of Eftain.

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 diftrict of Grenoble; 12 miles N . of Grenoble. The place contains 3339, and the canton 11,551 inhabitants, on a territory of $1 \delta_{2 \frac{1}{2}}$ kiliometres, in eight conimunes.

Laúrent de Rividol, St., a town of France, in the dppartment of the Aveiron; nine miles N. of Severac.

Laurent de la Salaque, St., a town of France, in the department of the Eaitern Pyrenées; feven miles N.E. of Perpignan.

LAURENTALIA, or Larentalia, called alfo La: rentinalia, Laurentales, and Larentales, feafts 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 fhepherd Fauftulus, and nurfe of Romulus and Remus.

Acca Laurentia, from whom the folemnity took its name, is reprefented as no lefs remarkable for the beauty of her perfon, than her lafcivioufnefs; on account of which, the was nick-named by her neighbours', lupa, Jke-wolf; which is faid to have given rife 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 ber death, fhe left to the Roman people; in confideration of which they performed her thefe honours; though others reprefent the fealt as held ia honour of Jupiter Latiaris. See Larentinalia and Lares.

LAURENTEVA, in Geography, a bay or gulf of the Frozen fea, on the W. coaft of Nova Zembla. N. lat. $72^{\circ} \mathrm{I}^{-1}$ 。E. long. $53^{\circ} 14^{\prime}$.

LAURENTIA, in Botany, Mich. Gen. is.t. I4, received its appellation from Macheli, in compliment to Dr.

## L $\AA$ U

Mark Anthony Laurenti, a phyfician and profeflor at Bo. logna, whofe botanical merits have not been tranfmitted to poftecity, and the name is now funk in that of Lobeliu, to which article we refer the reader.

LAURENTUM, in Ancicnt Geography, a town of Italy, in Latium, of which it was for fome time the capital; and fuppofed to have been the relidence of king Latinus; fituated upon the fea-coatt, about eight miles S. of the capital.
LAUREOLA, in Botany, Spurge Laurel. Sce Dapine.

LAURI, Filippo, in Biography, painter of figures and landícapes. He was fon of Baldaflare Lauri of Antwerp, a landfcape-painter of note, who fettled at Rome, and died there in 164 .

Filippo was born in 1623; and became celebrated for cabinet pictures in the Flemith tyyle of colour, but with a much more correct and refined tafte of form than prevailed in that fchool; which molt probably he acquired by refiding with his father in Rome. His pictures are agreeably compofed, touched with great fpirit and freedom, of good colour and picturefque cffect. Claude Lorraine paid him the compliment to employ him frequently to put figures in the fore-grounds of his landfcapes; and in fome of his beft pictures, the hand of Lauri is difcernible in the better proportion and beauty of touch with which the figures are wrought than in thofe completed by Claude's own hand.

The fubjects he generally felected were thofe of nymphs, gods, and goddeffes, and the like; where he could, with propriety, introduce much of the nude. To thefe he gave great eafe in their actions, and compofed them in a very agreeable manner. He died in 169t, at the age of 71 .

Lavir, in Botany, a natural order of plants, to whtch Laurus, one of the number, gives its name; (the Laurine of Ventenat and Brown; fee Prodr. Nov. Holl. v. 1. 4or.) -This is the 27 th order of Juffieu's fyltem, the fourth of his fixth clafs. There is nothing equivalent to it among the Ordines Naturales of Linmeus.

The characters of Jufficu's fixth clafs are-Cotyledons two; petals none; ttamens inferted into the calyx. - The calyx is of one leaf, either fuperior 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 diftinct. Germen fuperior or inferior, or only invefled with the calyx, fimple, or rarely feveral in a definite number; flyle either folitary, or feveral in a definite number, or wanting; figma fimple 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 clafs are fix; Elagni, Thymelaa, Protea, Lauri, Polygonea, and Atriplices. It is one of thofe in which botaniits differ moft with refpect to the application of the terms calyx and corolla. In the two firft orders Linnæan botanifts ufe 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 clals, if truly na. tural, ought certainly to prefcribe the ufe of the fame term throughont, for the fame part; but a queltion will but too frequently arife how far any clafs is really natural, or out of the reach of all exception; for, in every fytem, the leading fections, or claffes, mult be regulated by technical characters.

The order of Lauri is thus chatacterized:
Calyx divided into fix parts, permanent. Stamens fix, inferted into the lower part of each fegment, or couble that
number, fix of them being interior; anthers combined with the filament, opening from the bafe upwards. Germen fuperior; Tyle one; ftigma fimple or divided. Drupa or berry of one cell, containing a nut with one feed. Embryo deltitute of albnnen. Stemarborefcent or flrubby. Leavez alternate, rarely oppofite.

The gencra are Laurus, Poroflema, Schreb, and Dougluffit, Schreb. to which Mr. Brown has added Iindiandra, Ciryptocarya, Tet-antbera, and the Linnean genus CaljybaGencra fubjoined by Juffieu as allied to the Lauri are $M y=$ riflica, Virola of Aublet, which Schreber properly reduces to Myriflica, and Hernandia; to which lift Mr. Brown adds Gyrocarpus ; fee that article. The excellent author laft mentioned, accultomed, as has been faid of Jortin and Goldfmith, to enrich every fubject which he touches, has made the curious difcovery of the cotyledons of the Lauri being peltate near their bafe. He has alfo remarked a ftrange inadvertence of Gærtner, who takes the cotyledons of Caffytha for albumen, and the plumula for cotyledons. Thefe parts, being rightly underltood, admirably prove the truc affinity of the genus, notwithllandiug its paralitical and leaflefs habit.

Lauri, in Gcography, a town of Naples, in Lavora; two miles S.W. of Sezza.

LAURIA, a town of Naples, in Baflicata; 17 miles E. of Policaftro.

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 ; is miles E. of Bellac. The place con. tains $140 \%$, 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. $50^{\prime} 13^{\prime}$. E. long. $10^{\circ} 32^{\prime}$.

LAURINO, a town of Naples, in Principato Citra; 9 miles W.N.W. of Policaftro.

LAURINUM. See Daphineleon.
LAURISTAN, in Geogruphy, a town of Perfia, in the province of Irak, on the Zenderoud; 90 miles W. of Ifpahan.

LAURO, a town of Portugal, on a river of the fame name, in the province of $\dot{A l}$ lentejo ; 27 miles W.N.W. of Evora.

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, notwithftanding the very dangerous qualities of the reft of the plant. See Prenus and Laurel.

LAUROTAXA, a name ufed by Columna, and fome other authors, for the narrow-leaved kind of rufous, or butcher's broom, called by others bifingrua.
LAUROW, in Geography, a town of Hindooftan, 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 botanifts, and along with which it now comprehends a great number of fpecies, contlituting one of the nobleft genera in the whole vegetable kingdom. The origin of the word is loft in the obicurity of antiquity; and whether etymologifts derive it from lavo, to wafh, or from laus, praife or honour, they give us little more fatisfaction in one cafe than the other.Linn. Gen, 200. Schreb. 27 C . Willd. Sp. Pl. v. 2. $47 \%$ Mart. Mill. Dict. ©. 3. Ait. Hort. Kev. ed 2. v. 2. $42 \%$ : Sm. Prodr. FI. Grec. Sibth. v. I. 268. Juff. So. Tuurn.

## L $\Lambda \mathbb{O}$ U S.

\&.367. Lamarck. Tlluftr t. $\mathbf{3 2 I}^{\text {² }}$. Grertn. t. 92.-( Borbonia; Plum. Gen. 3.t.2. Perfea; ibid. 44. t. 20.) Clafs and order, Enncandria Monogynia. Nat. Ord. Holvracea, Linn. Lauri, Juif.

Gea. Ch. Cal: none, unlefs the corolla be taken for fuch. Cor. in fix deep, ovate, pointed, concave, erect, alternately external fegments. Nectary confilting of three pointed coloured tubercles, each terminating in two brifles, furrounding the germen. Stam. Filaments ni:ne, fhorter than the coroila, compreffed, obtufe, three in each row ; anthers attached to the edges of each filament, in the upper part, at each fide. There are two globular glands, on a very fhort Italk, attached to every filament of the innermolt row, near its bafe. Pif. Germen fuperior, nearly ovate; ftyle fimple, of equal thicknefs throughout, the length of the ytamens; itigma obtufe, oblique. Peric. Drupa oval, pointed, of one cell, contained within the corolla. Secd. Nut ovate, pointed, with a kernel of the fame fhape.

Obf. Moft of the fpecies, including the Cinnamon and Camphor, have united, or hermaphrodite, flowers; fcveral are dioecious, as $L$. nobilis, the Sweet Bay, which has moftly from 8 to it ftamens, and a deeply four-cleft corolla. The glandular bodies attached to fome of the filaments, afford a difcriminating character.

Eff. Ch. Calyx none. Corolla calyx-like, in fix deep fegments. Nectary of three glands, bearing two brillles, and furrounding the germen. Innermoft filaments bearing glands. Drupa with one fecd.

Linnrus's itth edition of Sylt. Veg. has i6 fpecies, Willdenow has 34 , the increafe being chiefly from the works of Swartz and Thunberg. Several till nondefcript are in the hands of moft collectors of tropical plants. The genus is extremely interelting on account of feveral fine and valuable aromatic fpecies, as the Cinnamon, Caffia, Camphor, Saffafras, \&c. The habit of the whole is arborefcent. Leaves ftalked, almoft without exception alternate, undivided, entire, fmooth and evergreen, more or lefs ovate or elliptical. Florwers moftly panicled, fmall, pale or greenifh, not ornamental, but very curious in itructure. Fruit large in proportion to the bloffom. Mr. Brown expreffes an intention of feparating Cinnamomum, as a diftinct genus from Laurus, as indeed it originally ftood, till Linmxus united them. It is extremely probable that other fpecies require more accurate generic inveltigation than they have hitherto received, in which predicament we fufpect is the Saffafias of Norih America, a tree with deciduous and partly lobed leaves. There appears alfo to be an oriental Saflafras wood, of a much more permanent though fimilar flavour to the American, of which we formerly procured a fpecimen at Venice, but of the tree that produces it we know nothing.

The following may fuffice for examples of Laurus as the genus at prefent ftands.
L. Cinnamomum. Cinnamon-tree. Linn. Sp. Pl. 528. (Cimnanomum foliis latis ovatis frugiferum; Burm. Zeyl. 62. t. 27. Caffia cinnamomea, five Cinnamomum; Herm. Lug-duro-Bot; 129. i. 655,656 .) - Leaves triply-ribbed near the bafe, ovate; lateral ribs vanithing near the top. Panicles repeatedly compound. Native of Ceylon, where, as well as in Amboyna, its importance as an object of cultivation, for the fake of its precious bark, is univerfally known. (See Cinnamon.) Cuncerning the botanical determination of the prefent fpecies, there has always been fome doubt, Linnæus having defined it foliis trinerviis, that is, with three ribs diftinct ar the bafe, which is only fo far true, that they are united to the mid-rib at a much lefs diltance above the bafe, which is rounded, than thofe of $L$. Caffa. It feems moreover that this Cinnamon, like other cultivated plants,
is liable to many varieties, not only in qualiey, but in external configuration, and it may very poffibly have originated from the Caffa, like apples from the wild crab. For a long while the true Cinnamon was fcarcely to be feen in the herbariums of Europe, but we have a fpecimen from Amboyna, by favour of the late Mr. Chriflopher Smith, in which the panicles are copious, longer than the leaves, repeatedly fubdivided, and fomewhat umbellate. The flowers are filky externally, and rather fmall. Linnzeus fays they are dioe--cious. Another fpecimen, from the garden at the Mauritius, has narrower leaves, and much fmaller panicles. The true Cinnamon is now not rare in the floves of curious collectors. The bifhop of Winchefter, many years fince, raifed it from feeds ripened in his own garden.
L. Caffia. Caffia-bark-trec. Liun. Sp. PI. 528. (Carua; Rheede Hort. Mal. v. 1. 107. t. 57.) -Leaves triply.ribbed far above the elongated bafe, elliptic-lanceolate; lateral ribs ranifhing beyond the middle. Panicles corymbofe.-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, diftinguif this from the preceding, whether it be a fpecies, or only a variety. Rheede fays, the bark of the root yields camphor.
L. Camplora. Japanefe Camphor-tree. Linn. Sp. Pl. 528. Jacq. Coll. v. 4. 22 I. t. 3. f. 2. Kæmpf. Amoen. 770. t. 771 . (Arbor camphorifera japonica; Commel. Hort. Amit. v. I. 185. t. 95.)-Leaves elliptical, pointed, triply-ribbed far above the elongated bafe. Clufters axillary, fomewhat compound, fhorter than the leaves. Native of Japan, often to be feen flowering in the Englifh ftoves. The curious ftructure of the Bloforms may be feen in Jacquin. The Japanefe camphor is believed to be obtained by diftillation from this tree, that of Borneo and Sumatra being the produce of one of a different fpecies, if not genus, of whofe botanical characters little is known. This latter is erroneoufly called Laurus Campbora 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 fhort axillary clufters. Native of Italy and Greece, almoft perfectly hardy in our climate, being one of the moft defirable evergreens we have, though of flow 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, ftrongly aromatic, never, as far as we know, perfected in England, but plentiful in Italy. This is certainly the $\delta x$ pm of Diofcorides, and confequently the claffical laurel. It is ftill called by the fame name among the modern Greeks. There is a broad-leaved variety, called $\delta \alpha \not \rho_{m} \pi \lambda \alpha z v \pi \hbar \hbar$ in Diofcorides.
L. afivalis, Benzoin and Safafras, three North American fpecies, have deciduous leaves. The true Benjamin tree, or Gum Benzoin (fee thofe articles) is not, as Ray fuppofed, this Laurus Benzoin, but a fpecies of Styrax, as was firft fhown by the late Mr. Dryander in the Philofophical Tranfactions for 1787, p. 307 .t. 12 . See Styrax.

Laurus, in Gardening, comprifes plants of the evergreen and deciduous tree kinds, for borders, green-houfe, and ftove, of which the fpecies cultivated are the common fweet bay (L. nobilis) ; the willow-leaved bay (L. xeftivalis) ; the common benjamin-tree ( L . benzoin) ; the faffa-fras-tree (L. faffafras); the royal bay, or Indian laurel (L. indica) ; the broad-leaved Carolina bay, or red bay (L. borbonia) ; the camphor, or camphire-tree (L. cam-
phora) ; the cinnamon-tree (L. cinnamomum) ; the caffia, or wild cinnamon-tree (L. caffia) ; and the alligator pear (L. perfea).

The firl fort has feveral varieties, as the broad-leaved, which is almolt too tender for the open air in this climate, with leaves much broader and fmoother than thofe of the common fort : the common, which is feldom hurt in this climate, except in very fevere winters, of which there are two fubvarietics, one with plain leaves, the other with leaves waved on the edges: the narrow-leaved, with very long narrow leaves, not fo thick as thofe of the preceding two forts, and of a light green, the branches covered with a purplifh bark, and the male flowers come out in fmall clufters from the axils of the leaves, fitting clofe to the branches; of which there are fubvarieties in the nurferies with variegated leaves. What is now called bay, was formerly called laurel, which has introduced fome confufion.

It may be noticed, that the chief of the camphor ufed in Europe is prepared from this tree in Japan, by fplitting the wood into fmall pieces, and fubliming or diftilling it with water in an iron retort, covered with an earthen or wooden head, in the hollow of which they faiten hay or ftraw, to which the camphor, as it rifes, adheres. This camphor is brownifh or white, but in very fmall femi-pellucid grains. It is packed up in wooden calks, and thus fent to India and Europe, where it is purified by a fecond fublimation, and reduced into the folid mafs as found in the fhops. Native camphor, or the Capoor Baroos of the Malays, is a production obtained in Sumatra and Borneo, by cutting down the trees, and fplitting them with wedges into fmall pieces, the camphor being found in the interltices in the Itate of a concrete cryftallization. Some have afferted that it is from the old trees alone that this fubftance is procured, and that in the young trees, if it is in a fluid ftate, it is called Meenio Capoor, or camphor oil; but this is a miltake : the fame fort of tree that produces the fluid does not produce the dry, tranfparent, flaky fubftance, nor ever would. They are readily diftinguifhed by the natives. Many of the trees, however, produce neither the one nor the other. The traders ufually diftinguifh three degrees of quality, by the names of head, belly, and foot, according to ite purity and whitenefs. Some add a fourth fort, of extraordinary finenefs, of which a few pounds only are imported to Canton, and fell there at the rate of two thoufand dollars the pecul.

The common camphor will evaporate till it wholly difappears; while that of Sumatra and Borneo, called native camphör, though fubject to fome decreafe, does not appear to lofe much in quantity from being kept.

Camphor oil is obtained by the Sumatrans by making a tranfverfe incifion into the tree, to the depth of fome inches, and then cutting flopingly downwards from above the notch, till a flat horizontal furface be lefr. 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 aeting as a ftimulus, draws the fluid to that part. In the fpace of a night the liquor fills the receptacle previoully made. The trees are foon exhaufted.

The eighth fort has feveral varieties; but it is the Ceylon cinnamon that is chiefly ufed as a fpice.

Method of Culture--The firft fort may be increafed by feed, layers, and fuckers. The feed fhould 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 fhould be fupplied with frequent waterings during the fummer, and in winter defended from fevere froft by the
fhelter of mats, or fome other covering, being tender whlnle young; and after having two fummers' growth in the feed. bed, in the fpring following the ftrongelt thould be removed into nurfery rows, one or two fect 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 fect high, they are of proper growth for tranfplanting into the firubbery in autumn or fpring. 'I'he berries may alfo be fown in pots, and planged 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 furnifhed with young fhoots, may be laid down in the early fpring, or in Auguft, but the latter is the beft feafon; each floot being flit-layed; they become rooted in one year, when in fpring following they may be taken ofl, and planted in the nurfery, in the manner directed for the feeelings.

Where fuckers are had rccourfe to, they fhould be taken up with good roots in autumn or fpring, and be planted in the nurfery like the feedlings and layers.

This fort is alfo capable of growing by cuttings, planted in the begiuning of April on a moderate hot-bed of tanners? bark covered eight inches deep with rich loofe frefh earth, five inches deep, and eight or nine afunder, rubbing off their leares, 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 fhot roots, they fhould receive all mild gentle fhowers, and the evening dews. In the beginning of Auguit, the glaffes may be taken off, being replaced when the weather begins to be frolty; keeping them open every mild day. In the beginning of the April following, or as foon as the weatherbecomes temperate, both glaffes and frames fhould 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 raifed in thefe ways are removed to the nurfery, they fhould have their fuperfluous roots and branches cut away, encouraging the leading fhoots; planting them in a well fheltered quarter of light mould. The ground fhould be dug over in autumn and fpring, keeping it clean, loofe, and mellow in fummer, and the plants be annually pruned in April.

The gold-ftriped variety is tender, being commenly kept in pots, and houfed with hardy green-houfe plants. When it flands in the open ground, it is fometimes much injured in fevere winters. The method of increafing 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 whilit young, in common winters, without fhelter. As in fevere winters the old trees are frequently killed, or at leaft the branches much injured, the plants are frequently kept in tubs, and houfed in the winter feafon.

The fecond, third, and fourth forts may be increafed by feed, by layers, and fometimes by fuckers and cuttings. The feeds or berries procured from America, and preferved in fand, fhould be fown, as foon after they arrive as poffible, in a bed of light earth an inch deep, or in largifh pots the fame depth, plunging them in mould, in an eaftern border, up to their rims, till the fpring following; when they fhould be placed in a hor-bed, which greatly forwards the germination of the feed, and foon brings up the plants. They mult be timely inured to the full air. The plants raifed by either method fhould, while young, be watered during fummer,
and fheltered from the frof in winter, and when two years old be planted out in nurfery rows, as directed for the other plants. They may alfo be increafcd by layers and fuckers in the fame manner as directed for the firll fort ; but it is fometimes long before the layers are rooted.

They are likewife fometimes capable of being increafed by cuttings, by the aid of a good hot-bed.
And the fifih, fixth, and feventh forts may be increafed by layers, but they are fometimes two ycars before they are fufficiently rooted. They may alfo be raifed from feeds, 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 frit feafon; in which cafe they flould be placed in the open air in fummer, and in a frame, or in the green-houfe, near the windows, in winter : and in fpring the pots be plunged in a lot-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 fhelter in winter, and in the following fpring planting them out in feparate fmall pots, managing them as other green-houfe fhrubs.
The eighth, ninth, and tenth forts are alfo raifed by layers and feed, fown and managed as above, generally affitited by the bark-bed of the flove; the plants being planted off into feparate pots, and managed afterwards as other hot-houfe plants.

It may be noticed that the firit, fecond, third, and fourth forts are lighly ornamental in the borders and clumps of pleafure grounds; the three following in green-houfe collections; and the three laft among other thove plants.

LAU RUSTINE, a name often given to a fine evergreen flowering fhrub. See Viburnum Tinus.
LAUS, in Ancient Geography, a town of Italy, in the territory of the Laconians; founded by the Sybarites, but afterwards taken poffeffion of by the Lycaonians, a colony of the Samnites.
Lavs Pompeia, a town of Gallia Tranfpadana towards the S.E.; founded by the Boii, and afterwards belonging to the Infubrians. It was a Roman colony and municipal.
Laus Kaurens, in Geograpby, a peninfula of Finmark, in the Frozen fea. N. lat. $70^{\circ} 45^{\circ}$. E. long. $30^{\circ} 24^{\prime}$.
LAUSANNE, a city of Switzerland, in the canton of Berne, and the largett town in the Pays de Vaud, and by the French divifion 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 diitant two miles from the lake of Geneva, and 37 miles N.E. from Geneva irfelf. The diftrict to which it gives name was once a republic itfelf, 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 fo fteep, that in fome places the horfes cannot, without great difficulty, draw up a carriage, and foot paffengers afcend to the upper part of the town by tleps. Thefe inconveniences, however, are amply compenfated by the fublimeft views in nature, commanding the lake of Geneva, the Pays de Vaud, and the rugged coalt of Chablais. The church is a magnificent Gothic building, having been formerly a cathedral, while the Pays de Vaud was fubject to the houfe of Savoy. It ttands on the mott elevated part of the town ; and contains, among many other fepulchres, the tomb of Amadeus VIII. duke of Savoy, tylyed the Solo. smon of his age, but more knowa by the name of the antipope Felix V., who exhibited a fingular inttance in the anBals of Europe of a perfonage twice abdicating the pomp of
fovercignty, and $\begin{aligned} & \text { zevice retiring to a private flation. The }\end{aligned}$ number of inhabitants, acoording to Coxe, is about 7000 ; Pinkerten flates them at 9000 . In the year 1536 , when part of the Pays de Vaud was conquered from the houfe of Savoy, the bifiop of Laufame retircd from the town, and the inhabitants put themfelves under the direction and fovereignty of the canton of Berne, which granted to it new privileges, in addition to thofe which it had formerly polfeffed. The reformation was introduced by Pierre du Viret in the fame ycar. The bihhop's diocefe formerly comprelended 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 almoff to Franche Comté. Since the reformation, it has been reduced to little more than the cantor of Triburg and a part of that of Soleure. Laufanne choofes its owr magitracy, which confitits of a burgomalter, five bannerets, the town council, the council of fixteen, and the great council. An academy was eltablifhed here in 1537 , and a college in 1540. Profeffors in every fcience are appointed by government, and there is a tolerable library for the ufe of the public. The bailiwick of Laufanne is extesfive ; the bailif,, who is chofen every. fix years, fucceeded to the bifhop, and has equal jurifdiction. The air of Laufanne is very pure and healthy; and it has plenty of excellent water, with every neceflary of life in the greatelt abundance. Laufanne is nat only governed by its own magittrates, and has its own courts of juttice; but the burghers, who polfefs houfes in the principal freet, enioy the right of pronouncing fentence in criminal caufes. The criminal is tried by the civil power; if he is found, and acknowledges himfelf guilty, one of the magittrates pleads in defence of the prifoner, and another againft him ; the court of juftice gives an opinion upon the point of lave, and the majority of the burghers above-mentioned determine the penalty. If the punifhment is capital, there is, according to the letter of the law, no pardon, unlefs obtained within twenty-four hours from the fovereign council of Berne, although it. generally happens that eight days are granted for that purpofe. When the criminal is feized within the juridiction of the town, the fact is tried, and the burghers pronounce fentence in the town-hall ; in this cafe there is no appeal. But when he is taken within the diftrict of the bailiff, they affemble in his houre, and an appeal lies from their determination to Berne. Laufanne is 41 miles S.W. of Berne. N. lat. $46^{\circ} 33^{\circ}$. E. long. $6^{\circ}$ 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. $51^{\circ} 7^{\prime}$. E. long. $12^{\circ} 36^{\circ}$.
LAUSSNITZ, a town of Saxony, in the margravate of Meififen; 13 miles N. of Drefden.
LAUSZA, a town of Samogitia; 44 miles N.W. of Miedniki.
LaUT. See Pulo Laut.
LAUTAKARI, a fmall infand in the $N$. part of the gulf of Bothnia. N. lat. $65^{\circ} 35^{\prime}$. E. long. $24^{\circ} 34^{\prime}$.
LaUTENBURG, a town of Pruffia, 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. $50^{\circ} 2^{\prime}$. E. long. $12^{2} 45^{\prime}$ - Alfo, a town of UPper Hefle; 13 miles N.W. of Fulda.-Alfo, a town of Saxony, in the circle of Errgebirg; five miles N.W. of Z wickau.
LAUTERBERG, a town of Wefthalia, in the Hartz

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Haxtz forett, near which are mines and forges of copper and iron; 14 miles S. of Goflar.

LAUTERBOURG, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the diltrict of Wiffembourg, fituated on the Lauter. The place contains 1941, and the canton 9782 inhabitants, on a territory of 1 So kiliometres, in 10 communes; 29 miles N.N.E. of Strafburg. N. lat. $49^{\circ}$. E. long. $8^{2}$ I4..

LAUTERBRUENNEN, a valley of Switzerland, in the canton of Berne; fix miles S. of Interlachen, and about 15 miles in circuit, embofomed in the midit of the Alps, and celcbrated for its picturefque and romantic fcenery. The weftern boundary, from which the Staubbach falls, forming a catara\{t, would, in any other country, be called an errormous mountain; it here appears only a trifing hill, in comparifon with the oppofite chain, of which the highelt point is the beautiful Jung frau-horn, that flretches in a femicircular dircction, and, towering above the adjacent peaks, rifes to a ftupendous height. At the extremity of the vale, there are fome noble points of view, and glaciers which ftretch from the foot of the Breithorn and Grofs-horn. In this delightful valley, many ftreams of the cleareft water gulh from the earth like fmall rivers, and numberlefs torrents precipitate themfelves from the mountain. From this circumftance the valley derives its name; Lauterbruennen fignifying, in German, many /prings. One of the peaks, adjoining to this valley, which is called the Grols-horn, is of a pyramidal Thape, and capped with frozen fnow; another, the Breithorn, is conical, and feems crowned with an enormous mafs of tranfparent ice, from which the reflection of the fun-beams is inexpreffibly beautiful. But the molt elevated and the moot majeftic of the whole group, is the Jungfrau-horn. (See Jungrrau.) The hollows between the mountains are filled with large vallies of ice, broken into various fhapes, and feveral torrents, burting from the fnow, and uniting in their courfe, 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 furtheft extremity. Wengenalp is the laft of a group of calcareous and fchiftous 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 diftrict of Kaiferflautern; 24 miles N. of Deux Ponts. The place contains 627 , and the canton 4594, inhabitants, in 21 . communes. N. lat. $49^{\circ} 39^{\prime}$. E. long. $7^{\prime} 35^{\prime \prime}$.

LAUTERHOFEN, a town of Bavaria; 12 miles S.W. of Sulzbach.

LAUTERN, a town of Pruflia, in the province of Ermeland; $1+$ miles S.S.E. of Heiliberg.

LAUTERSHAUSEN, a town of Germany, in the principality of Anfpach, on the Altmuhl ; eight miles W. of Anfpach.

LAUTERSTEIN, a town of Saxony, in the circle of 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 diftriet of Caftres; 12 miles N.N.W. of Caftres. The place contains 3238 , and the canton 7548 inhabitants, on a territory of $147 \frac{3}{2}$ kiliometres, in 12 communes.

LAUTTE, a town of Pruffia, in Oberland; 16 miles E.S.E. of Marienwarder.

LAVUNS, a town of France, in the department of the Lower Pyreneés; 15 miles S.E. of Oleron.

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LAUZERTE, a town of France, in the department of the Lot, and chief place of a canton, in the diftrict of Montauban; 17 miles N.W. of Montauban. The place contains 3608 , and the canton 12,176 inhabitants, on a territory of $232 \frac{\mathrm{~T}}{2}$ kiliometres, in 16 communes. N. lat. $44^{\prime} 15^{\prime \prime}$. E. long. $\mathrm{I}^{\prime} \mathrm{I}^{\prime}$ 。

LAUZES, a town of France, in the department of the Lot, and chief place of a canton, in the diltrict of Cahorn. The place contains 444 , and the canton 7139 inhabitants, on a territory of $237 \frac{1}{2}$ 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 diltrict of Barcelonnette; ro 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 dutrict of Marmande; 14 miles N.E. of Marmande. The place contains 10S9, and the canton 12,852 inhabitants, on a territory of 220 kiliometres, in 17 communes, N. lat. $44^{\circ}$ $3^{8}$. E. long. $0^{-3} 3^{\prime \prime}$.

LAW, Edmund, in Biography, a learned Englifh prelate, the fon of a clergyman, in the neighbourhood of Cartmel, in Lancafhire, was born in the year $170 \%$. He received the greater part of his claffical learning at the free grammar fchool of Kendal, from which place he was fent to $S t$, John's college, Cambridge. He was admitted to the degree of B. A. in 1723, and foon afterwards was elected fio low of Chrift's college. During his refidence in this coiles', he became known to the public by a tranflation of azcluitt ? King's "E(fay upon the Origin of Evil," with note ${ }^{\text { }}$ To this work was prefixed "A preliminary difertation," by the Rev. Mr. Gay of Sidney college. In the controverfy which took place in confequence of Dr. Clarke's "Demonitration of the Being and Attributes of God," Mr. Lav took a part, and among other things publihhed his "Enquiry into the Ideas of Space, Time, \&c.". In the year 1735 , a new and improved edition of Robert Stephens" "Thefaurus Lingur Latinæ" was given to the public, and in the preparation of this valuable work, Mr. Lav had a confiderable fhare. In 1737, he was prefented by the univerfity to the living of Graytock, in the county of Cumberland, worth about 300 l . per annum. In 1743, he was promoted by fir George Flemming, bifhop of Carlifle, to the archdeaconry of that diocefe, and, in 1746 , went from Graytock to refide at Salkeld, a pleafant village upon the basks of the river Eden, the rectory of which is annexed to the archdeaconry. During his refidence at this place, he publifhed his "Confiderations on the Theory of Religion ;" to which he fubjoined "Reflections on the Life and Character of Chritt;" and an appendix concerning the ufe of the words "Soul and Spirit." In 1749, Mr. Law proceeded doctor of divinity; in his public exercife for which degree, he defended the doctrine of what is ufually denominated "The feep of the foul." In 1754, he was elected mafter of Peter-houfe, in Cambridge, and in the following year appointed head librarian of the univerfity; a finecure place, with a falary of fifty pounds a-year. He received almolt every year fome additional preferments, which were rather honourable expreffions of regard from his friends, than of much advantage to himfelf: in 1767 , he obtained a ftall in the church of Durham, and in ${ }_{17} \mathrm{G}_{9}$, on the recommendation of the duke of Grafton, he was nominated bifhop of Carlifle, and was permitted to hold, in connection with the bifhopric, the malterfhip of Peter-houfe, and the rectory of Graytock. In 1574, he publificd a very valuable tract, entitled "Confiderations oa the Theory of

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Religion," which has paffed through at leait eight editions. The object of this work was to fhew that arts and fciences, natural and revealed religion, have upon the whole been progreffive, from the creation of the world to the prefent time; as alfo that they have been fuited to each other, as well as to the circumttances of mankind, during each eminent period of this their progreffion. In 1777, Dr. Law gave the public a handfome 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," publifhed at Carlifle in 1784, he made fuch alterations as thewed that he had given up the doctrine of the pre-exiftence of Chritt, a fact which he noticed to a friend in pretty ftrong language. Dr. Law died in Auguft 1787, in the 84th year of his age. The life of Dr. Law was a life of inceffant reading and thought, almolt entirely devoted to metaphyfical and religious enquiries. The leading peculiarity of his religious fentiments is, that "Jefus Chrilt will, at his fecond coning, by an act of his power, reftore to life and confcioufnefs the dead of the human fpecies, who, by their own nature, and without his interpofition, would remain in the Itate of infenlibility, to which the death, brought on mankind by the fin of Adam, had reduced them." Dr. Law pubilihed, befides the articles already mentioned, fome fingle fermons; a tract on "The Nature and Neceflity of Catechiling ;" "A Defence of Mr. Locke's Opinion concerning perfonal Identity;" and "Obfervations occafioned by the Contelt about literary Property." See life prefixed to an edition of his Reflections printed by Johnfon in 1803.

Law, Joun, a famous projector, the fon of a goldfmith in Edinburgh, was born about the year 1681. It appears that he was not brought up to any profeffion, but having a turn for calculation, he made himfalf a proficient in numbers, and in the fpeculations depending upon them. He obtained, while very young, the confidence of the king's minifters 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 propofed the eftablifhment 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 fmall eftate, and commenced the fine gentleman, fupplying the deficiency of his income by gaming. In confequence of a duel, in which he killed his antagonit, he was obliged to leave the country. He vifited Venice and Genoa, from which cities he was banifhed as a fharper; be wandered through Italy, fupporting himfelf by his wits, chiefly by the fuccefis of fingular wagers, in which, by his fkill in calculation, he always took care that the chances fhould be in his favour. He propofed his financial fcheme to Louis XIV, who liftened to his plans. A bank was eftablifhed, compofed of 1200 flares of 3000 livres each; to this was annexed a Miffifippi company, who had grants of land in Louifiana, and was expected to realize an immenfe fum by planting and commece. To this were afterwards joined the trade of Senegal, and the privilege of the old Eaft India company. In 17 IS, it was declared a royal bank; and by a number of advantages arbitrarily conferred upon it, fuch were the extent of its bufinefs, and the magnitude of its funds, that its fhares rofe 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 invetted in bank paper, and thofe thought themfelves truly happy who could ifrip 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 marfhals of France. At length the bafelefs fabric of this profperity began to give way: the fhares funk daily in value, and the ruin of the fyltem feemed to be inevitable. He was obliged to refigu his poft, after holding it only five menths; and loaded with the public execrations, retired firft to an eftate in the country, and then, for further fafety, quitted the kingdom. He now palted the remainder of his days in obfcurity, occupied, however, with his projects, fully convinced of the folidity of his fyftem, the failure of which he attributed to the oppofition 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, Northamptonfhire, 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 sure of fouls, owing probably to his adherence to non-juring principles, which he maintained to the clofe of his life. He was fome time a private tutor in a gentleman's family at Putney, after which he chiefly refided in a very retired way at the houfe of Mrs. Hefter Gibbon, aunt of the celebrated hiltorian, in Northamptonfhire, where he died in 1761. He was author of a great many theological publications, of which the moft important is "The lerious Call to a devout and holy Life, adapted to the State and Condition of all Orders of Chriftians." His "Practical Treatife on Chriftian Perfection" was likewife very much elteemed. He entered the lifts againft bihop Hoadley; and was a zealous difciple of the doctrines of Jacob Behmen, whofe works he publifhed.
Law, in its moft general and comprehenfive fenfe, fignifies a rule of action; and is applied indifcriminately to all kinds of action; whether animate or inanimate, rational or irrational ; in which fenfe it is ufed when we fay, 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, conflituting a rule of action, and coming from fome fuperior authority, which an inferior is obliged to obey; or, according to forme, law is a command, or mandate of fome perfon, or power, whofe precept carries with it the reafon of obedience: or, it is a rule of action, that obliges by virtue of its being the will of a fuperior. See Obligation.

The word is formed from the Saxon lah, laga, which figo nifies the fame.

Thus, the commands of God with relpect to men, of a city with refpect to the citizens, and univerfally of all powerful beings in refpest to thofe who cannot refilt, are called their laws.

The nature of a law will be mot clearly difcovered by Thewing wherein it differs from covenant, counfel, and right or equity; with all which it is frequently confounded.

Law is confounded with covenant, or compact, by thofe who take laws to be nothing elfe but opoiornuzix, or forms of living determined by the confent of mankind : among whom is Aritotle, who defines a law, "a declaration determined by the common confent of a city, fhewing in what manner things are to be done :" which is not fo much the definition of a law, as of a civil law; nor yet properly of a civil law ; for this common confent is ne more than a mutual covenant, which does not oblige any perfon, and confequently is not any law, till fome fupreme power be conflituted with a power to compel, and to make it penal to tranfgrefs it. Here then the covenant is confounded with the law, which leads into abfurditiẹ; for a covenant or compact is a promife proçeding from us; a law, a command directed to us.

## L A W.

The difference between a counfel and a law is this:
A counfel is a precept, wherein the reafon of obedience is taken from the thing itfelf prefcribed; a command is a precept, wherein the reafon of obedience depends on the will of the prefcriber; for we cannot properly fay, fic wolo, fic jubeo, unlefs Aet pro ratione voluntas. A law comes from a perfon who has a pawer over thofe whom he commands; a counfel, from him who has no fuch power. To do what is enjoined by a law, is an att of duty; what by a counfel, an act of choice, or freewill. Counfel is only matter of perfuafion, law is matter of injunction; counfel acts only upon the willing, law upon the unwilling alfo.

Law is confounded with right or equity, by thofe who perfift 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 permited by the civil law; nor what is commanded by the divine law, be prohibited by the civillaw; but what is permitted by the divine law, may, notwithitanding, be prohibited by the civil law: for the inferior laws have a power of reftraining the liberty left by the fuperior laws, though they cannot enlarge it. Now right or equity is a natural liberty, not conflituted by laws, but free of them; for take away laws and liberty is complete.

This liberty is firt reftrained by the natural and the divine law, the reft reltrained by the civil laws; and what remains unreftrained by the civil law, may be again reftrained by the conflitution of particular cities and focieties. There is a great difference, therefore, between law and right, lex $\mathcal{J}$ jus ; for law is a chain ; but right a liberty; and they dif. fer as two contraries. See Civil or Municipal Law, infra.

Law may be divided, with refpect to its different original, inte divine and buman.

Law, Divine, may be confidered as twofold, with refpect to the two different manners in which God notifies or announces his will to man ; viz. natural (or moral), and pofitive.

Law, Natural, is that which he has made known to all mankind, by an innate light, called natural reafon.

Natural law may be divided into that natural law of men, which, in a peculiar fenfe, is called the Law of nature; and the nafural lav of countries, commonly called the Law of nations. (See each of thefe articles.) The precepts are the fame in both thefe; but becaufe, when focieties are once inftituted, certain perfonal properties become velted in men; that law, which, when we fpeak of the duties of men feverally, we call the natural laws, when transferred to citieg or countries, we call the lawe of nations.
M. Regis fays, that the laws of nature are the dictates of right realon, which teach every man how he is to ufe his natural right; and the laws of nations, the diAtates, in like manner, of right reafon, which teach every ftate how to att and belhave themfelves toward others.

Law, Poffitive, is that which God has revealed by his prophets, or by perfons fupernaturally commiffioned and infpired and found only in the holy fcriptures: fuch are thofe laws delivered to the Jews, relating to the divine worfhip and polity, which may be called divine civil laws, as being peculiarly directed to that people. As the natter of natural laws is fomething in its own nature good and neceffary, thefe 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 fupernatural light for the difcovery of their reafonableneis and obligation. Whereas pofitive laws differ from the former, both with regard to the matter of them, as well as the manner of their publication. Thefe may be diftinguifhed into fuch as are purely pofitive, or partly fo. The matter of Vor. XX.
purely pofitive laws is indifferent; fo that the pofitive decree of the legilator alone makes them to be laws, mere reafon being then filent. Such were the cercmonial laws of the Jews, and fuch are the facraments of the Chrittian religion. Neverthelefs, every pofitive law is founded in reafon, though reafon may not be able, antecedently to their promulgation, to difcover their fitnefs and utility. But the reafons that recommend them, when they are actually promulged, would not give them the authority and fanction if a law, without the exprefs inftitution of the fupreme 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 alfo a flronger enforcement. The law concerning the fabbath is in a peculiar fenfe a law of this kind, the matter of it being of a mixed nature. That fome part of our time fhou'd be confecrated to the worhip of our creator, the light of nature dietates; but that it fhould be a ferenth part rather than any other, or the laft ferenth rather than the firft, or the third, is not natural but poffive.

Law of Naiure, as it refpects intelligent, moral, and accountable beings, is the will of God, relating to humar aetions, grounded in the moral differences of things; and becaufe it is, in fome meafure, difcoverable by natural right, it is obligatory upon all mankind. It is thus defined by Cisero (De Legibus, lib. i.) "Lex ef ratio fumma infita in natura que jubet ea qux facienda funt, prohibetque contraria." It is called the law of nature, on account of the manner of its promulgation, which is by natural reafon; on account alfo of its fource or foundation, this law refulting from the refpective natures of beings and things, of beings, as God and man, and of things or actions, as morally good or evil, and having different phyfical effects; and, moreorer, becaufe it is the law of God. Nature is but a fictitious perfen; and all that is faid of the wifdom of her deligns and operations, of her power, or of her laws, is to be afcribed to him who is the author of nature. "Quid enim eft aliud natura, quam Deus et divina Ratio, totii mundo, et partibus ejus inferta?" Seneca de Benef. 1. vi. c. 7. The demonfration 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 exiftence of this law. "Omni autem in re confenfio omnium gentium lex natura putanda eft,", fays Cicero; i.eo "as to any point, the agreement of all nations in it is to be efteemed a law of nature." Others have erroneount alleged, as a proof of the law of nature, innate ideas or praetical principles, impreffed on the foul of man by its creator: but of fuch ideas and principles we have no evidence. A. more direct and conclufive demonfration of the law of nature may be deduced from the confideration both of the divine and human nature; which beheld in one siew and in the relation they bear to each other fupply unequivocal eridence of the exittence and obligation of this law. To this purpofe we thall avail ourfelves of fome appropriate reflections and reafonings of the learned judge Blackftone in immediate connection with this fubject. "As God," fays this learned writer, "when he created matter, and endued it with a principle of mobility, eftablifhed certain rules for the perpetual direction of that motion; fo, when he created man, (and endued him with freewill to conduct himfelf in all parts of life, he laid down certain immutable laws of human nature, whereby that freewill is in fome degree regulated and reftrained, and gave him alio the faculty of reafon to difcover the purport of thofe laws:"

Confidering the Creator only as a being of infaite power, ${ }_{3} \mathrm{E}$
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he was able unqueftionably to have prefcribed whatever laws he pleated to his creature, man, however unjuft or fevere. But as he is alfo a being of infinite wifdom, he has laid down only fuch laws as were founded in thofe relations of juftice, that exifted in the nature of things antecedent to any pofitive precept. Thefe 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 reafon to difcover, fo far as they are neceffary for the conduct of human actions. Such among others are thefe principles: that we fhould live honefly, fhould hurt nobody, and fhould render to every one his due; to which three general precepts Juftinian has reduced the whole doctrine of law.

But if the difcovery of thefe firlt principles of the law of nature depended only upon the due exertion of right reafon, and could not otherwife 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 refted content in mental indolence, and ignorance its infeparable companion. As therefore the Creator is a being, not only of infinite pozver, and wiflom, but alfo of infinite goodnefs, he has been pleafed fo to contrive the conftitution and frame of humanity, that we fhould want no other prompter to inquire after and purfue the rule of right, fut only our own felf-love, that univerfal principle of action. For he has fo intimately connected, fo infeparably interwoven the laws of eternal juftice with the happinefs of each individual, that the latter cannot be attained but by obferving the former; and, if the former be punctually obeyed, it cannot but induce the latter. In confequence of which mutual connection of jultice and human felicity, he has not perplexed the law of nature with a multitude of abtracted rules and precepts, referring merely to the fitnefs or unfitnefs of things, as fome have vainly furmifed; but has gracioully reduced the rule of obedience to this one paternal precept, "that man fhould purfue his own true and fubftantial happinefs." This is the foundation of what we call ethics, or natural law. For the feveral articles into which it is branched in our fyftems, amount to no more than demonftrating, that this or that action tends to man's real happinefs, and therefore very jultly 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 deftructive of man's real happinefs, and therefore that the law of nature forbids it.

This law of nature, being coeval with mankind and dietated by God himfelf, is of courfe fuperior 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 itill neceflary to have recourfe to reafon: whofe office it is to difcover, as was before obferved, what the law of nature directs in every circumitance of life; by confidering, what method will tend the moft effectually to our own fubtantial happinefs. And if our reafon were always, as in our firft anceftor before his tranfgreffion, clear and perfect, unruffled by paffions, urclouded by prejudice, unimpaired by difeafe or intemperance, the tafk would be pleafant and eafy; we fhould need no other guide but this. But every man now finds the contrary in his own experience; that his reafon is corrupt, and his undertanding full of ignorance and ervor.

This has given manifold occafion for the benign interpofi-
tion of divine providence; which, in compaffion to the frailty, the imperfection, and the blindnefs of human reafon, hath been pleafed, at fundry times and in divers manners, to difcover and enforce its laws by an immediate and direet revelation. The doctrines thus delivered we call the revealed or divine law, and they are to be found only in the holy fcriptures. Thefe precepts, when revealed, are found upon comparifon to be really a part of the original law of nature, as they tend in all their confequences to man's felicity. But we are not from thence to conclude that the knowledge of thefe truths was attainable by reafon, in its prefent corrupted ftate; fince we find that, until they were revealed, they were hid from the wifdom of ages. As then the moral precepts of this law are indeed of the fame original with thofe of the law of nature, fo their intrinfic obligation is of equal ftrength and perpetuity. Yet undoubtedly the revealed law is of infinitely more authenticity than that moral fyftem, which is framed by ethical writers, and denominated the natural law. Becaufe one is the law of nature, exprefsly declared fo to be by God himfelf; the other is only what, by the affiftance of human reafon, 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 thefe two foundations, the law of nature and the law of revelation, depend all human laws; that is to fay, ne human laws fhould be fuffered to contradict thefe. 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 neceffary for the benefit of fociety to be reftrained within certain limits. And herein it is that human laws have their greatelt force and efficacy: for, with regard to fuch points as are not indifferent, human laws are only declaratory of, and act in fubordination to, the former. To inftance in the cafe of murder : this is exprefsly forbidden by the divine, and demonftrably by the natural law ; and from thefe prohibitions arifes the true unlawfulnefs of this crime. Thofe human laws that annex a punifhment to it, do not at all increafe its moral guilt, or fuperadd any frefh obligation in foro confcientia to abftain from its perpetration. Nay, if any human law fhould allow or injoin us to commit it, we are bound to tranfgrefs that human law, or elfe we mutt offend both the natural and the divine. But with regard to matters that are in themfelves indifferent, and are not commanded or forbidden by thofe fuperior laws; fuch, for inftance, as exporting of wool into foreign countries; here the inferior legillature has fcope and opportunity to interpofe, and to make that action unlawful which before was not fo.

We might further add, that, as there is a natural and neceffary difference between virtue and vice, and the feveral actions and difpofitions which are denoted by thefe two oppofite terms, natural reafon difcovers it to be the will of God, that every man fhould look upon this difference in the nature of things and actions, as a law or rule, which he is religiounly to obferve, under pain of his Maker's difpleafure. Among thofe writers who have alleged arguments in proof of the law of nature, fome have founded it upon the reafon and fitnefs of things, others, on our moral fenfe, 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 reafoning, they have ultimately arrived at the fame conclufion. Thefe principles are illutrated under their proper heads in the courfe of this work. The names and works of the different writers are cited by Grove,
in his "SyAtem of Moral Philofophy," vol. II. p. ii. n. 5. The law of nature, fays the author laft cited, is eternal and neceflary ; fo that it always did, and always could not but exif. It is univerfal, infomuch that all mankind are born the fubjects and objects of this law, notwithflanding the difference of climate, of government, of language, and of opinions and cuitoms that have prevailed in different parts of the world. Moreover, the law of nature is immutable, for the divine nature is immutable. The firft principle, or law of nature, according to Hobbes, is felf-prefervation. Thomafius will have in to be our own happinefs, which falls in at laft 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 reafon. Velthemius, the intrific decency or turpitude of actions. Strimefius and Janus, that we are to love God, ourfelves, and our neighbour.

Laws, Human, comprehend all thofe 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 neceffary as a remedy, partly to the generality, and partly to the inefficacy of the divine. The laws of God are too general to afcertain 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 notwithftanding, human laws are in many cafes needful to fettle the bounds of property, and affign 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 efto." "To fecure the welfare of the fociety be the fupreme law" is really a divine precept; but the geniufes and interefts of nations are fo various, yea, fo liable to change are the interefts and circumftances of the fame people, that different laws are neceffary to fuit this diverfity of tempers, occafions, and emergencies. Nor is it any reproach to the divine law that it is no more particular ; fince it mult be infinite to reach all the particular circumftances of mankind: and God hath given men reafon, by which they may build upon the foundation that he hath laid fuch further laws and conflitutions, as the courfe and pofture of human affairs fhall require. Nor is the inefficacy of the law of God, which is the other thing that makes human laws neceffary, any more a difhonour to it. For what is the caufe of this inefficacy, but the wilful corruption of men? It was moft fit, that the chief rewards and punifhments annexed to the divine laws fhould be unfeen and future; that the trial of human virtue might be more confpicuous. And were not mankind furk into an extreme degeneracy, the profpect of an eternal werld would make all other confiderations ufzlefs. But as it is now, the torments of an after-life are not a bridle ftrong enough upon the lufts and paffions of men. It is therefore neceflary, that every fociety, to fecure its own peace, fhould infert as much of the divine law into their refpeltive conftitutions, as concerns the welfare of the body politic; and inforce thefe laws, not as divine, but as laws of the fate, with civil fanctions; that they who will not be made honeft by the fear of God, may be fo by the fear of the laws of their country. The difference between the phi-

 that honefly and virtue, which others obferved through fear of the laws;" agreeably to that of the apofle, "that the law is not made for a righteous man, but for the lawlefs and
difobedient." All human laws are of the nature of thofe called civil; and thefe, with regard to the difference of their fubject matter, may be fub-divided into the law of nations, civil law, and canon law.

Law of Nations, Jus Gentium, is that rule, or meafure, which all or feveral nations, either by a tacit or expre?s agreement, are obliged to obferve 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 occafion for any other laws, than the law of nature, and the law of God. Neither could any other law polibly exift: for a law always fuppofes fome fuperior who is to make it; and in a ftate of nature we are all equal, without any other fuperior but him who is the author of our being But man was formed for fociety ; and, as is demonftrated by the writers on this fubject, is neither capable of living alone, nor indeed has the courage to do it. However, as it is impoffible for the whole race of mankind to be united in one great fociety, they muft neceffarily divide into many; and form feparate flates, conimonwealths, and nations, entirely independent of each other, and yet liable to a mutual intercourfe. Hence arifes a third kind of law, to regulate this mutual intercourfe, called "the law of nations:" which, as none of thefe ftates 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 confruction alfo 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 fubject : and therefore the civil law very jufly obferves, that "quod naturalis ratio inter omnes homines confituit, vocatur jus gentium."
Law, Civil or Municipal, is the rule by which particular diftricts, communities, or nations are governed; being thus defined by Juftinian, (Inft. 1. 2. 1.) "Jus civile eft quod quifque fibi populus conftituit." Judge Blackitone calls it " municipal" law, in compliance with common fpeech; for though, frietly fpeaking, that expreffion denotes the particular cuftoms of one fingle municipium, or free town, yet it may with fufficient propriety be applied to any one fate or nation, which is governed by the fame laws and cuftoms. Accordingly, municipal law, thus underfood, is properly defined to be "a rule of conduct prefcribed by the fupreme power in a ftate, commanding what is right and prohibiting what is wrong." It is a "rule;" not a tranfient order from a fuperior to or concerning a particular perfon, but fomething permanent, uniform, and univerfal. It is thus diftinguihed from advice or counfel, and alfo from a compact or agreement. (See the beginning of the article Lawr.) It is a rule of "civil conduct," by which it is diftinguifhed 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 thofe of mere nature and religion; duties in which he has engaged, in confequence of enjoying the benefits of the common union ; and which amount to no more than that he do contribute, on his part, to the fubfiltence and peace of the fociety. It is likewife a rule "prefcribed," becaufe a bare refolution, confined in the breait of the legiflator, without manifelting itfelf by fome external fign, can never be properly a law. This refolution muft be notified to the people who are to obey it. This may be done by univerfal tradition and long practice, which fuppofe a previous publication, and is the cafe of the common law of England. It may be notified, viva voce, by officers appointed for that purpofe, as is done with regard to proclamations, and fuch acts of ${ }_{3}$ E 2
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parliament as are appointed to be publicly read in churches and other affemblies. And, lattly, it nay be notified by writing, printing, or the like; which is the general courfe taken with all our aets of parliament. This notification, however, fhould be made in the moft public and perfíicuous manner; and not like the mafk of Caligula, who (according to Dion Caffus) wrote his laws in a very fmall character, and hung them up upon high pillars, the more effectually to enfnare the people. That, without doubt, can never be a rule to any perfon, which is not liable to his engnizance, or which he neither does nor can know. Agretably to this circumflance, fome have derived "lex" a legendo; becaufe the law was to be publicly read, that it might be known to all and oblerved by all. The matter of divine laws being ufually of great importance, and the author a fovereign who bas an abfolute propriety in us, and on that ground an unqueftionable right to the moft entire devotednefs, and zealous concern to pleafe him; we ought to ufe all the means in our power to come at the knowledge of his will. But as human laws proceed from the will of thofe who, by nature, are upon a level with the relt of mankind, and have the confent of others to govern them purely for their temporal or political good, fuch a provifion 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 circumitance, which is worfe than the non-promulgation of a law; and that is the making of laws "ex poft facto:" when after an action (indifferent in itfelf) is committed, the legiflator then for the firlt time declares it to have been a crime, and inflicts a punifhment upon the perfon who has committed it. All laws fhould be made to commence " in futuro," and be notificd before their commencement. When the laws or rules of conduct are properly notified or prefcribed, it is the bufinefs of the fubject to be thoroughly acquainted with them: for if ignorance, of what he might know, were admitted as a legitimate excufe, the laws would be of no effect, but might always be eluded with impunity. On this head we fhall only add, that it is requifite to the very effence of a law, that it be made by the fupreme power. Sovereignty and legilature are convertible terms; one cannot fubfilt without the other. That the law may anfwer the purpofe of a complete rule, "commanding what is right and prohibiting what is wrong," it is neceffary that the boundaries of right and wrong be eftablifhed and afcertained by law: and it is then the bufinefs of the law, confidered as a rule of civil conduct, to enforce thefe rights, and to redrefs thefe prongs. For this purpofe every law may be faid to confift of Ceveral parts: one, declaratory, whereby the rights to be obferved, and the wrongs to be efchewed, are clearly' defrined and laid down ; another, dircIory, whereby the fubject is inftructed and enjoined to obferve thofe rights, and to abftain from the commiffion of thofe wrongs; a third, remedial, whereby a method is pointed out to recover a man's private rightc, or redrefs his private wrongs ; to which may he added a fourth, ufually termed the fanation, or rindicatory branch of the law, whereby it is fignified what evil or penalty fhall be incurred by fuch as commit any public wrongs, and tranfgrefs or neglect their duty. (Blackit. Comm. book i.) For the interpretation of the law, fee Interpretation.

Civil haws, confidered with regard to the two offices of the legiflator, viz. to judge and to compel, may be divided into two branches; the one difributive, the other vindiative and peral.

Law, Difributive, is that by which every man has his
right; or, it is that which conllitutes the rules and meafures of things, whereby we know what belongs to us, and what to others; fo as we may not difturb or interrupt others in the enjoyment of their own, nor be interrupted by them; and what each man may lawfully do or not do.

Law, Vindizive, is that branch by which the punifhments to be inflicted on thofe who violate the laws, are determined.
The diffributive and vindictive are not two fpecies 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, fhall be your's," it is in vain ; for though another take from you what you have caught, it is ftill your's; in regard, in the ftate 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 poffeffed by another.-A law, therefore, is but an empty found, unlefs it determisie the thing to be your's in fuch a fenfe as to forbid every body elfe from difturbing you in the poffeffion of it. But fuch prohibition will be vain, unlefs there be a penalty annexed to it. A law, thercfore, muft contain both thefe parts, that which prohibits, and that which punifhes. The firt whereof, which is called difributive, is prohibitory, and fpeaks to all; the latter, called vindizive or penal, is mandatory, and fpeaks 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 punifhment is not afcertained, either by writing or by example, it is fuppofed to be arbitrary, and to depend on the pleafure of the legillator: for that is no law, which may be violated impunè.

Civil laws, confidered with regard to the different manners of promulgating them, are of two kinds; fripte and non fcripta, or written and unwritten.

Laws, Written, are thofe which require either the voice, or fome other fign of the legillator's will to become laws. The written laws of England confirt of ftatutes, acts, or edicts, made by the king's majefty, by and with the advice and confent of the lords fpiritual and temporal, and commons, in parliament affembled. The oldeft of thefe now extant is the famous "magna charta," as contained in parliament 9 Hen. III. See-Magna Cbarta and Statuths.

Laws, Unwritten, are fuc, as need no other promulgation befides the voice of nature, or natural reafon; of which kind are all natural laws.

Hence it appears, that though the natural laws be defcribed in the writings of the philofophers, they are not therefore to be called zuritten laws; nor are the writings of lawyers, laws, for want of the fupreme authority; nor the refponfa prudentum, or opinions of judges, laws, excepting fo far as they are allowed by the fupreme power to pafs into ufe; and then they are called leges fcripte, written laws; not becaufe of their ufe, but becaufe of the will of the fupreme power, which is argued from their paling into ufe.

The unwritten law of England includes not only "general cuftoms," as the common laww, properly fo called; but alfo the "particular cuftoms" of certain parts of the kingdom; and likewife thofe "particular laws," that are by cufom obferved only in certain courts and juridictions. When thefe parts of the municipal law of England are called "leges non icripte," we are not to underfland that thefe laws are at prefent merely oral, or communicated from the former ages to the prefent folely by word of mouth. Indeed, during an age of profound ignorance of letters, all laws were entirely traditional, becaufe the nations among which they prevailed had but little idea of writing. Thus the Britifn

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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 prefent, the monuments and evidences of our legal cuftoms are contained in the records of the feveral courts of juttice, in books of reports and judicial decifions, and in the treatifes of the learned fages of the profeffion, preferved and handed down to us from the times of higheft antiquity. But thefe parts of our law may be fitly Atyled "leges non fcriptx," becaufe their original inflitution and authority are not fet down in writing, as acts of parlizment are, but they receive their binding power, and the furce of laws, by long and immemorial ufage, and by their univerfal reception throughout the kingdom. In like manner as Aulus Gellius defines the " jus non fcriptum" to be that, which is "tacito et illitcrato hominum confenfu ct moribus exprefium." See Consmon Laze and Custom.

Having confidered the civil law in its more general acceptation, as denoting the ftatutes and ordinances of every flate for its own good government, we fhall refer for the flatement of its more fecial acceptation to the article Civil Lazu.
Laws, Canon or Ecclefiafical, in a more extenfive fenfe, denote laws relating to the workhip, difcipline, and government of the church. For an account of that which is by way of eminence called cinnon law, fee Canon Lazv.

There is another divifion of the law of England befides that which we have above ftated, more large and particular ; as into the prerogative or crown law; the law and cuftom of parliament; the common law; the ftatute law; reafonable cuftoms; the lav of arms, war, and chivalry; ecclefiaftical or canon law ; civil law, in certain courts and cafes; fore? law ; the law of marque and reprifal ; the law of merchants; the law and privilege of the fannaries, \&c. But this large divifion may be reduced to the common divifion; and all is founded on the law of nature or reafon, and the revealed law of God, as all other laws ought to be. I Co. Inf. II.

Law is alfo applied to the feveral policies of ftates and people, or the maxims and rules they have agreed upon, or received from their magitrates, 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 jurifprudence.

The celebrated laws of the more modern days, are thofe of the Angli, the Werini, or Thuringi; of the Boii, or Bavarians ; thofe of the Burgundi, Germans, Danes, and Norwegians; of the Franks, the Frifons, the Lombards, the Gothic laws, the Martina, or Mercian law; the laws of the Saxons, Scots, Sicilians, Vifigoths; the laws of Oleron, the Molmu:in law, and the Salic law.

Law, Lex, among the firit Romans properly fignified an ordinance of the people, made at the requeft of a magiftrate, particularly a conful.

Thefe ordinances differed from the plebifcita and fenatus confulta, and even from other ordinances made at the requeft of any other magittrate befide a conful, though thofe to0 bore the name of laws.
Thus, though Aquilius and Falcidius were only tribunes when they made their requelt, yet we fill fay, the Aquilian Law, the Falcidian law, \&c.
The feveral laws of the Romans are diftinguifhed, 1. By the name of him at whofe requeft they were paffed; as the Cornelian Eaw, the Julian law, \&c. 2. By the matter or
fubject of the law; and hence came the terms, teflumentary laws, as the Furian, Voconian, \&c. judiciary laws, Agrarian laws, \&c.
3. Sometimes by the crimes againlt which they were made. For inttance : the laws tou diug poifoning, parricides, \&c. the laws of concufion, preculate, \&c.

The Codex and Authenzicx are the laws and conftitutions of the Roman emperors; and the Digeft is a compilation, made by the emperor Jultimian's order, of the feveral opinions and judgments of the mof learned in the Roman law ; to which he gave the fanction of laws, as appears by the epiftle prefixed to the work; and it is this that properly coniftitutes the lloman law. See Civir Law.

The lex talionis, or law of like for like, is the moft ancient and equitable law in the world. It was obferved by the Hebrews.

Law has alfo a more fpecial fignification, wherein it is taken for that which is lawful with us, and not elfewhere : as "tenant, by the courtefy of England."

Thus we alfo fay, to evage lasw (vadiare legem), and to make or do laze (facere legem). See Wager, and Make.

Law of Arms, is that law which gives precep:s how rightly to proclaim war, to make and obferve leagues, to attack the enemy, and to punifh offenders in the camp.
Common things concerning arms and war are under the cognizance of the conitable and marihal of England. ${ }_{13}$ R. II.
Latr, Affignee by: See Assigiee.
Law, Covenant of. See Covenant.
Laws of Effates, fuch acts and regulations as relate to their natures and managements. See Estate, and Fars.

Law, Foreft. See Forest.

## Law, Frank. See Frank.

Law of Honour, denotes a fyftem of rules, conftructed by people of fafhion, and calculated to facilitate their intercourfe with one another; and for no other purpofe. No. thing is adverted to by the law of honour but what tends to incommode this intercourfe; and hence it only preferibes and regulates the duties betwixt equals, omitting fuch as relate to the Supreme Being, as well as thofe which we owe to our inferiors. For which reafon, profanenefs, negleat of public worlhip or private devotion, cruelty to fervants, rigorous treatment of tenants or other dependants, want of charity to the poor, injuries done to tradefmen by infolvency or delay of payment, with numberlefs examples of the fame kind, are accounted no breaches of honour ; becaufe a man is not a lefs agreeable companion for thefe vices, nor the worfe to deal with, in thofe concerns which are ufually tranfacted between one gentleman and another. Again, the law of honour, being conllituted by men occupied in the purfuit of pleafure, and for the mutual conveniency of fuch men, wivil be found, as might be expected from the character and defign of the law-makers, to be, in moft inItances, favourable to the licentious indulgence of the natural paflions. Thus it allows of fornication, adultery, drunkennefs, prodigality, duelling, and of revenge in the extreme; and lays no itreis upon the virtues oppofite to thefe. Paley's Principles of Moral and Political Philofophy, vol. i.
Law, Infurance of. See lnsurance.
Law, Intendment of. See Intendsents.
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 humifating and ignominious badge of tyranny and foreign fervitude; being introduced under the aufpices of William the Norman, and his fons; and thus the ironical obfervation of the Roman fatiriat came to be literally verified, that "Gallia
"Gallia caufidicos docuit facunda Britannos." (Juven. xrv. 118.) This continued till the reiga of Edward III., when by flat. 36 Ed. III. c. 15 , it was enacted, that for the future all pleas, \&c. Mould be conducted in the Englifh tongue ; but entered and enrolled in Latin. The practifers, how* ever, being ufed to the Norman language, which was more familiar to them, continued to take their notes in law French ; and when thefe notes were publifhed, under the denomination of reports, they were printed in that barbarous dialect ; which, joined to the additional terror of a Gothic black letter, has occafioned many ftudents to throw away their Plowden and Littleton, without venturing to attack a page of them. But in reality, fays Blackitone, 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 dietion of Chaucer and Gower does from that of Addifon and Pope: Befides, as the Englifh and Norman languages were concurrently ufed by our anceftors for feveral centuries, the two idioms have naturally affimilated, and actually borrowed from each other; for which reafon the grammatical conftruction of each is fo very much the fame, that an Englifhman (with a week's preparation) would underftand 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 fucceeded the French for the entry and enrolment of pleas, and which continued in ufe for four centuries, anfwers fo nearly to the Engliih, that it has been generally imagined to be totally fabricated at home, with little more art or trouble than by adding Roman terminations to Englifh words. Whereas, in reality, it is a very univerfal dialect fpread throughout all Europe at the irruption of the northern nations, and particularly accommodated and moulded to anfwer all the purpofes of the lawyers with a peculiar exactnefs and precifion. Thefe northern nations, or rather their legiflators, though they refolved to promulge their laws in the Latin tongue, have frequently intermixed in it fome words of a Gothic original ; which is more or lefs the cafe in every country of Europe, and ought not, therefore, to be imputed as any peculiar blemifh in our Englifh 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 prefent and future times ; and on thofe accounts beft fuited to preferve thofe memorials which are intended for perpetual rules of action. As to the objection of locking up the law in a ftrange and unknown tongue, this is of little weight with regard to records, which few have occation to read, but fuch as do, or ought to, underftand the rudiments of Latin. The learned Blackfone fuggeits, that the terms of the "law are not more numerous, more uncouth, or more difficult to be explained by a teacher, than thofe of logic, phyfics, and the whole circle of Arittotle's philofophy, nay even of the politer arts of architecture and its kindred fudies, or the fcience of rhetoric itfelf." The technical Latin continued in ufe from the time of its firft introduction till the time of the fubverfion of our ancient conftitution under Cromwell, when, among many other innovations in the law, the language of our records was dltered and turned into Englỉh. But, at the rettoration of king Charles, this novelty was no longer continued; the practifers finding it very difficult to exprefs themfelves fo concifely or fignificantly in any other language but the Latin. Thus it cortinued without any fenfible inconvenience tiil about the year 1.730 , when it was again thought proper that the proceedings at law fhould be done into Englifh; and it was accordingly fo ordered
by fatute 4 Geo. II. c. 26. This provifion was made, according to the preamble of the flature, that the common people might know and underfland what was alleged or done for and againft them, in the procefs and pleadings, the judgment and entries in a caufe. Several inconveniences arofe from this alteration; fo that in two years it was found neceffary to make a new aet, 6 Geo. II. c. 14 , which allows all technical words to continue in the ufual language, and has thereby almoft defeated every beneficial purpofe of the former ftatute. Blackft. Com. b. iii.
Law, Marine, denotes that law which ferves to regulate the interefts of navigation and maritime commerce. (See Navigation, and Commerce.) This law has undergone various alterations and improvements, in confequence of the extenfion of naval intercourfe between different nations for the purpofes of commerce. Several codes have been formed by different ftates primarily for the regulations of navigation, and for defining the authority of the mafters and other officers of hhips, and the duty and rights of the feamen; and afterwards for the regulation of maritime contracts. The earlieft fyftem of marine law, which hittory records, was that compiled by the Rhodians, after they had, by their commerce and naval vietories, obtained the fovereignty of the fea, about 900 years before the Chriftian era. Thefe laws exift at prefent only in a detached and imperfeet ftate, as they have been preferved and incorporated in other fubfequent inflitutions of a fimilar nature. It has been fuppofed by fome that the Rhodian laws were adopted by the Romans during the firft Punic war, when they firft became a naval power ; but others affirm that they were incorporated with the Roman law by Juftinian and others. As for the Phoenicians, Carthaginians, Athenians, Corinthians, and other maritime fates of antiquity, it does not appear whether they had any marine laws of their own inftitution. If they had any, they have not been tranfmitted to our times. The firtt code of modern fea-laws was compiled, fays ferjeant Marfhall, about the time of the firlt crufade, towards the end of the irth century, by the people of Amalf, who had then become confiderable for their commerce and maritime power. It is not improbable that the code confifted principally of the Rhodian inftitutions, which were found ftill in force in the countries bordering upon the Mediterranean; and being collected into one regular fyltem, were generally received, for a confiderable time, as law in thofe countries. In procefs of time, other ftates, as they acquired importance and diftinction, formed new collections of marine laws, in which the old inflitutions were altered and modified to fuit the improvements of the times, or their own particular interelt. But when inconveniences were found to arife from a diverfity of rules pertaining to a fubject that had been long regulated by one general fyftem, which was regarded as part of the law of nations, it became neceffary for the different maritime flates to form a new code out of all thefe difcordant materials, which was done, as Grotius informs us, (De Jure Bell. 1. iii. c. 1. § 5. n. 6.), by the authority of almoft all the fovereigns of Europe. This new digeft was denominated "Confolato del Mare." It was firft publifhed, by order of the ancient kings of Aragon, in the Catalan tongue, and therefore probably compofed at Barcelona, the capital of Aragon. In the $1^{\text {th }}$ th century this code was revived as law in Italy, the Greek empire, France, and Germany; and Vinnius fays, that moft 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 ftill of very high authority in every maritime ftate of Europe. The next colleciion of feap laws in point of time, as well as of celebrity, is that of Oleron.

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Oleron. (See Oreron.) This was fucceeded by a collection of the ordinances made by the "Merchants and mafters of the magnificent city of Wibuy, in the ifland of Gothland, formerly very famous for its commerce, but now reduced to an obfcure and inconfiderable town." Many of 'the regulations contained in this code of lawa are precifely "the fame with thofe of Oleron. Thefe laws were for fome ages, and indeed ftill remain, in great authority in the north'crn parts of Europe. In 1597, the deputies of the Hanfeatic league, in a general affembly at Lubeck, drew up a fyftem of laws relating to navigation, for the ufe of their confederacy, to which, in i614, they added feveral new ordinances. But the molt complete and comprehenfive fyltem of this kind is the famous ordinance of the marine of -Louis XIV. publifhed in 168 I . This excellent code was̀ compiled and arranged by a very malterly hand, under the infpection of Colbert, the celebrated minifter of that prince, upon an attentive revifion of all the ancient fea-laws of France and other countries, with the affiltance of the moft learned men of the time, and upon confultation with the different parliaments, the courts of admiralty, and the chambers of commerce in France. It forms a fyftem of whatever experience and the wifdom of ages had pronounced to be molt jult and convenient in the marine inflitutions of the maritime Itates of Europe. Notwi:hftanding new regulations, fuggelted by motives of national intereft, it has hitherto been efteemed a code of great authority upon all queftions of maritime law. From this ordinance, and from the elaborate and ufeful commentary of Valin, lord Mansfield is faid to have derived much of his extenfive and accurate acquaintance with the principles of marine. Marfhall's Law of Infurance, vol. i. See Insurance.

Law of Marque, a law by which thofe who are driven to make ufe of it, take the goods, or fhipping of the party that has done them wrong, and of whom they cannot get ordinary juftice, whenever they can take him within their own bounds or precincts. 27 Edw. III. cap. 17 .

Law, Martial. . See Martial.
Law AIerchant, 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 caufes of merchants on the general rules which obtain in all commercial countries; and that often, in matters relating to domeftic trade, as, for inftance, 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 confifts in this, that if there be two joint merchants of wares, and one of them dies, his executor fhall have the moiety; which is not allowed in the cafe of others, not merchants. See Custom.

The law of merchants not being founded in the particular inftitutions, or local cuftoms of any particular country, but confilting of certain principles which general convenience has eftablifhed to regulate the dealings of merchants with each other in all countries, may be confidered as a branch of public law.

Laws of Molmutizs. See Molmutin Laws.
Laws of Olergn. See Oleron.
Law of Parliament. See Parliament.
Law, Poynings'. See Poyning.
Law, Releafe in. See Release.
Law, Salice See Salic.
$\mathrm{L}_{\text {Aw, }}$ Spirilut, is the ecclefiaftical or canon law, allowed and authorized in this fealm, fo far as it is not againft the common law, nor againft the ftatutes and cuftoms of the kingdom. And according to fuch ecclefiaftical laws, the

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ordinary and other ecclefialtical judges procecd in cafes within their cognizance.

Law Staple, the fame with law merchant.
Law Suit. Sce Suit.
Law, Sumptuary. See Sumptuary.
Law, Surrender in. See Surrender.
Laws, $B y$. See By-Laws.
Laws, Cock-pit. See Cockpit.
Laws of the Stage. See Stage.
LAW is alfo ufed figuratively in fpeaking of the rules or order wherein any thing is performed.

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 refiftance, of defcent of bodies, \&cc. laws of clalticity, rarefaction, reflexion, refraction, \&c.; ell which fee under their proper heads.

Law, in Scripture Hiftory, one of the thrce divifions of the Old Teftament, comprehending Genefis, Exodus, Leviticus, Numbers, Deuteronomy. Sce Canon.

Law-Day, Lagedayum, in our old Law Writers, was any day of open court, and commonly uied for the courts of a county or hundred. It is alfo called view of frank-pledge, or court-lcet. "Et quieti fint de fectis comitatuum \& hundredorum noftrorum, de vifu franci plegii \& laudavorum, \&c."

LAWA, in Geography, a town of the inland of Borneo, fituated on a river of the fame name. N. lat. $0^{\circ} 40^{\prime}$. E. long. $110^{\circ} 42^{\prime}$.

LAWEND, in the military language of the Ottoman empire, the appellation of cavalry, called alfo Delibaches. (See Delibacies.) From Lawend we have formed Laventi. Their arms are fhort fabres, piftols, mufkets, and lances. They wear a kind of cap, which is a long cylinder of black felt, nine or ten inches high, and without any projecting rim. Their faddles are made in the Englifh manner, of a fingle fkin, ftretched upon a wooden tree; in the reft of their accontrements and clothing, they refemble the Mamlouks. Their ragged clothes, their rufty arms, and their horfes of different fizes, give them the appearance of banditti more than of foldiers; and, in reality, they have firft diftin. guifhed themfelves under the former character, nor have they much changed their habits by adopting their fecond occupation. Almoft all the cavalry in Syria are Turkmans, Curds, or Caramanians ; who, after exercifing the trade of robbers in their own country, feek employment, as well as an afylum, near the perfon of the pacha. Throughout the empire, their troops are, in like manner, formed of plunderers, who roam from place to place. From want of difcipline, they retain their former manners, and are the fcourge of the country, which they lay walte, 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 eldeft fon of Thomas Lawes, a vicar-choral of the cathedral church of Salifury, and a native of that city, was placed early in life under Coperario, for bis mulical education, at the expence of the earl of Hertford. His firlt preferment was in the choir of Chichelter, but he was foon called to London, where, in 1602 , he was fworn a gentleman of the chapel royal; which place, however, herefigned in 1611 , and became one of the private, or chamber-muficians, to Charles, then prince, and afterwards king. Fuller fays, "he was refpected and beloved of all fuch perfons as calt any looks towards virtue and honour ;" and he feems well entitled to this praife. He manifeited his gratitude and loyalty to his royal mafter by taking up arms in his caufe againft the par-
liament.

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liament. And though, to exempt him from danger, lord Gerrard, the king's general, made him a commiflary in the royal army, yet the activity of his fpirit difdaining this intended fecurity, at the fiege of Chefter, $16+5$, he loft his life by an accidental fhot. The king is faid, by Fuller, to have been fo affected at his lofs, that though he was already in mourning for his kinfman lord Dernard Stuart, killed at the fame fiege, his majcly put "on particular mourning for his dear fervant Willian Lawes, whom he commonly called the father of nufic."

His clief compofitions were fantafias for viols, and fongs and fymphonies for mafques. Though his brother Henry, in the preface to the Choice Pfalmines for three voices, which they publiflied jointly, boalts that "he compofed more than thirty feveral forts of mufic for voices and inftruments, and that there was not any initrument in ufe in his time but he compofed for it as aptly as if he had only fudied that.". In D.. Aldrich's Collection, Chrif-church, Oxon, there is a work of his cailed Mr. William Lawes's Great Confort, "wherein are fix fetts of muficke, fix books." His Royal Confurt for two treble viols, two viol da gambas, and a thorough-bafe, which was always mentioned with reverence by his admirers in the 17 th century, is one of the mott dry, aukward, and unmeaning compofitions we ever remember to have had the trouble of fcoring. It mult, however, have been produced early in his life, as there are no bars, and the pałfages are chiefly fuch as were ufed in queen Elizabeth's time. In the mulic--fchool at Oxford are two large manufcript volumes of his works in fcore, for various inftruments; one of which includes his original compofitions for mafques, perforined before the king, and at the inns of court.
His authem for four voices, in Dr. Boyce's fecond volume, is the beft and moft folid compofition that we have feen of this author ; though it is thin and confufed in many places, with little melody, and a harmony in the chorus, P. 201, which we are as unable to underfland, or reconcile to rule, or to our own ears. He nuft have been confiderably older than his brother Henry, though they frequently compofed in conjunctions: We are, however, unable to clear up this point of prinogenenture : Henry's name is placed firtt in the fitle to Choice Palmes, publifhed in 164S, 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 jult before, "they had their birth at the fame timee as his." Befides 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 mufick of the fongs and fymphonics, were excellently compofed by Mr. William and Mr. Henry Lawes, his majefty's fervants."
Several of the fongs of William Lawes occur in the collections of the time, particularly in John Playford's Mufical Companion, part the fecond, confilting of dialogues, glees, ballads, and airs, the words of which are in general coarfe and licentions. The dialogue part, which he furnihed to this book, is a fpecies of recitative, wholly without accom. paniment : and the duet at laft, which is called a chorus, is infipid in melody, and ordinary in counterpoint. His boated canons, publifhed by his brother Henry at the end of their pfalms, as proofs of his great abilities in harmony, when fcored, appear fo tar from finihed compofitions, that there is not one of them totally free from objections, or that bears the flamp of a great mafter.

Lawes, He\ry, the brother of William, was likewife a difciple of Coperario. By the cheque-book of the clapel royal, it appears that he was fivorn in Pifteller, in January, 2625 , and, in November followigg, gentleman of the ehapel;
after this, he was appointed clerk of the cheque, and one of the public and private muficians 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 difputed them with more violence than at any other period of our hiftory, there was but one opinion concerning the abiities of theie muficians. Yet as the reputation of Heary was \&ill higher, and more firmly eftablifhed than that of his brother, it feems to require more ample difcuffion. We have examined with care and candour all the works which we cosild find of this compofer, which are fill very numerous, and are obliged to own ourfelves unable, by their excellence, to account for the great reputation which he acquired, and the numerous panegyrics beftowed on him by the greateft poets and muficians of his time. His temper and converfation mulf certainly have endeared him to his acquaintance, and rendered them partial to his productions : and the praife of fuch writers as Milton and Waller is durable fame. Tallis, Bird, or Gibbons, who were all infinitely fuperior to Lawes, never had their abilities blazoned by contemporary poets or hiftorians of eminence. Fenton, the editor of Waller's works, tells us, that "the belt poets of his time were ambitious of having their verfes fet to mufic by this admirable artit ;" and, indeed, he not ouly fet fome of the works of almoft every poct of eminence in Charles I.'s reign, but of young noblemen and gentlemen who feem only to have tried their frength on the lyre for his ufe, and of whofe talents for poctry no other evidence remains than what is to be found in Lawes's publications.
Waller has more than once bettowed his fragrant incenfe on this mufician. Peck fays, that " Milton wrote his Mafque at the requeft of Lawes ;" but whether Milton chofe Lawes, or Lawes Milton for a colleague in Comus, it equally maniferts the ligh rank in which he thood with the greatelt puets of his time. It would be illiberal to cherifh fuch an idea; but it dooss fometimes feem as if the twinfifters, Poetry and Muric, were mutually jealous of each other's glory: "t the lefs interefting my lifter's offspring may be," fays Poetry, "t the more admiration will my own obtain?" Upon afking fome years ago, why a certain great prince continued to honour with fuch peculiar marks of favour an old performer on the flute, when he had fo many muficians of fuperior abilities about him? We were anfwered, "becaule he plays worfe than himfelf." And who knows whether Milton and Waller were not fecretly influenced by fome fuch confideration? and were not more pleafed with Lawes for not pretending to embellifh or enforce the fentiments of their fongs, but fetting them to founds lefs captivating than the fenfe.

But burd as the mufic of Lawes appears to us, it feems to have been fincerely admired by his contemporaries in general. It is not meant to infinuate that it was pleafing to poets cnly, but that it was more praifed by them than any other mulic of the fame time. Though that of Laniere, Hiltcn, Simon Ives, Dr. Child, and others, feems preferable ; :nd the poets, whofe praife is fame, perhaps taught others to admire.

The time was now conie for fimplifying harmony and purifying melody in England, as weil as in Italy; and the beginning of this enterprize was not fortunate here any more than in that country : harmony and contrivance were relinquifhed without a compenfation. Simplicity, indeed, was attained; but devoid of accent, grace, or invention. And this accounts for the fuperiority of church mutic over fecular at this period in every part of Europe, where canon, fugue, rich harmony, and contrivance, were ftill cultivated; while the firt attempts at air and recitative were auk ward, and the bafes thin and unmeaning. Indeed, the compofers of this
kind of mufic liad the fingle merit to boaft of affording the tinger an opportunity of Jetting the words be perfectly well undertood; as their melodies, in general, confitted of no more notes than fyllables, while the treble accompaniment, if it fubfitted, beinis in unifon with the voice-part, could occafion no embarrallinent or confution.

But there feems as little reafon for facrificing mufic to poetry, as poetry to mufic ; and when the fentiments of the poem are neither enforced nor embellifhed by the melody, it feems as if the words might be ttill belter articulated and underltood by being, read or declaimed, than when drawled out in fuch pfalmodic ayres as thofe of Henry Lawes and his contemporaries. It has, however, been afked "whoever reads the words of a fong but the author ?", And there are certainly many favourite fongs, which nothing but good mufic and good finging could ever bring into notice. There are, however, poems, we will not call them fongs, on fubjeets of wit and fcience, which mult ever be enfeebled by mufic ; while others, truly lyric, and confined to paffion 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 againft another, or to give a preference to finging over declamation ; but to affign to each its due place and praife. There are palages in our beft plays which could never be fung by the fineft performer that ever exilted, to fo much effect as they have been Spoken by a Garrick or a Siddons; while in Mctaftafio's charming dramas, there are lines and flanzas, by which an audience has been often more comoletely enrapt, when well fet and well fung by a mellifluous and touching voice, than by the moft exquilite declamation of the greateit actors that ever exilted. Though Henry Lawes feverely cenfures the admirers of Italian mufic in his preface, yet his firft cantata, "Thefeus and Ariadne," is both in poetry and mufic, an imitation of the famous fcene in Monteverde's opera of "Arianna," which was afterwards formed into a fingle heroic fong, entirely like this, in ftilo 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 17 th century, had met with fuch univerfal applaufe in Italy, from the lovers of poetry and fimplicity, and enemies to madrigals and mufic of many parts, this kind of compofition had many imitators, not only in Italy, but throughout Europe. All the melodies of Henry Lawes remind us of recilative or pfalmody, and fearec 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 vorks were chiefly publifhed under the title of "Ayres and Dialugues," of which he printed three feveral books, the firlit in 1653; the fecond in 1655 ; and the third in $105 \%$. Befides thefe, many of his fongs and dialogues were publifhed by Playford in collections, entitled "Select Mufical Ayres and Dialogues," by Dr. Willon, Dr. Charles Colman, Nicholas Laniere, and others. Though moft of the productions of this celebrated mufician are languid and infipid, and equally devoid of learning and genius, we fhall point out one or two of them that feem the molt meritorious.

Book the Firf, p. Ir.


Vol. XX.
is one of the moft pleafing airs that we have feen of thiak author. We fhould infert anotlier of his fongs cutire, in the mulical plates, had we roons; "A Lover once I did efpy;" not fo much on account of the beauty of the melody and harmony, though it is one of the beft in thofe particulars, as for the fingularity of the meafure, which is fuch as feldom occurs. Harry Carey"s ballad "Of all the firls that are fo fmart, \&cc." which is a flower kind of hornpipe, refembles it the molt of any air which we can recollect. "Little lowe ferves my turn," p. 18. of the fame collection, is the gayeft air which we have feen of H. Lawes. Flis other moit. pleafing ballads are thofe beginning. "If v:hert the fun," p. I8, and Ben Johnfon's fong, "Still to be neat, ttill to be drefled ;" fee Play ford's Colicction. But the beft of all hus fonys feems "Come from the dungeon to the throne," p. 167. of Playfair's fecond part; and "Amidit the myrtles as I walk," is pleafing pralmody.

The tunes which he fet to Sandys's excellent verfion of the pfalms, as well as thof to the Chose Pfalmes of the fame paraphrafe, which were con pofed by Henry Lawes and his brother, in a kind of anthem or motet ityle, though afhered into the world, in $16+8$, by fuch imnumerable pancgyrics in shyme, are fo far from being fuperior to the fyllabic pfalmody of their predeceffors orho clothed Sternhold and Hopkins in Narcoties frains, that they feem to poffefs not only lefs pleafing melody, but lefs learned harmony, than may be found in anterior publications of the fame kiod. 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 difcover, fince they were firlt printed. One of thefe, firit publifhed by Henry, to the feventy-fecond pfalm, 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 eftablithed in Pfalmody illand, mentioned in the General Hillory of Mufic, vol ii. p.g.

During the civil war, Henry Lawes fupported himfelf by teaching ladies to fing; however, he retained his place in the chapel royal, and, at the Reftoration, compofed the coronation anthem. Yet he did not long furvive this event, for, in October, 1662 , he died, and was buried in Weftmin. fter Abbey.

## LAWFUL. Sce Unlawful. <br> Lawful Nam. See Naam.

LAWING of Dogs, a phrafe ufed in our ancient law. writers. Thus, maftiffs murt be lawed every three years, Crompton Jurifd. fol. I 63 , that is, three claws of the forefoot fhall be cut off by the fkin, or the ball of the fore-foot cut out. Sce Expeditation.

LAWLESS Court, a court held on King's bill at Rochford in Effex, every Wednefday 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, becaufe held at an unlavful hour ; or, perhaps, quia diata fine lege; hecaufe opened without any form. It is mentioned by Camden ; who fays, this fervile attendance was impofed on the tenants, for conlpiring at the like unfeafonable time, to raife a commotion.

## Lawless Mar, ex-lex. See Outlaw.

LAWN, in Gardening, an open fpace of fhort grafs. ground, in the front of a refidence, or in a garden, park, or other pleafure-ground. Thefe, 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 extenfive profpects. Where there is a fulti-

## $\mathrm{L} \wedge \mathrm{W}$

cient Icope of ground, they thould be as large as the nature of the fituxtion will adnit, always being planned in the moft confpicuous parts immediately joining the: houfes, and extended outwaid as far as convenient, allowing width in proportion; having each fide or verge bounded by elegant flurubbery compartments in a varied order, feparated in some parts by intervening fpaces of grafs-ground, of yaried dimenfions, and ferpentine gravelowalks, gently winding between and through the plantations, for occafional hady, theltered, and priyate walking; or fimilar walks carried along the fronts of the boundary plantations, and immediately joining the lawns, for more open and airy walking in; and in fome concave fweeps of the plantations there may be receffes and open fpaces both of grafs and gravel, of different forms and dimenfions, made as places of retirement, fhade, $\$ \mathrm{sc}$.

Thorgh the ufual fituations of lawns are thofe juft mentioned; yet if the nature of the ground admit, or in cafes where there is a good fcope of ground, they may be continued more or lefs each way; but always the mott conliderable on the principal fronts, which, if they be to the fouth, or any of the foutherly points, they are the moft defirable for the purpofe.

With refpect to the dimenfions, they may be from a quarter of an acre, or kefs, to fix or eight acres, or more, according to the extent and fituation of the ground. Sometimes lawns are extended over ha-has, to ten, twenty, or even to fifty or fisty acres, or more. But in thefe cafes they are not kept mown, but caten down by live flock.

The form mult be directed by the nature of the fituation; but it is commonly oblong, 〔quare, oval, or circular. But in whatever figure they are deligned, they thould widen gradually from the houfe outward to the furtheft extremity, to have the greater advantage of profpect ; and by having that part of them within the limits of the pleafure-ground, bounded on each fide by plantations of ornamental trees and frubs, they may be continued gradually near towards each wing of the habitation, in order to be fooner in the walks of the plantations, under fhade, fhelter, and retirement. The terminations at the farther ends may be either by ha-has to extend the profpect, or by a flrubbery or plantation of fately trees, arranged in fweeps and concave curves. But where they extend towards any great road, or diftant agreeable profpect, it is more in character to have the utmoft verge open, fo as to admit of a grand view from and to the main refidence.

But the fide-boundary verges fhould have the plantations rurally formed, airy, and elegant, by being planted with different forts of the molt ornamental trees and fhrubs, not in one continued clofe plantation, but in diftinct feparated compartments and clumps, varied larger or fmaller, and differently formed, in a fomewhat natural imitation, being fometimes feparated and detached lefs or more, by intorvening breaks, and open fpaces of fhort grafs, communicating buth with the lawns and interior diftricts; and generaily varied in moderate fweeps and curves, efpecially towards the lawns, to avoid ftiff, formal appearances, both in the figure of the lawns and plantations. In planting the trees and fhrubs, which fhould be both of the deciduous and evergreen kinds, where intended to plant in diftinet clumps, eisher introduce the deciduous and evergreens alternately in feparate parts, or have fome of both interfperfed in affemblage; in either method, placing the lower growth of fhrubs towards the front, and the taller backwards, in proportion to their feveral ftatures, fo as to exhibit a regular gradation of height, that the different forts may appear coufpicuous from the main Jawns. They may be continued backwards to a confiderable
depth, being backed with trees and flirubs of more lofty growth. The internal parts of the plantations may have gravel or fand walks, fome flady, cthers open; with here and there fome fpacious fhort grafs openings, of different dimealions and forms.

It is feldom that extenfive lawns in parks or paddocks, \&ec. have any boundary plantations clofe to what nay be consfidered as a continuation of them beyond the pleafare-ground, but are fometimes dotted with noble trees, difperfed in various parts, at great diftances, fo as not to obftruct the view; fome placed fingly, others in groups by twos, threes, fives, \&c. and fome placed irregularly, in triangles, fweeps, Itraight lines, and other aifferent figures, to caufe the greater variety and effect, each group being diverffied with different forts of trees, all fuffered to take their natural growth. Where frall, thefe kinds of openings fhould always be kept perfectly neat, by being often poled, rolled, and mown, but where they are of large extent, this is fcarcely ever the cafe. See Grass, Ground, and Turfing.
Lawns, in Commerce. See Cambric.
LAWOROW, in Geograthy, a town of Auftrian Poland, in Galicia; 24 miles W. of Lemberg.

LAWREACE, Peter Joseph, in Biography, an engineer, was born in Flanders in the year 1715. He difitiguilhed himfelf, 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 conftructed, predicted that he would one day arrive at eminence in the fcience 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 conftrueled many curious and very ingenious nuices 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 ftatue 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 leagaes 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 vifited Carolina, and publihed 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. Air. Hort. Kew. ed. 2. v. 2. 354 . Juff. 33 I. Lamarck. Illuftr. t. 296. (Akanna; Gærtn. t. 110.)-Clafs. and order, OZandria Monogynia. Nat. Ord. Calycantbeme, Linn. Salicaria, Juff.

Gen. Ch. Cal. Perianth inferior, four-cleft, fmall, permanent. Cor. Petals fuur, ovato-lanceolate, flat, fpreading. Stam. Filaments eight, thread-fhaped, the length of the petals, and flanding in pairs between them; anthers roundifh. Pif. Germen fuperior, roundifh; ityle fimple, as long as the ftamens, permanent; fligma capitate. Peric. Berry dry, globofe, pointed, of four cells. Sceds numerous, ak. gular, with a fpongy coat.

Obf. Gærtner, who juftly efteems the fruit to be rather a dry berry than a capfule, chufes to call the genus Alcanna, a word corrupted from Al Henna, the Arabian appellation of the firt fpecies.

Eff. Ch. Calys fourocleft. Petals four, regular. Stamens approaching each other in four pairs. Berry dry, fuperior, of four cells, with many feeds.

1. L. inermis. Henna, or Smooth Lawfonia. Linn. Sp. Pl. 419. Suppl. 219. (L. alba; Lamarck. Dict. *. 3. 106. L. fpinofa; Haffelq. It. 464. Alhenna, five Henna Arabum; Walth. Hort. 3. t. 4. Rauwolf. It. Go. 1. 7.)-Thorns none. Leaves obovate, acute. Segnents of the calyx as long as its bafe. - Native of various parts of the Levant. Miller is faid in the Hortus Kewenfis to have cultivated it in 1759 , but it is never preferved long, even in a ftove, by our gardeners. The writer of this article obtained feeds in 1787 at Paris, from M. Desfontaines, who had brought them from Barbary. Thefe vegetated at Chelfea, and in fome other gardens, producing fhrubiay plants of a humble ftature, which in the enfuing autumn and winter were laden with flowers, whofe delicate afpect, and exquifite feent, attracted the admiration of all who faw them. The habit of this fpecies is not unlike Privet, but the laves are more obovate, and of a lighter green. The forvers are yellowifh-white, whith purplifh flamens, and grow in oppofite clufers about the tops of the branches. Haffelquift in his travels, Englifh edition 246, fays, "the leaves are pulverized, and made into a pafte with (hot) water. They (the Egyptians) bind this pafte 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 lafts for three or four weeks, before there is occafion to renew it. The cuftom is fo 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 bear."
2. L. Jpinofa. Prickly Lawfonia. Linn. Sp. Pl. 498. (Cyprus, Alcanna; Rumph. Amboin. v. 4. 42. t. 17. Mail-an「chì ; Rheede Hort. Mal. v. 1. 73. t. 40. Pluk. Phyt. t. 220.f. r.)-Branches becoming (pinous. Leaves obovate, with a fmall point. Segments of the calyx as long as its bafe.-Native of the Eaft Indies. It differs from the former, of which many have not unjufly thought it a variety, in having the permanent lateral branches hardened into a fpine at their extremities. The fruit anfwers to Gærtner's deicription of a dry berry rather than a valvular capfule. The leaves feem to vary in fhape. Rumphius fays they are ufed to dye the nails in the inland of Celebes, \&c., and that the Malay women are particularly fond of the flowers, with which they deck their perfons and ftrew their beds. Haffelquit's own fpecimen, called in his travels, by Linnæus, $L$. Jpinofa, proves not to be this plant but the former. Indeed, as we bave before hinted, they are moit probably but one fpecies.
3. L. coccinea. Scarlet Lawfonia. Branches becoming fpinous. Leaves elliptic-obovate, acute. Segments of the calyx twice as long as its bafe.-Sent from Banda by the late Mr. Chriltopher Smith, as "a Lazufonia with fcarlet flowers.". It is very nearly related to the lalt, and we find nothing to difcriminate this, our fpecimen being but imperfect, except a difference in the relative proportions of the parts of the calyx, of the certainty or conftancy of which we have fome doubt.

One might fuppofe this plant to be the L. purpurea, Lamarck. Dict. v. 3. 107, Willdenows's n. 2; but on turning to the Poutaletsje, Rheede Hort. Mal. v. 4. 117- t. 57, citcd for it, which Linnews very erroneoully quotes for $L$. inarmis, the plant of Rheede will be found widely different
from every Lawfonia, as Jufficu well obferves, p. 332. The flowess are monopetalous and tetrandrous, with an inferior germen, and this great French botanif fufpects it may be a Petfia, Of its belonging to his order of Ruliacta there can be little doubt. The 1. . purpurea, therefore, of which Lamarck had feen only leaves, and Willdenow nothing, falls to the ground.
4. L.? Acrongchia. Broad-leaved Lawfonia? Linn. Suppl. 219. Forftr. Prodr. 27. (Acronychia lx vis; Forit. Gen. 27. t. 27.) - Leaves obovate, on long falks. Petals inflexed at the point. Stamens fringed.-Gathered by the Forfters in New Caledonia. A fmooth /brub, with round Uranches. Leav's oppofite, an inch or two long, obovate, obtufe, broad, entire, תightly revolute, veiny, frooth. Footlalks half an inch long, fraight, channelled, fmooth, united to the leaf by a joint. Clufers axillary, forked, much florter than the leaves. Calyx with very fmall, rounded, pale-edged fegments. Petal's lincar-oblong, hooked inward at the point. Stamsons fringed at the bale, fcarcely fo long as the corolta. The fruit is pofitively defcribed by Foriter as " an inflated caprule of four vulues." This character, and the totally different form of the petals and calyx, perfuade us that the fpecies in quellion ought to ftand as a genus by itfelf, as Forter originally made it.

Lawsonia, in Gardening, contains plants of the exotic tree kind for the flove, of which the fpecies are the fmooth Lawfonia (L. inermis), and the prickly Lawfonia (L. (pinofa).

Metbod of Culture. - Thefe two plants may be raifed by fowing the feeds in pots of light mould, in the early fpring, and plunging them in the bark bed of the flove. When the plants have acquired a few inches growth, they fhould be removed into feparate fmall pots filled with light fandy earth, replunging them in the bark-bed, and giving a little water, with proper fhade. They afterwards may be placed fo as to have pretty free air, but be conftantly kept in the fore at all feafons.
They afford a variety among other fove plants.
LAWYER, (legjfa, legijperitus, jurijconfultus,) by the कaxons calted labman, is a counfellor, or one learned in the law; and lawyers, fuch as counfellors, attornies, \&c. are within the act 3 Jac. I. againit extortion; but it has beca held only to extend to officers. See Counselior, Attorney, \&c.
LAX, in Geograpby, a town of Switzerland, in the Valais; 33 miles E . of Sion.

LAXA, a town of the ifland of Lewis, fituated on a bay, on the eaft coaft; 9 miles S.S.W. of StornamayAlfo, a town of Peru, in the diocefe of La Paz; 20 miles S.W. of La Paz.

LAXATIVE Medicines, are thofe purgative or cathartic fubftances, which operate gently, without producing any confiderable difcharge from the mucous glands and exhalants of the inteftines; fuch as manna, magnefia, rhubarb, the neutral falts in fmall dofes, fulphur; electuary of fenna, \&c. For an account of the operation and ufe of thefe medicines, fee Cathartics.
LAXATOR, in Anatomy, a name applied to two mufcles of the officula auditus. The laxator tympani najor is the externus mallei of Albinus; the laxator minor is fimply laxator tympani of that anatomit. The exiftence of the latter mufcle is doubted by fome. See the article Ear, where they are defcribed by the names of Albinus.

LAXEMBURG, in Geography, a town of Auftria; 7 miles S. of Vienna.

LAXEX BAX, a bay on the ealt coaft of the Ifle of Man, in the Irin fea, which affords a fhelter from wefterly
winds, in about 7 to to fathom water. The cape at the fouthern extr-nity is called "Laxey Point."
layior Tócia. Sec Toma.
LAXMANNTA, in Botany, a mame originally given by Forlter, in his G.miza, $t .47$, to a fyngenelious tree of St. Helena, which Solander confidered as a Bidens, buis which George Forter in his Pluntie Allantice, 50, fubfequently reforred to Spilantlusus. We have not difonvered it in Will. denow, nor caas we afeertain what Schreber decided concerning this plant ; but the latter has adopted the name for ano her genus, of which we are now to fpeak. It is defigned to commemorate the Rev. Eric Laxinann, a native of Finland, Profeffor at Peterfburg, who made many botanical difcoveries in Silberia, and died in 1796.-Schreb. 800. Mart. Mill. Dict. v. 3 . (Cuminofima ; Grertn. t. 58.) Clafs and order, Heicandrici Monogynia. Nat. Ord. Aurantia ; Jufl.
Gen. Ch. Cal. Perianth inferior, very fmall, of one leaf, bell-haped, in four roundifh fegments, permanent. Cor. Petals four, longer than the calyx, linear, coriaceons, cqual, fpreading, inflesed at the point, marked on the upper fide with a triply villous line. Stam. Filaments fix, linear in their lower part, awl-fhaped upwards, ftraight, fpreading, rather fhorter than the corolla ; antliers roundifif, incumbent. Pijf. Germen fuperior, ronndinh, very bairy; ftyle fhorter than the flamens, thick, angular ; itigma limple, obtufe, furrowed. Peric. Berry nearly globofe, of four cells lined with a membranc. Seeds folitary, oblong, comprefifed.
Eff. Ch. Calyx four-cleft, inferior. Petals four, linear, downy on the upper fide. Berry with four cells. Seeds foltary.

1. L. Cuminofma. Globofe Ankrenda. (Cuminofma Ankænda; Gxatn. Sem. v. 28o. t. 58. f. a-H.) -Fruit globofe, ीlighty deprefled. Petals twice the length of the calyं.- Native of Ceylon. Of this we know nothing but from Gartner, who confounds its fynonyms with the following, though he dititinguifhes it as a fpecies by the fhape of the fruit, and relative proportions of the caly:v and pecals.
2. L. Ankenda. Pointed Ankrenda. (Cuminofma baccis ovato-acuninatis; Gartn. v. I. 281 . Jambolifera; Linn. Zeyl. 5 8, excluding the fynonyms. Ankenda; 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 $\beta_{\text {brib }}$ about four feet high, with round, fmooth, leafy branches. Lezzes oppofite, without flipulas, ttalked, four or five inches long, znd nearly two in breadth, obovate, entire, veiny, fmooth and flinieg, full of pellucid dots. Panicles axillary, flalked, repeatedly three-cleft, corymbofe. Flowers greenih-white. Berry ovate, pointed, dark-green, with an aromatic flavnur of Cumin.
Mr. Dryander in Tr. of Limn. Soc. v. 2. 232, has well illuitrated the fynonymy of this plant, which Linnxus had confounded with the Jambolana, or Jamboloins of Acolla, a fpecies of Calyetrantbes; fee that article. This mittake is fuppofed to have arifen from the tickets of Madan and $A n$ Lerdiz in Hernann's herbarium having been changed.
LAY, Allampl, or Alampou, in Geography, a town of Africa, in the kingdonn of Niugo, on the Cold Coatt.

Lay, or $L a i$, the title of the mof ancient kind of fongs in the French language. It was not till the reign of Plilip Auguflus that longs became common in that country. Gautier de Coincy, an ecclefiatic of St. Medard de Soiffons, compofed a confiderable number, which are fill preferved in MS. among his other writings. "Lays were a kind of elegies," 'ays M. 1 'Eveque de la Ravaliere, (An-
cienté des Chanfons, tom. i. p. 225.) "filled with amorous complain:s. The origin of this fuecies of compofition is fuch as rendered it neceflarily plaintive: as the word lai is imagined to have been derived from $1 / . f$ fus, Latin, which fignifies complaints and lamentations. However there are fume lays which defribe moments of joy and pleafure more than forrow or pain; and others upon facred fubjects.

Chaucer, who frequently ufes the word lay, confines it. wholly to fongs of complaint and forrow:

> "A Ad in a lettre wrote he all his forwe In manere of a complaint or a lay, Unto his faire frefhe lady May," Cant. Tales, v. 9754* "He was difpeired, nothing dorft he fay, "Sauf in his fonges formhat wold he wray His wo, as in a general complaining; He faid, he loved, and was beloveu nothing. Of fwiche matere made he many layes, Songes, complaintes, roundels, virelays-",

Tran. t. 112550
"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.
Shakfpeare and Milton ufe it likewife indifcriminately 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 poetefs Marie, who in the time of St. Louis, about the middle of the thirteenth century, tranflated feveral tales from the Armoric language of Bretagne, calls them lais; but the term is of much higher antiquity. After its adoption by the Englifh poets, it foon became a generical term in poetry for every fpecies of verfe, as fong is now: but both thefe words ftull retain their particular acceptation as well as generical; for by a fong is undertood a fhort poem fet to a tune, and this was the particular meaning of lay, in the lait century, among our mufical writers.

Tales and fongs, fays the editor of ancient Fabliaux et Contes François, were the molt common and ancient fpecies of poetry. The French, naturally gay, chearful, and fportive, were more attached to this fpecies of compofition than any other nation, and communicated this love for lyric poetry to their neighbours. They mult have been in poffeffion of a great number of thefe fongs and tales, becaufe in all focial meetings the cuftom was for every one prefent either to fung a fong or tell a fory, as appears by the end of the fable of the prielt, "qui ot Mere à force," where we. read thefe verfes:

> "A ceft mots fenift cis fabliaux Que nous avons en rime mis, Pour conter devant nos amis."

And according to John li Chapelain, in his ditty of the Sacriltain of Clugny, it was cuftomary for a bard to pay his reckoning with a flory or a fong.

> " Ufage eft en Normandie, Que qui hebergiez elt, qu'il die.

Fable ou chanfon a fon ofte Cefte coftume pas n'en ofle Sire Jehans li Chapelains."
"In Nurmandy 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 thirtenth century the fongs in vogue were of various kinds i 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 thofe of the Rumilh church, in the clef of C , without any marks for time. The movement and embellithments of the air depended on the abilitics of the finger. The compafs of modern mufic is much extended fince 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 ftave. The finger always accompanied himfelf on an inftrument in unifon. Poefie du Roi de Navarre, tom. ii.
Lay, in Agriculture, a term applied to fuch land as is in the ftate of grafs, or fward. This fort of ground is frequently dittinguifhed into fuch as has been long in the ftate of fward, and fuch 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, fould be by keeping them perfectly free from ail forts of fock for the following autumn and winter after their being laid down, when, in the fpring, they will afford a flow of young grafs highly valuable for fheep, with which they fhould only be well Itocked, and kept down then, and during the whole of the fumnier: "nothing," in his opinion, "being more pernicious than mowing a new lay, as directed by certain authors. They may," he fuppofes, " have fucceeded in fpite of fuch bad management, but never by it." The molt fuitable method of managing thefe new lays, under different circumftances, will be defcribed in fpeaking of laying lands down to the flate of fward or grafs. See Laxing down to Grafs.

It may be obferved, that the treatment neceffary for old lays muft vary much, according to their nature and the particular circumflances under which they are placed, as will be fhewn under the management of meadow and pafture lands, as well as in confidering the nature of grafs. See GrassGround, Meadow, and Pasture.

It has alfo been obferved, that, on many farms, there are often " tracts of barren lays, from mofs, poverty, neglect, and bad herbage, upon which a very great improvement may be made by a fingle ploughing in Auguft. For this purpofe, a ftrong four-horfe plough mult be ufed with a fkimcoulter; then going over it twice, in different directions, with the fcarifier, fo as not to dilturb the flag; harrowing it once, and immediately fowing a quarter of a peck of colefeed, two bufhels of cock's foot, and one bufhel of Yorkfhire white per acre; adding fome of whatever feeds may be procured at the moment cheaply." It is then advifed to be left " unfed and untouched till the March following; in which month, and through April, it fhould be loaded well with fheep: the ufe will then be very great. Keeping fheep feeding it heavily through the year, the cole will be killed, and you will have a palture worth treble what it was before. The expence is faid to be fmalt, and the improvement rapid." Various modes of improving land, in the ftates here defcribed, will be explained under the heads above mentioned.

And the fame writer alfo thinks, that, by December, old lays will be wet enough to begin to break them up: "a

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work that fhoukd 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 mofs and other rubbifh, or hide-bound. To keep land under fuch unprofitable turf is bad management. It fhould, by all means, be broken up, and kept in a cburfe of tillage for three or four years, and then laid down again: by which conduct, four times the profit will arife that could be gained from keeping it in lay."
Lax-Brother, among the Romanifs, a pious, but illiterate perfon, who devotes himfelf, in fome convent, to the fervice 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 enders He is not in any orders, nor does he make any vow, excepting of conftancy and obedience.
Thefe lay-brothers make the three vows of religion.
In the nunneries are alfo lay-filters, who never enter the choir, \&c. and who are only retained for the fervice of the convent.

The inftitution of lay-hrothers 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 themtelves wholly to bodily Jabour.

It feems to have taken its rife from hence, that the laity in thofe days had not, for the generality, the leaft tincture of learning; whence alfo thofe came to be called clerks, by way of diltinction, who had fludied 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 pafs 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
Jefuits call them coadjutors.

Lay-Canons. See Canon.
Lay-Communities. See Community.
Lay-Corporation. See Corporation.
Lay-Fee, feodum laicum, land held in fee from a lay-bord, by the common fervices to which military tenure was fubject, as diftinguifhed from the ecclefiaftical holding in frankalmoign, difcharged from thufe burdens.

Lay the land, in Sea Language. See Land.
Lay-patronage. See Patronage.
Lays, fide. See Side-lays.
Lay, vaunt. See Vaunt-lay.
LAYAU, in Geography, a town of the ifland of St. Vincent, on the W. coatt, in a bay at the mouth of a river, to both of which it gives name. N. lat. $13^{\circ} 8^{\prime}$. W. long. $61^{\circ} 18^{\prime}$.
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 bifhop, 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. $46^{\circ} 12^{\prime}$. E. long.' $14^{\circ} 30^{\prime}$.

LAYCOCK, or LACOCK, a parifh, formerly a markettown of Wilthire, England, is feated in a fine, fertile valley, on the weftern bank of the river Avon, three miles from Chippenham, and 95 weft of London. In the year 1800 this place contained 147 houfes, and 1408 inhabitants.. Here was formerly an abbey of large extent, and rich endowment. A large pile of the cld buildings atill remains in their formes monaftic.

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monaftic flyle; particularly the cloifter, kitchen, cellars, gallery, \& $\mathbf{c}$. ; with the fith-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 Blackitone's "Differtation on Magna Charta," \&c. Some account of the abbey, with a view of the cloifters, is publifhed in "The Architectural Antiquities of Great Britain," vol. ii. ; and a full defcription of the place, and other objects in the vicinity, will be found in Britton's "Brauties of Wilthire."

LAYDE', a town of Africa, in the country of the Foulis, on the Senegal ; 4 miles S.E. of Goumel.

LAYER, in Buildug. See Cocrse.
Layli, in Gardening, the young fhoot or branch of fuch trees as are capable of being raifod by being laid into the ground. It is the part which is placed in the earth in order to ftrike root, and from the new plant layers are made from different kinds of fhoots 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 Layng.

LAYES, or Leyes, a termufed in many parts of Eng. Jand for fuch pafture ground as has been formerly tilled and fown.

LAYING, in Gardening, the procefs or operation of placing layers in the foil. It is a method adapted to molt forts of trees and fhrubs, and many herbaceous plants. It is effected by laying branches and young fhoots of trees and plants in the earth, from two or three to five or fix inches deep, leaving their tops out, that the part laid in the earth -may emit routs, and become a plant. The layers, when well sooted, fhould be feparated from the parent, and planted in the nurfery, or other proper place, to acquire due ftrength and fize, for the purpofes for which they are defigned. And they require different lengths of time for becoming rooted, from a few months to two or more years.

There are great numbers of flarubs and trees that are eapable of being increafed by layers, but the practice is more particularly applicable to the floubby kind; as their branches grow near the ground, convenient for being laid down. It may, however, be practifed with fuccefs on fruittrees and forelt-trees, when their branches are fituated 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 increafed by layers; and foreft-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 increafe fuch fhrubs 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 fhoots of any branch fituated near the ground, or convenient for laying down, may be made diftinct plants.

It may be noticed that, for all forts of the tree or fhrub kinds, it is generally performed on the young fhoots of the preceding fummer, which fhould be laid down in fpring or autumn; but fometimes on fhoots of the fame year, in fummer, efpecially in the hard-wooded evergreen trees and Shrubs, that do not frike root readily in the older wood. Many forts of trees that have their wood of a loofe foft texEure often grow pretty freely by layers of them, of two or Several years growth.

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But in herbaceous plants capable of being propagated by layers, fuch as carnations, pinks, double fiveet-williams, \&c, the young thoots of the fame year, laid down in June and July, are commonly the moft fuccefsful.

In regard to the feafon for performing this fort of work, in moft forts of trees and fhrubs, it is autumn and fpring, though it may be performed at almolt any time of the year.

Many kinds of under-fhrubby and herbaceous plants alfo fucceed, if layed any time in fpring or fummer till the end of June; though that and the following month are the moft fucceffful for the herbaccous tribe, as carnations and others ufually propagated by laying, as they then root the fame feafon in from three or four to five orfix weeks, fo as to be proper for tranflanting.

When it is intended to lay trees or fhrubs that naturally run up to ftems, without furnifing any confiderable quantity of lower branches for laying, a fufficient number of ftrong plants fhould be fet in the nurfery, at proper diftances, and headed down in the autumn or fpring after, within a feir inches of the ground, that they may throw out a good quantity of young fhoots the following fummer, ncar the earth, fo as to be convenient for laying down in the fucceeding autumn; or, by waiting another year many more fhoots for the purpofe of layers will be providcd, by the firlt fhoots 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 ftool remaining will furnifh another crop of fhoots for laying next year, and the fame in fucceffion for many years.

Where layers are wanted from trees that are grown up, and whofe branches are at a diftance from the ground, a temporary flage or fcaffold is erected, on which pots or tubs of mould are placed to receive the layers.

The general method of merely laying the branches or fhoots 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, twiting, filting, cutting the bark, piercing the floot, wiring, and other modes.

Simple Laying.-This is merely layisg the fhoots in the earth, as directed below, without any previous preparation of twifting, flitting, \&cc. and is fufficient for a great number of trees and fhrubs of the foft-wooded kinds; but for fuch as do not readily roct by this fimple method, recourfe muft be had to fome of the following ways.
$T$ woifing the Layer.-By giving the fhoot a gentle twik in the part defigned to be laid in the ground, it greatly promotes and facilitates the emifion of fibres from the bruifed part.

Slitting or forguing the Layer.-This is the moft univerfal and fuccefsful mode, where any preparation of the fhoot is neceflary to promote its rooting ; it is performed by fitting the fhoot at a joint underneath, up the middle, half aninch or an inch or more long, according to the fize and nature of the layer, forming a fort of tongue nearly the fame as directed for carnation layers; laying that part in the earth, and raifing the top upright, or rather pointing inwards, fo as to feparate the tongue of the dit from the other part, and keeping the dit 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.

Piercing the Layer.-This is done, by thrufting an, awl through the fhoot, 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 Laycr. -This is by twiting a picce of wire hard round the fhoot at a joint, and pricking it with an awl on each fide of the wirc in feveral places, laying it in the earth, by which it breaks out into roots at the confined and wounded parts; often proving fuccefsful in fuch trees and thrubs as do not readily emit fibres by the other methods.

It may be obferved that by fome of thefe methods almoft all forts of trees and Ghrubs may be propagated.

Metbod of Laying. - The general method of laying all forts of trees or plants, ether by fimple laying, or any of the other methods, is the following.

The ground about each plant muft be dug for the reception of the layers, making excavations in the earth to lay down all the thoots or branches properiy fituated for the purpofe, pegging each down with a booked ftick, laying alfo all the proper young fhoots on each branch or main fhoot, fixing each layer from about three or four to fix inches deep, according to their leagth, though fome fhorten their tops down to an eye or two only above the earth, raifing the top of each lajer fomewhat upright, efpecially the flit or tongued layers, to keep the fit part open. As all the layers of each plant or ftool are thus layed, all the mould fhould be levelled in equally in every part, clofe about every layer, leaving an even fmooth furface, with the top of each layer out.

It fometimes happens that the branches of trees are fo inflexible as not to be ealily brought down for laying ; in which cafe they mult be plafhed, making the gafh or cut on the upper fide; and when they are grown too large for plafh. ing, or the nature of the wood will not bear that operation, they may be thrown on their fides, by opening the earth about the roots, and loofening or cutting all thofe on one fide, 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-houfe fhrubs, or other plants in pots, the work fhould 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 neceflary, except in the heat of fummer giving occafional waterings to keep the earth moilt about the layers; which will greatly forward them, and promote a good fupply of roots againit autumn, when thofe that are properly rooted fhould be taken off and tranfplanted.

The layed branches or thoots fhould be examined at the proper feafon, October and November, and thofe that are rooted be cut from the mother plant, with all the root poffible, planting them out in nurfery rows a foot or two afunder, according to their nature of growth, there to remain till of due fize for their feveral purpofes; but thole of the tender kinds muft be potted, and placed among others of fimilar nature and growth.

When the layers are all cleared from the ftools or main plants, the head of each ftool, when to be continued for furnifhing layers, fhould be dreffed; cutting off all decayed and fcraggy parts, digging the ground about them, working fome freth mould clofe about their heads, to refrefh and encourage their producing a frefh fupply of thoots for the following year's laying down. This fort of care preferves them many years.

Lainng-down to Grafs, in Agriculture, the means of bringing fuch land as has heen under the plough into the ftate of grafs or fward. This is a part of hubandry which is of much importance to the farmer, and which requires much care and attention to accomplifh it in a proper manner,
under different circumfances of foil, climate, fituation, and preparation of the ground. It is well known by practical farmers that fome forts of foil are much more difficule to be brought into the thate of good grafs or fward than others, and that, when thes point has been accomplifhed, fome are much more profitable and advantageous than others, as affording a much better, and more latting herbage. In fome places, too, the bufinefs of bringing the land into the ftate of fward, after it has been in that of arable cultivation, is effected with the greateft eafe and facility: the ground, on being left in an unploughed condition, from its natural tendency to the production of herbage, returns to the ftate of fward, almoft without trouble, feed, or expence; whle in others, all the art of the moft careful agricultor is found infufficient for accomplithing the purpofe. It has been fated by Mr. Davis, that " after twenty years fruitlefs expectation and expence, the landholders have frequently been obliged to reftore the land again to a flate of tillage." Put befides this difpofition or tendency in foils for taking on the grow ha and eftablifhment of grafs crops, there are other circumftances to be attended to in Dringing them to the ftate of grafs or fward, after they have been under the plough; fuch as thofe of their poffeffing neither too much nor too little moilture, and that of their having a fufficient flaple or depth of mould for the full and fecure ellablifhment of the grafs plants. As where the foils are too wet, or too retentive of moifture, they will fuftain much injury, if not be wholly deftroyed, during the winter feafon, when there is much rain and frolt, as well as be quickly fuperfeded by plants of the coarfe aquatic kind, fuch as the rufh, \&c. And where they are too dry, the graffes will be liable to be deftroyed by heat during the fummer months, by the little moifture which they contain being thus carried away, and of courfe leave their places to be fupplied by other forts of coarfe plants, fuch as thofe of the mofs, 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 meafure out of danger from the effects of heat and evaporation in the fummer feafon. On thefe as well as other accounts, it is therefore better that the lands intended for grafs, efpecially where they are to be kept in a permanent ftate of fward, fhould ineline in fome meafure to a ftate of moisture, or be in fuch a degree retentive of it, as to preferve that ftate of humidity which is neceffary for the healthy and vigorous growth of the plants, withot endangering the deftruction of their roots by putrefaction, from its ftagnating in too large a proportion about them. It is chiefly on this principle, it is added, that the more light, thin, dry, defcriptions of foil are better fuited for the production of grain, or the occafional prac. tice of convertible hubandry, than for that of permanent grafs or fward.

And there are fill other circumltances connected with the nature of the foils, which are neceffary to be partioularly attended to in the laying of lands down to the fate of grafs, as thofe of properly adapting the grafs plants to their qualities, fome forts of graffes being much more impatient of wet than others, confequently more proper for the dries forts of lands; fome more capable of refilting the effects of heat and drought, and of courfe more fuitable for the thinner and more porous kinds of foil $\because$ while others delight in a moitt or wet foil, and are inoapable of being grown with any fuccefs, on fuch as are of a dry quality. They likewife differ much in refpect to their hardnefs; fome relifting the effects of cold much more effectually than others, and of courfe more adapted to high expofed fituations. Befides

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thefe, they vary in other refpects, fome fuccecding to the molt advantage in foils of the clayey kind, others in thofe of a loamy quality, while others delight in thofe of a $\int$.ndy nature, a few in thofe of the calcareous kind, and fome in thofe which partake much of the nature of peat.

In addition to thefe different natural propenfities, there are fome grafles that have the property of rifing to a great height in the ftem, and of courle affording a large coarfe produce, while others are more limited in this refpect, but fpread and extend themfelves more in a lateral direction, affording a lefs proportion of produce, but which is of a finer quality. The former, with certain reflrictions, would feem better adapted to the purpofe of hay, though the latter may be applied to.the fame ufe, where the finenefs of quality is preferred to quantity of produce. There are likewife fome forts of graffes that contain much larger proportions of faccharine matter in their compofitions than others, as well as more leaves and fewer flower ftems; 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 ftock, would appear to poffefs the largelt proportion of nourifhment; and of courfe to be the mott proper for being introduced where the lands are intended for the purpofe of grazing, or fattening animals by means of vegetable food in its graffy flate. And further, there is another property of graffes in which they differ confiderably; and which is of to much confequence as to require being regarded in the laying of lands to the fate of fward. This is that of early growth, which is a circumftance of valt importance in a grazing point of view, as there is in general a great deficiency of grafs for the fupport of tock in the early part of the fpring. See Praftical Agriculture.

It is the opinion of Mr. Curtis, that in the forming of good meadows, or other grafs-lands, there fhould be a combination of thefe different circumftances, as it is chiefly by the firlt, or the quantity of produce, that the cultivator is enabled to fupport his live flock, and pay his rent ; of courfe no expence in labour or manure is fpared to obtain it by the prudent farmer. It does not, however follow, that this fhould be folely regarded, or that to attain it the coarfeit forts of plants fhould be cultivated; nor will the graffes that are recommended merely for their being relifhed by cattle, or for the fweetnefs 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 conflitute a good meadow or pafture, an abundant produce is neceflary, And that, though animals prefer fome forts of food to others, it is not poffrble to indulge the live fock that is to be fupported conltantly with the fineft and moft delicate hay or herbage. Befides, it is not improbable but that the productive graffes may in fome cafes be highly nutritious, or that cattle may eat as eagerly the herbage or hay made from the coarfe as the fine graffes. And cattle are frequently known to thrive on food to which they are habituated by neceffity, though at firt they could fearcely be prevailed on to eat it. It is fuggefted, that in making experiments, perfons are apt to conclude too haftily from the appearance which a plant aflumes on its being firlt planted or fown; as the moft infignificant plant or vegetable will often make a great fhow, when its fibres have frefh earth to fhoot into: "but the trial comes when the object of the experiment has been in a meadow or pafture feveral years, when its fibres, from long growth, are matted together, and it meets with powerful neighbours, to difpute every inch of ground with it :" if " it then continue to be productive, it mult have merit." It is well known, that " lucern, when left to itfelf, is foon
overpowered ; and if broad-leaved clover, which is undoubeedly a perennial, the firtt year be fown, a great crop is produced; but let the field be left to itfelf, and the clover, like the lucern, will yearly diminim,-not becaufe it is a biennial, as has been often fuppofed, but becaufe plants hardier, or more congenial to the foil, ufurp its place : this flews, "that at the fame time that a good plant is introduced, it hoold be a powerful one, and fuch as is able to keep poffeffion, and contimue to be productive." Further, that "in refpect to the property of cattle's thriving on the food they eat, it is unqueftionably of great confequence; and it is to be regretted, that our knowledge of the molt nutritient kinds of herbage is fo confined: but of thofe 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 grafles, or other plants, which have not been fubjected to feparate culture, have this particular tendency, and in what degrees, remains to be afcertained by the teft 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 paftures. It is well known that certain paftures are more difpofed to fatten animals than others: but how far this depends on fituation, and their particular produce, remains to be afcertained." With reipect to the property of early growth, it is fuggefted that the " want of early herbage in the fpring is the general complaint of farmers and graziers in all the beit grafs diftricts of the kingdom: thofe plants, therefore, which are found to hoot at an early period, and to put forth early foliage, efpecially when it is fuch as is grateful to cattle, muft be deferving of great attention. As far as graffes have to do in this bufinefs, thofe mentioned hereafter may effect all that can be expected in this way : much mult, however, depend on feafons; if the winter fhould be fevere, or north-eatterly winds prevail in the fpring months, grafly 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 poffible, paftures and grafs-lands fhould be warmly fituated, and not drenched too much with moiture, being theltered by thick hedges, and divided into fmall inclolures." But where early pafturage is the great object of the farmer, there are other plants that may deferve a place among them, fuch as thofe mentioned below. And that "though early herbage is highly valuable for pafturage, it is not lefs fo for the purpofes of hay; as by the middle of May at the lateft, 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 cafes; and by this means the double advantage be obtained, of a larger produce, and lefs rifk in fecuring or making it."

It is fated 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 attention to the different circumftances and ufes for which grafslands are intended, as well as to the felecting and mixing of the beft and moft proper grafs-feeds, and adapting them to the particular nature and circumftances of the Ioils, after they have been brought into a fuitable condition for receiving them, thofe grounds which have been in a ftate of tillage may be laid down to the fate of fward, in a much better and more beneficial manner than has been the cafe under the indifcriminate ufe of fuch as were in, or which have fown thémfelves on the lands from the contiguous paftures." It has "been long fince remarked as extraordinary, by Mr. Stillingfleet, that cultivators fhould have neglected

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to make 2 proper adrantare of plants of fuch importance, and which, in moft fituations, conltitute the principal food of live ftock, from the want of properly dittinguifhing and felecting fuch as are the moft adrantageous and ufeful under different circumflances of the land." Some have likewife contorded, that " the beft grafs-feeds cannot be collected at too high a rate; as it is poffible, by fuch means, to render lands, which are fuited for the production of grals, much wore valuable than can be done by the common modes of laying them down."

It cannot, however, but be confeffed that much difficulty has "been thrown in the way of introducing the molt proper forts of graffes, in laying lands down to fward, from their near refemblance to each other, in many inflances, requiring the niceft difcernment to diftinguifh them, and from the want of other means of procuring them."

It has been Itated by Mr. Curtis, in his tract on Graffes, that "if graifs-lands, fuch as downs, pallures, 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 fate of nature, replete with an indifcriminate mixture of plants, fome of which produce cattle food of a good kind, others fuch as is of a very indifferent defcription ; fome affording good crops, while others fcarcely yield any thing at all." And in the fyftem of Practical Agriculture it is fuggefted as fufficiently obvious, "that by a careful attention to the procuring of the beft and molt fuitable forts of grafs-feeds, and applying them according to the principles which have been given above, much fuperiority may be attained in the forming of palture, or other forts of grafs-lands." See Grass.

Method of Preparation of the Land.-The proper preparation of land for grafs-feeds is a part of management, according to the fame writer," that is of valt importance to the fuccefs of furming good grafs-lands, but which has been much negle eted in the practice of laying them down. From the fmalnefs of the feeds, and the fibrous nature of the roots of the grafs-plants in moft cafes, it is evident that lands which are intended for being laid down to the ftate of frard, whatever their quality may be in refpect to foil, fhould conftantly be brought into as fine a ftate of pulverization and mellownefs as poflible, before the feeds are put in: as where the contrary is the cafe, from the lumpinefs 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 eftablifh themfelves at firft fo perfectly in the land, they are of courfe more liable to be deltroyed by hot feafons coming on afterwards. It is probable that in this sway much new laid down grafs-land is greatly injured the firit fummer, efpecially when it turns out to be hot and dry. The neceffary finenefs of mould may be obtained in different modes, according to the nature of the lands. In the more niff and heary ones, by ploughing before winter, and leaving them to be expofed to the action of frofts and other caufes during that feafon; having recourfe to fevere harcowing, and occafional rolling, in the early fpring months; and by the frequent interpofition of fuch forts of crops, in the courfes that precede thofe of grafs, as have a tendency, from the peculiar nature of their roots, to loofen and render the foils fine, fuch as thofe of the bean, cabbage, rape, and clover kinds. The lighter forts of land may be brought into a proper condition for the reception of grafs-feeds, by repeated pioughing and harrowing, or fcufting, and the frequent introduction, in the previous crops, of fuch forts of green fallow crops as have a power, by the great degree of fhade and flagnation which they afford, as well as by the culture which they require whle growing, of bringing the
foil into a fine friable nate. Thefe ate turnips, potatoss, tares, faintfoin, and cothers of a fimilar defcription." It has been contended by Mr. Clofe, "that where the grafs feeds are to be put into the ground with grain crops in the fpring, the tillage fhould be performed with more th: $n$ ordinary attention; which, in the cafe of turnips, will d: p 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 feafon 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 fhould be ploughed over three times; and where the firft of thefe earths can be given early cnough to be influenced by the vernal froits, it will be found to be much more beneficial." The ufe of the harrow and the roller will be occafionally neceffary, after the diferent ploughings, according to the nature and fate of the land. "But when the fowing is executed in Augulf, the fame degree of attention is not believed by the Xev. Mr. Young to be fo neceflary, as the time and feafon afford fo full an opportunity of bringing the ground into fuitable order, that the moft inattentive caltivator can fcarcely experience any other difficulty than what originates from an unufual wetrefs of feafon."
In the Syltem of Practical Agriculture noticed above, it is mentioned that, "befides this finenefs of preparation in the foils, it is neceflary that the method of cropping and application of manure in the preceding courfes be fuch as to leave them in a ftate of high fertility and richnefs; as no good grafs-land can be fuppoled to be produced, where the lands have been worn out and exhaufted by the previous crops:a praftice which has, howeter, been too general in the returning of arable lands to the condition of grafs. Mr. Marfhall has, he fays, indeed very juftly obferved, that the want of proper condition in the lands at the time of their being laid down to fward, added to thofe of improper fort of grafles and bad feeds, is the chief caufe 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 thould be adopted as mutch as poffible." And " in order to have grafs-lands of the beft kind, it is likewife of great utility to have them fo 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 grafs-plants, they are often liable to fhade and deAtroy them, or greatly injure their growth."

And it has been advifed by Mr. Billing\{ey, "in reftoring old worn out lands to the ftate of good patture, to clear the land from injurious weede by means of a full winter and fummer fallowing; or, inftead of the latter, by a crop of potatoes, well manured for, and kept in a perfectly clean itate by attentive culture while growing, fucceeded by winter vetches fed off in the early Cpring." And "in all the more light forts of foil, it is unque!tionably the moft beneficial practice to bring the ground into that fort of fine tilth, which is proper for the reception of grafs-feeds, by a judicious mixture of green crops of different forts with thofe of the corn kind, according to the nature of the foil." The moft appropriate methods of combining and intermixing thefe with each other are fully explained in confidering the modes of cropping different forts of ground. See Courfe of Crops, and Rotation of Crops.

Further: "when the lands have been, by thefe methods, brought into a good ftate of fertility, and reduced into z fufficiently mellow and friable condition of mould, the furface fhould be made as fine, loofe, and even as poffible "'

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And that "where the grounds are much inclined to moifture, the ridges may be preferved, which fhould be of confiderable breadth, with very flight furrows; but in the more light and porous defcriptions of land, the whole fhould be laid as even as poffible, without any ridges or furrows. In the former cafes, in fome diftricts, they prefer making the ridges fix, eight, or more yards in breadth; which, when the land is to be under the fcythe, is in a much better ftate for being mown; and if for patture, there will be lefs danger of the animals being injured by being caft in the furrows. But in the latter, the furface will not only be more agreeable in its appearance, but be more advantagcous for all the purpofes of grafs management," when thus laid down.

Moft proper natural Graffes. -In refpect to the kinds of natural graffes, the circumitances that have been obferved above render it fufficiently plain, that the proper choice and application of grafes mult be a matter of great confequence, in the laying down lands to the flate of fward or herbage.

In fact, it is, according to the author of Practical Agriculture, "a bufinefs 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 ufes, in many cafes, as well as from their habits, and the foils to which they are the beft fuited, being often very imperfectly known; and alfo from the great trouble and inconvenience of obtaining their feeds genuine, and in a proper ftate of healthy vegetation."

But it is fuggefted that the plants of the natural grafs kind, which have been found by experienced cultivators most ufeful in the different intentions already mentioned, are "the fweet-fcented vernal grafs, meadow fox-tail grafs, fmooth-ftalked meadow grafs, rough-ftalked meadow grals, meadow fefcue grafs, hard fefcue grafs, tall fefcue grafs, crefted dog's-tail grafs, ray or rye grafs, Yorkfhire white, cock's-foot grafs, tall oat grafs, timothy grafs, yarrow, burnet, white clover, trefoil, cow grafs, rib grafs, and a few others;" moft of which will be found ufeful in laying lands to grals, under different circumftances of foil, fituation, moilture, and drynefs. See Grass, and thefe feveral heads.

The Rev. Mr. Young, in the third volume of Communications to the Board of Agriculture, advifes the varying of grals-feeds, according to the nature of the feil, in this way:

Soils and Seeds.

| Clay. | Loam. | Sand. | Chalk. | Pest. |
| :---: | :---: | :---: | :---: | :---: |
| "Cow-grafs. | White clover. | White clover. | Yarrow. | White clover. |
| Cock's-foot. | Ray. | Ray. | Burnet. | Dog's-tail. |
| Dog's-tail. | York white. | York white | Trefoil. | Cock's-foot |
| Fefcue. | Fefcue. | Yarrow. | White clover. | Rib. |
| Fox-tail. | Fox-tail. | Burnet. | Saintfoin. | York white. |
| Oat-grais. | Dog's-tail. | Trefoil. |  | Ray. |
| Trefoil. | Poa. | Rib. |  | Fox-tail. |
| York-white. | Timothy. Yarrow. |  |  | Felcne. Timothy. |

With regard to the proportions or quantities which are neceffary per acre, it is hinted, that " in fituations where women and childres are fully employed, it may be difficult to procure large quantities gathered by hand: in fuch places a man muft be content with what can be bought. Crefted dog's-tail is fo very generally to be thus procured, that he eannot but fuppofe it in a good meafure at command.

However, without adverting to this point, he may remark, that from the lands which he has laid down to grafs to a confiderable extent, and in which he has ufed every one of thefe plants largely except the poa, and that on a fmaller fcale, he is inclined to think that the quantities fated below. may be fafely employed."

Soils and Seeds,

$$
\text { Clay. } \quad \text { Lioant. }
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## Peat.

Seeds.

| Seeds. |  |
| :---: | :---: |
| White clover | - |
| Dog's.tail | - |
| Ray - | - |
| Fox-tail | - |
| Ecrue | - |
| Timothy |  |

Sublitures.

$$
\text { Yorkhire white } 6 \text { pecks. }
$$

$$
\underset{\text { Cow-graifs }}{\text { Rib }}-\frac{51 \mathrm{lb}}{4 \mathrm{lb} .}
$$

Mrethod of fowing Grafs-feeds.-In refpect to the time and manner of fowing grafs-feeds, they are different in practice according to the preparation and the particular circumftances of the land. The molt ufual period of putting in grafsfeeds has been the fpring, at the time the grain crops are fown: but where the land has been brought to a fuitable ftate of preparation by means of green and other fallow crops, the latter end of the fummer, as about Auguft, has been the more general time. In the former cafe they are moft commonly put in with the grain crops; but in the latter without any other fort of crop. The author of the Syftem of Practical Agriculture remarks, that "there has been much diverfity of opinion among agricultural writers with regard to the fuperior utility of thefe different feafons of introducing the feeds, as well as with regard to their being fown with or without other forts of crops. The adrantages of the auturmal over thofe of the vernal fowings are contended to be, thofe of the grafs-plants being lefs expofed to danger frum the fhade, clofenefs, and choking, that muft neceflarily occur at the latter feafon, there being lefs rifk of ftocking the ground with noxious weeds in cafe of the feeds of hay-chambers being indiferiminately fown; their being put in upon a better preparation and more mellow and fertile ftate of the land; their growth being more Atrong and vigorous from their not being robbed of their proper nourifhment by other exhaufting crops, and the great fuperiority of the hay produce: while, on the contrary, it is maintained in fupport of the vernal fowings, that befides their being lefs precarious, fhade is neceffary in the early growth of the grafs-plants to protect them from the effeets of heat; the moifture is better preferved in the foil for their fupport; fmall annual weeds niore effectually prevent it from rifing to injure them; and the lofs the farmer muft fuftain from the want of grain crop guarded againft."

But in regard to the objection on the ground of weeds being produced, Mr. Clole has remarked, that "fowing rubbin in Auguft is not of fo great importance as in the fpring. In the former feafon all the annual feeds vegetate, and if the beginning of the winter be mild, they will bloffom; but they cannot perfect their feeds, and thus ftock the land with noxious weeds.

Upon which the firlt of thefe writers obferves, that " though fome of the arguments urged on both fides of this controverted point may be objected to, the autumnal fowings not preventing the perennial weeds from rifing and fiedding their feeds in the following fummer, nor the great clofenefs of grain crops being without injury to the growth of the young grafs-plants; there are facts which render it probable that each method may have advantages under particular circumftances. In the more fouthern diftricts, where the feverity of the winter feafon is later in its approach, the autamnal feafon may frequently be made ufe of with advantage, after fallow crops, for fowing grafs-feeds, efpecially in cafes where the lands are in too rich a condition Sor the fucceffful growth of corn. But in the more northern
parts of the kingdom, and expofed fituations, where the froft fets in at an early period, it may be in general the moft advifable practice to put the feeds in, in the vernal months, with fuitable crops of the grain kind." And the Rev. Mr. Young has obferved, that "grafs-feeds anfwer almoft equally well in either method: he prefers, however, the Augult fowing without corn, though the fuccefs of his trials in the different feafons has not juttified any decifive conclufion." It is even admitted, that "in moory and mountainous fituations, where the fnows come early, autumnal fowings are not advifable, or to be performed later than the very early part of Augult; the vernal feafon with oats, for being cut young for foiling or hay, is conftantly to be preferred." Mr. Dalton, in Yorkfhire, after trying othicr methods, alfo recommends the autumnal feafon withouc corn as the molt advifable. And the Rev. Mr. Clofe ftates, that "a friend of his, wihing to procure good meadow or palture around his houfe, fallowed the land for barley; but the fpring proving wet, and the foil being a ftrong 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 Augult with the fweepings of hay-chambers. The barley was a good crop, and the clover and rye-grafs were probably equal to the firft year's cut of hay. The fecond year the artificial graffes began to fail ; worfe the third, fourth, and fifth; the fixth year, after haping received two dreflings, the fpontaneous product of the foil began to give a fleece over the furface of the land. About ten years after thefe lands were fown, Mr. Clofe faw this field, when the part fown in Augult was worth at leaft fifteen fhillings 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 fiveepings of hay-chambers in Auguft, is preferable to fowing any artificial grafles in the fpring with any crop of corn. Suppofe the corn worth five pounds per acre, the difference in the produce of hay or feed in the fecond, 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 fhillings per acre." Mr. Young thinks, the beft feafon in the whole year for this purpofe is Augult, and the only one bdmiffible for it on Atrong, wet, and heavy foils, in forty years' experience having never failed at that period. It is flated in the Syftem of Practical Agriculture already noticed, that " $\mathbf{~ о ~}$ comparative experiments being made with corn in the fpring months, and without it in Augult, the latter was found by much the beft 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 deftroyed, by being eaten down by $a$ dairy of cows." And others, after repeatedly trying the experiment of fowing in the fpring with corn, and the autumn without, and from long and extenfive practice, conclude, "that, even if we were to have no regard to any other circumftance, except the grafs crop alone, it would be always beft to fow it with fome kind of grain; but when we confider likewife the lofs that the farmer thus fuftains for want of a crop of grain, the practice of fowing alone muft be looked upon as highly perucious to the farmer."

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And he fappofes, that it is probably in this laft refpect that the greatet difudvantage of the practice confite, as without it the farnuer can derive no inmediate recompenfe for his great expence of tillage and preparation of the land."

In cafes where the vernal fowing with other forts of crops is had recourfe to, barley is that, according to Mr. Cartwright, which is molt ufually recommended, and "there feems to be no queltion that barley is in general the fitteft grain to be fown with grafs-feeds. The fame tilth which anfwers for the one is requifite for the other. Barley has a difpontion to loofen the texture of the ground in which it grows; a circumftance highly favourable to the vegetation of grais-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 reliftance of a fubborn foil. And this points out the reafon why grafs-feeds fo frequently fail on ftrong land not in a proper flate of cultivation. In the choice of barley, that fort fhould be preferred which runs leait to flraw, and which is the foonett ripe." But the writer of the Syttem of Practical Agriculture obferves, that as from the grafly nature of the ftem, and the large fize of the ear in this fort of grain, a confiderable degree of clofenefs and fhade muft conttantly be kept up, it flould never be fown fo thickly as in other cafes where there are no grafs-feeds. Some object to fowing grafs-feeds with barley on other principles, as thofe' of its Grawing its nourifhment from the furface, which is alfo the cafe with the grafs-plants, and that in confequence they muft be greatly retarded in their growth from the want of due fupport. Where the land is in a proper flate 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 grafs-plants by the clofenefs of their made. In fome cafes they, however, fucceed tolerably with this fort of crop. On the ftronger kinds of land the fowing of grafs-feeds has been found to anfwer well with thin crops of beans. In an experiment of this kind, it is ftated that Mr. Dalton found that the beans did not "rob, but fheltered and nourifhed the grafs-plants, the plan anfwering beyond expectation."

It is fuggefted, that in order to effe? the purpofes of diltribution and perfect vegetation in the moit complete manner, the feedifman fhould " be accuftomed to the bufinefs, and the feeds, as being of different weights, $i$. as little mixed with each other as poffible. It is much better to have more cafts than to blend the feeds together for the fake of difpatch. For all the fmaller forts of feeds, it has been fuppofed by the Rev. Mr. Young, preferable to deliver them by means of the Norfolk turnip trough, which bas lately been adapted to clover and ray-grafs. And this operation flould always be performed as foon after the land has been ploughed as poffible, as under fuch circumftances the feeds vegetate in a much more quick and vigorous manner. But it fhould never be attempted in fuch a wet ftate of the land as produces any great degree of tenacity or adhefivenefs in the mould, as in fuch circumftances the feeds would be apt to come up in a tufty unequal manner. Nor for the fame reafon fhould the lighter forts of grafs-feeds ever be fown in windy weather; as the delivering them in an equal and regular manner is a point of confequence to the forming of good grafs-land. In the covering in of the feeds, the author juit mentioned obferves, that care thould be taken that none are left in an expofed ftate on the furface of the ground, as where that is the cafe many of them will be deflroyed or picked up by birds, and the fward appear patchy. This bufinefs is execused in the moft complete
manner by a pair of light fhort-tined harrows at one tining. The practice of employing bulh-harrows is improper, as in that way the feeds are liable to be drawn into lumps. In all the lighter and more fpongy deferiptions of land, it may be advantageous to pafs a light roller over the furface immediately after the feeds have been well harrowed in." And " in cafes where the tenants and not the proprietors of the land are to lay them down to grafs, it may be the moft advifable practice for the latter to procure the feeds, but at the expence of the former, efpecially where they have a fufficient intereft in fuch laids; as, without this precaution, from their general propenfity to keep the ground under the plough, and their indifference in refpect to the obtaining of the moft proper forts of feeds, there may be danger of the bufinefs being improperly performed."
Proper Management after being laid down.-It may be remarked, that the proper conducting of this bufinefs is a matter of confiderable importance, and a point upon which much of the fuccefs of forming good grafs-land mult in moft circumftances depend. It is advifed by fome, as foon as the crop with which the feeds have been fown has been removed, to have recourfe to rolling the land with a moderately heave roller, when it is in fuch a flate of drynefs as jull to admit the impreffion of the implement; as by this procefs, from the mould being preffed clofely about the roots of the plants, their early growth may be much benefited, and the danger of drought in fome meafure obviated. The practice is, however, in the opinion of others, the moft neceffary in the more light and porous defcriptions of land. There are fill others, likewife, who recommend the application of manure at this period, in order to promote the growth and fupport of the young grafs-plants; a point which would feem quite unneceffary where the above mode of preparation has been had recourfe to. The writer of the Syitem of Practical Agriculture, however, ftates that " as the furface of fuch grounds as have been newly laid down to the ftate of fward is, from the previous tillage which they require, extremely tender, and readily broken into holes for fome time even in the drier defcriptions of land, the turning in of the cattle with the view of feeding them down muft, in moft cafes, be highly prejudicial by the treading which they caufe. The bell practice is, therefore, probably to fuffer no fort of fock to be put upon fuch lands till the fpring after their being laid down; or where the farmer finds it abfolutely neceflary to turn upon the lands, the lighteft fort of tock fhould conftantly be felected for the purpofe." And "it has been obferved by the Rev. Mr . Young, that the advantage of feeding fuch lands during the autumn and winter feafons, is fcarcely matter of any confequence, as the fpring feed for fheep, where it is omitted, is of fo much greater utility, a very early pafturage being in this way afforded for ewes and lambs." Mr. A. Young is allo decidedly of the fame opinion in his Farmer's Calendar.

There are much diverfity and contradiction in the opinions of experienced cultivators as to the future management in different flates and circumftances of the lands, fome fupporting the fuperiority of keeping the ground clofely fed down by theep or neat cattle, while others confider mowing or feeding as preferable. "There feems little reafon to doubt but that feeding by fome fort of flock is a much better practice than thofe of either mowing or feeding; the chief difficulty is in refpect to the fort of ftock that is the moft proper. On the dry and more firm forts of ground, a mixed flock may be the moft advantageous, as neat cattle and fheep, as in that way the new pafture may be fed down in the moft regular manner; but oan thofe that are of a more

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open, porouc, and lefs firm quality, fheep, by their eating fo clofely, may do much harm, efpecially in the firlt years of the new lay, by pulling up the young and imperfectly eftablifaed grafs-plants. Several inftances of this kind have been noticed in fuch foils. In lands that are more inclined to moilture, the confuming of the produce by neat catt'e muft conftantly be liable to do mifchief, except in very dry feafons; they mult of courfe be principally fed down by Theep. And in all cales where the new lay is chiefly ecnftituted of the more coarfe fort of graftes, theep would feem to be the molt proper kind of lock, as the graftes are thereby conitantly becoming more fine and fweet. Many fagt of this nature have been noticed by cultivators. The fweetnefs of the palturage on many fheep-downs has been remarked to depend more on their being kept clofely fed down than any other circumflances, as on being neglected in this refpect it becomes coarfe, and is rejected."

Syferm of Pradical Agriculture.-It has been well obferved by the Rev. Mr. Young, in a valuable paper, in the third volume of Communications to the Board, that " heepfeeding not only ameliorates by enriching the foil, and fining the herbage, but alfo by deftroying weeds." And Dr. Dickfon has "been affured by a very extenfive and experienced cultivator in Somerfethhire, that under this fort of management, not only many coarle graffes, but other forts of plants become fine, and eagerly fed upon by animals:" It is ftill farther ftated, that " Dr. Wilkinfon, who has been much in the habit of comparing different practices, advifes the grazing conftantly with fheep, and for the firlt fix jears never to permit the fcythe to touch the lays;" but this is certainly longer than is neceflary to preclude the foythe in many forts of foil. And the Rev. Mr. Young has remarked in. addition, "that it is not merely the firt jear that feeding with fheep is the beft practice on new lays, but it may he to managed the fecond, and if it extend to the third it is the better: and though there is not any neceffity for adhering to it any longer, it has been found to anfwer well in bis practice, four, five, or even fix years; and in general it may be concluded, that the more the land is fed with fheep, the greater the improvement will be. But in this management the impoverifhing abfurd fyitern 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 Yorkfire it is fuggefted, that "it has been long the pracrice in that ditriet, with the molt improved cultivators, to have recourfe to the method of fheep-feeding for fome time after laying the lands down to grafs, as two years or more. Where ray grafs and white closer are intended to remain fome years, it is found by fome advantageous to eat them the firt.jear by the fheep, in clofing, thickening, and rendering them more permanent." Thele facts are all in evidence of the great propriety and utility of the practice of feeding new grafs-lands. It muft, ho:vever, be obferved, that in order to render the practice perfectly fafe and beneficial, the new lays fhould not be fed during the autumn, or the flock turned into them at too early a period in the fpring. "Nor fhould they be too hearily ftocked, or the ftock kept in the paftures too long, efpecially when it confilts principally of theep, as they may do much harm by paring and eating the plants fo clofely down as immediately to kiil them, or expofe their roots too much to the deftructive effects of drought. And in cafes where the graffes bave run up much to tlem, if the lands be fufficiently ftoeked with plants, it may be an ufeful method to cut them over, by means of a Aroug fcythe, before their feeds are formed, as
by this means they will become more frong, and vigorous; but, in the contrary circumilances, they are better left for the purpofe of providing a more abundant fupply of young graffes, as the benefit obtained in this way wi.l more than counterbalance the injury fuftained by the running up of the old plants." But the author of the Syftem of Practical Agriculture ftates, that "though the practice of feeding new laid graffes in the firt years appears to be the molt adyantageous and proper mode of managenent, efpecially for lands intended for pafture, there are many cafes in which they may be mown with great fuccefs. This pracice is perhaps always the moft beneficial and proper, and indeed the only one that can be adopted, in fuch foils as pofers any great degrec of moitture; as, under fuch circurallinces, ti.e feeding them down with any fort of live flock muft, in moft feafons, be injurious to she fward. And, befdes, where the object and intention of the farmer is chiefly hay, the grafs-plants, by being kept clofely eaten down by live flock for a confiderable length of time before the fcythe is applied, may, from their becoming thereby difpofed to a low and lateral fpreading growth, be aferwards more unfit for the production of hay crops. Several facts of this nature are related by writers on hufbandry. In one cafe, where different divifions of land of the fame kind were laid down in the fame manner, on one of them being kept in the flate of pafture, and the other alternately mown and paltured; after fome years, both being thut up for hay, that which had been paftured afforded a much inferior produce to the other. The fame thing has happened in other cafes of old pattures being converted into hay lands, even when the molt favourable feafon prevailed." It is confequently concluded, that "on thefe principles, it may be a more judicious practice to manage lands detigned for hay, without havicg them for any great length of time, previoully to their being mown, fed down clofely with foock; as in this way a larger produce of hay may be afforded." And it is fuppoled, that "where the new lays are mown the firt year after being laid down, which is not a method to be recommended, ith is an excellent practice to apply a moderate coat of manure over them in the autumn, efpecially when the fate of the land and the feafon is fuch, in refpect to drynefs, as to admit of its being done without injuring the furface fiward; as by this means the grafs-plants not only become more ftrong and vigorous, but better eftablified in the foil, and of courfe bear cutting with much lefs injury."'

But as it may be the cafe fometimes, though feldom, where thefe modes are fuliy attended to, that the farmer may fail either in part or wholly of producing a good lay; it has been obferved, that, "in the firlt cafe, it is the beft practice to have recourfe to fowing frefh feeds, which flould be performed in the early part of the fpring, when the weather is in a moilt fate; the feeds being adviifed by fome to be trodden in by putting fheep upon the land; either indifcriminately, or by very open folding, as the ufe of the roller will not be effectual, and that of harrowing canuot be practifed without injury." It is flated that a large cultivator at Enfield fourd advantage from puttirg the feeds in before the manure was applied in the new lays, which are fometimes too hatily plonghed up. By either method, the fward of fuch lays may often be much thickened, as well as benefited in other refpects. And that, in cafes uhere the grafies have run up much to ftem, if the lands be fuffieiently ftocked with plants, it may be beneficial to cut them over, by means of a fharp fcythe, before their feeds are formed; as by this means they will be more ftrong and vigorous, and the lands be lefe injured:- but, under the coatrary circum-

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fances, they are better left for the purpofe of providing a more abundant fupply of young graffes, as the benetic obtained in this way more than counterbalances the injury futtained by the old plants being left upon the land. But that where there is a complete failure from particular caufes, the moft advifable 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 frefh feeds, which fhould be accomplifhed as carly in the beginning of Augult 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 fhould 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 anfivers well in dry feafons; and in wet ones, as affording but little feed, may be mown when in blofom 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 grafs lands is feldom abfolutely neceflary: yet where they have not been returned to the ftate of fward under that degree of fertility and preparation which has been inculcated, it may, in many intlances, be had recourfe to with great advantage and improvement; as it is perhaps one of the belt methods of preferving a good clofe ftate of grafs or fward, when properly employed. Mr. Maxwell dtates, in the third volume of Comnunications to the Board, that "though in general no manure will be wanted till the land has been mown for hay, there caa 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 dlight 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 cafes, the latter end of the fummer following, or very early in the autumn, are fuppofed by fome to be the molt beneficial and proper periuds for the purpofe: "but as at thefe times, in many infeances, much lofs of manure may be fultained both by evaporation and the wafhing of heavy rains and fnows, it may be a better and more advifable practice to perform the bufinefs in the early fpring months, efpecially where the lands are to be conducted under the feythe; 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 - Shoots, and thus not only afford more affiltance in thickening and invigorating the new fward, but be lefs in danger of being ufelefsly diflipated and wafted." But "where manure cannot be fpared for repeatedly dreffing new grafs lands, as the gralfes are ofter, efpecially on lands not fuited to their growth, liable to decline and become thin, in fome inftances, it is fuppofed, from the fown graffes difappearing before the fpontaneous ones have attained fufficient vigour and Itrength; but more generally, probably, from the grounds not having been in a proper ttate of fertility, or finenefs of furface mould, at the time the feeds were put in; or the particular unfavourablenefs of the feafon, about the clofe of the third fummer after their being fown. It is believed by the Rev. Mr. Young, to be a better practice to edefer the ufe of manure till that time, on fuch lays as are
paftured; and when they are under the feythe, till the hay crop has been taken from the ground. We have no doubt of the fuccefs of the application of dung top dreflings at thefe periods, though they muft evidently be made ufe of in a lefs economical manner than at a later feafon in the autumn, or an earlier one in the fpring. And it is the molt common opinion, that all the finer and more foluble kinds of top dreflings are applied with the greateft 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 thefe forts of manure have perhaps not yet been fully afcertained, under different circumitances of application."

With the view of encouraging and fupporting 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 moft ufefully laid on land early in the autumn, or on hay lands immediately after the crops have been taken off, Itates that " he has ufed coal-afhes with great fuccefs, 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 ftand 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 reafons for altering his mind, and for wifhing to continue it in grafs, he refolved to ary the effects of grazing it with theep. On the fourth year it looked fo very bad, the clover almoft entirely difappearing, that he was tempted to plough it up. He, however, refolved to continue the grazing, and to give it a drefling of three chaldrons per acre of coal-a\{hes. The next year he obferved the white clover and natural graffes beginning to form a clofe 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 fame cultivator, that the following fubllances 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 courfe to be principally advantageous in increafing the quantity of produce; fuch as "tallow-chandlers" graves, when ufed in proportion of a ton an acre; and night-foil, when laid on to about three horfe cart loads the acre. And that in fixing, producing, and rendering the white clover more permanent, marle, or ftrong cold land, and coal-afhes, on wet foils, 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 gra\{es." And on what are termed ftone brafh lands, the ufe of marle is often found of great utility, when applied in the latter part of the fummer of the firft year of the lay. But it is neceflary, to the fuccefs of this fort of application, that the ground be well covered with grafs before it is applied; as where the furface is much expofed, the marle is liatrle to plaitter and cake together, and the young grafs-plants to be, in confequence, expofed to much injury from the heat of the fummer. This fubftance feems to bring up the belf fort of natural graffes; but in time it finks below the reach of vegetation. About thirty cart-loads are fufficient for the acre. And chalk, on the deep loamy clays, was found by Mr. Davis an ufeful application the firft 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 efta-
blifhing the grafs; and on peaty or moory lands, marlc and other fimilar materials will be found of advantage in rendering them more compact, and better fuited for preferving the grafles; as well as fand and road-ftuff, for fining the herbage, and rendering it more palatable to the flock.

Though " foot has been much ufed as a top-dreffing, it has not been found that its effects laft beyond the firt year. It has been tried to the amount of fixty bufhels per acre, at 8 d . per buthel; perhaps it fhould be ufed in larger quantity. Lime is nearly as dear, and of that 160 bufhels have been ufed per acre on arable land. Soot flhould perhaps be laid orr to that amount. Sugar-bakers' fcum has been ufed with great fuccefs to the amount of two loads an acre, at half a guinea per load, which has been found a ftrong warm manure, highly ferviceable on cold land, its effects being permanent. Lime is alfo found ufeful on the more friable red loamy foils, by fixing and rendering them more clofe, to kecp 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 ufed as manure on grafs-land, when chopped fmall, have been fpread with advantage on young clovers before winter, to the amount of about 10 cwt . per acre," being ufeful in protecting and nourifhing the young grafs-plants in their more tender growth, but they are flow in producing their beneficial effects.

On applying, in order to compenfate for an immediate crop of hay, and to thicken the fward or one part of a field, rotten dung about eight tons to the flatute acre, on another part woollen rags chepped at the rate of 1 vo flones to an acre $;$ and on a third a rich marle in the proportion of about 80 tpns to the flatute acre; Dr. Campbell found, on comparing their effects two years afterwards, that "the dung had produced the greater lusuriance. 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 acertained." An acre of land may, it is fuppofed, "be manured by this means for about 3l. effectually, fhould they be found to anfwer the purpofe." The fame is the cafe with " the marle, which having covered the ground into which it is not yet carried down by the rains, and the grafs not having:grown through, it has at prefent rather done harm than good." On this account, he fuppoles that "marle is long in producing its beneficial effects, and the return of which cannot be looked for in lefs than two or three years:"

It is evident from thefe facts, that different effects may be produced on grafs-lands by the application of different forts of fubilances 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 afhes and compofts of the earthy kind formed from fand, rud, fcrapings of roads, and other fimilar materials, intimately blended and incorporated with fuitable proportions of well rotted dung, may be the moft beneficial applications;": alfo that "the liquor of fold yards and watering may be ufeful in the fame intention as well as thofe of reftoring the grafs-plants or fwards, and promoting the luxuriance of the crops.". But that "where the increafe of produce is chiefly aimed at, good dung in a well reduced ftate, tal-low-chandlers' graves, night foil, chopped rags, foot, fcum of fugar, and other fubltances of the more animal kind, are the moft effectual and proper." While in the intention "of eftablifhing, preferving, rendering durable the different graffes, marle, lime, chalk, the folding of fheep, and other lubftances and practices of the fame fort, will be the moft proper for producing fuck effects.". And that in "render.
ing the lands more firm and folid, the three laft fubfances may perhaps be employed with the greateff fuccefs and ad: vantage." Sce Maxure and Grass Land.

Laying.out Hfomefalls. Sce Hoamstale and Farss Buildings.
Laving-out Lands, the manner of diftributing the land of a farm or an eftate. See Fans.
Laying-oul Roads, in Rural Ecenomy, the meike of planning and laying out the linns of roads. Sece Rosiss.

Lavivg-down, or Laying-off, in Sbip Building, delineating the fhip to its full fize from the given draught upon the mou'd-loft floor, for the purpofe of making the moulds by which the feveral parts of the Thip is provided.
Laying, in Ropemaking, the clofing of the frainds together, to compofe the rope.
Laving-book, the hook on which the ftrands are all hung together for laying or clofing.

LAYKAN, in Gearrafoy, a fmall ifind in the Eatt Indian fea, near the S.W. coalt of Celcbes. S. lat. $5^{\circ} 5^{2 \prime}$. E. long. $119^{\circ} 5^{1}$.

LAYMAN, a perfon not engaged in any order of ecclefiaftics: accordingly, in the diftribution of the people, laity is oppofed to the clergy, and may be divided into three diftinct ilates, viz. the civil, the military, and the maritime.

Layman, among Painfers, a little itatue, or model, either of wax or wood, whofe joints are fo made, that it may be put into any attitude, or pofture. Its chief ufe is for the cafting and adjufting draperies, for the clothing of figures.

Some call it, after the French, manequin, q. d. a liftle man.

LAYMABAMBA, in Geograply, a town of Peru, in the jurifdiction of Chaçapayas.

LAYMOU, a town-on the $S$. coaft of the ifland of Ceram.

LAYR. See Liair.
LAZA, in Geography, a town of Spain, in Galicia ; 18 miles E.S.E. of Orenfe.

LAZANILLA, a town of the illand of Cuba; 40 miles E.N.E. of Spiritu Santo.

LAZARE BUEY, a town of Spain, in New Caftile; eight miles from Toledo.

LAZARETTO, a fmall illand in the Méditerranean, near the $N$. coaft of the ifland of Candy, formerly ufed by the Venetians as a lazaretto, but now deferted.
Lazaretto $V$ ecchio, $I l$, a fmall ifland in the neighbourhood of Venice, formerly called "St. Maria of Nazareth," from a church of tiat name built by Augutin Hermits in 1249. Since the year 1422, all fhips coming from the L.evant, are to perform quarantine in this iffand, for which purpofe it was provided with the neceffary inns, which were rebuilt and enlarged in 1565. Here all the fhips and merchandize are clofely infpected, under the direction of a deputation of the fenate.

Lazaretto, or Lazar-boufe, a public building, in manner of an hofpital, for the reception of poor fick.

Lazaretto, in fome countries, is an difice appointed for perfons coming from places fufpeited of the plague, to perform quarantine. Sce Quarantise.
This is ufually a large building, at a diftance from anycity, whofe apartments fland detached from each other, \&c. where fhips are unladen, and their crew is laid up for forty days, more or lefs, according to the time and place of their departure.
We are indebted to John Howard, efq., the moft diftinguifhed philanthropift, who has appeared in this or any otber country, and whofe ferrices in the caufe of bumanity
an nerer 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 regula－ tions，and very important and ufeful hints for their improve－ ment．With this view he determined，towards the end of the year 1785 ，notwilhifanding the expence and danger which he thus incurred，to vifit them in perfon．Accordingly，the firit lazaretto which he infpected was that at Marfeilles， which is fituated on an elevated rock near the city，at the end of the bay，fronting the fouth weft，and commanding the entrance of the harbour．This is a fpacious building， and its fituation renders it very commodions for the great trade whis the Firench carry on in the Levant．Within the lazaretto is the gavernor＇s houfe，a chapel，in which divine fervice is regularly performed，and a tavern，from which per－ fons．under quarantine may be fupplice with néceflaries．In order to prevent any communication，that is not allowed by the regulations of the ellablifhment，there is a double wall round the lazaretto ；and at the gate there is a bell for calling any perfon within this inclofure；and by the number and other modifications of the ftrokes，every individual knows when he is called．At Genoa，whither Mr．Howard next proceeded，the lazaretto is fituated on the fea－flore， sear the city，detached from other buildings，and encom－ paffed by a double wall．Another lazaretto，befonging to the Genoefe，Atands on a rifing ground at Varignano，near the gulf or noble port of Specia．At Leghorn there are three lazarettos；one of which is new，having been erected in the year 1778 ．The lazaretto at Naples is very fmall ； that at Meflina lies on an ifland near the city．At Naples there are two kinds of quarant ue performed ；one by fhips with clean bills of health，and the other by fhips with foul bills．The firlt，called the petty quarantine，laiks 18 days，and the fhips which perform it lie at the entrance of the port near the health．office．The other，called the great quaran－ tine，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 dittant about half a mile from the city，ald fituated on a rifing ground near the fea． There is another called the ne：v lazaretto，which is appro－ priated to a numerous body of peafants，who pafs over to the Morea to work in harveft time；on their return，they perform here a feven days＇quarantine ；and other $p$ ：rfons perform 14 days＇quarantine in the old lazaretto．The laza－ retto at Corfu is tinely fituated on a rock furrounded with water，about a league from the city．The lazaretto of Cattel－Nuovo，in Daimatia，is on the fhore，about two miles from the city；at the back of it there is a deligheful hill， which belongs to a convent of friars．Perfons in quarm－ tine，after a few days，are allowed to walk there，and divert themfelves with fhooting，\＆c．In order to obtain the moft compleie and fatisfactury information by performing the frictelt quarantine，our author determine i to go to Sinyrna， and there to take his paffage to Venice in a hip with a foul bill．He was thus enabled to give a particular account of his receotion and accominodation in the new lazaretto of this city，which is chielly affigned to Turks and foldiers，and the crews of thole fhips which have the plague on board； and this he thought to be the more neceffary，as the rules and tarifs of the other lazarettos in Europe have heen evi－ dently formed from thofe eltablified at Venice．The city of Venice has ewo lazarettes，appropriated to the expurga－ tion of merchandize fufceptible of infection，coming from fufpected parts，and for the accommodation of palfengers in performing quarantine ；as alfo for the reception of per－ fons and effects infected in the unhappy tires of peflilence． The old lazareto is two miles，and the new about fixe miles
diflant from the city，both on little iflands，feparated fron all communication，not only by broad canals furrounding them，but alfo by high walls ；they are of large extent， being ahout 400 geometrical paces in circumference．Of thefe Mr．Howard bas given a particular defcription，with an account of the regulations，and mode of government to which they are fubject，and a plan of the old lazaretto． At Triefte there are two lazarettos；one new，but both clean，and a coneraft to thofe which our author had feen at Venice．Of the new one he has given a plan．It is fur－ rounded，at the diftance of about 20 yards，by a double wall， within which are feparate burying places for Roman Catho－ lics，Greeks，and Proteftants．Mr．Howard clofes his account of the principal lazarettos in Europe，with the out－ lines of a proper lazaretio，and an engraved fketch of a plan for its cointruction．He bas alfo fubjoired，in minute detail， various pertinent remarks refpe Cing quarantinea and laza－ rettos in general ；together with obfervations on the im－ pertance of a lazaretto in England，in its connection with the advantages which our commerce might derive from it． Sce＂An Account of the principal Lazarettos in Eurcpe， \＆c．＂by John Howard，F．R．A．Warrington $1 ⿰ 豸 ⿱ 夕 夕 g, 4$ to．

By 39 \＆ 40 Geo．III．c．80．§ 23．is is enacted，that if any found perfon fhall enter any lazaret，he fhall perform quarantine ：and if he fhall return from thence（unlefs duly licenfed），or thall efcape，or attempt to efcape，he fhall be guilty of felony without benefit of clergy．See Quaran－ tine．

Lazaretto，a name given to an hofpital hip，which is for the reception of the fick，or perfons fuppofed to be in－ fectious．It is alfo the name of a place parted off at the fore part of the lower deck in fome merchant fhips，for the conveniency of laying up the provifions，flores，\＆c．necef－ fary for the voyage．
LAZAREVA，in Geography，a town of Ruffia，in the government of Irkutk，on the Lena； 32 miles S．W．of Kirenf．

LAZARI Morbes，a name given by fome 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 Lazako，a military order，inft－ tuted at Jerufalcm by the Chrittians of the Weft，when they became matters of the Holy Land；whofe bufinefs 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 inttizuted in ing．
The knights of this order，being driven out of the Holy Land in 1253 ，followed St．Lew：sinto France；who，in return for the fervices they liad done him in the Eaft，confirmed the donations made so them by his predeceffors，put them into poffeftion of feveral houfes，commanderies，and hofpitals， which he had built and endowed with ample privileges，and procured from Alexander IV．in 1255 a bull，confirming the order，and giving them permiffion to oblerve the rule of St． Augufline．In the year 1490 ，pope Innocent VIII．fup－ prefled their ordcr，and united them to the order of St．Juhn of Jerufalem；but the bull iffued for that purpofe was not received in France．In 1572，pope Gre ory XII．united thofe of the order in Italy with that of St．Maurice，（which Sce，）then newly inflituted by Emanuel Philibert，duke of Savoy．And，is 1608，this order was umited in France to that of our Lady of mount Carmel，which had been infti－ tuted by Henry IV．，and it obtained fome new advantages from Levis XIV．The knights of St．Lazarus，and thofe of our Lady of mount Carnel，are allowed to mary，and，
at the fame time, to poffefs penfions charged upon ceclefialtical livings. The badge of this order is a crofs (like that of Malta) of eight points, made of pure gold, edged with white enamel ; the middle, or nucleus, of the crofs is enamelled crimfon, and on it is the image of the bleffed virgin and child proper; the reverfe has the middle enamelled green, on which is the figure of St. Lazarus ; between the rays of the crofs are four fleurs-de-lis, and on each of the points a fmall gold ball. The crofs is faftened to a broad crimfon ribbon, and is worn either on the breatl or fcarfwife.

Lazanus, Fatbers of Sto, called alfo Lazarites, a name given to certain regular clerks of a congregation inftituted in France, in the feventeenth century, by M. Vincent.

They take the denomination from a houfe in the Fauxbourg St. Denis of. Paris; they have a feminary in Paris, called the feminary des bons anfans. The vows they make are fimple, and may be difpented with on occafion.
I.AZICA, in Ancient Geography, a country of Afia, S. of the Phafis, 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 fkirts of Colchos. In the age of Juftinian, they fpread, or at leaft reigned, over the whole country. At prefent they have migrated along the coalt towards Trebizond, and compofe a rude fea-faring people, with a peculiar language. As the ftrength of the Roman empire was gradually impaired, the Romans ftationed on the Phafis were gradually withdrawn or expelled about the beginning of the 2d century of the Chriftian era; and the tribe of the Lazi, whofe polterity (as we have faid) fpeak a foreign dialect, and inhabit the fea coalt of Trebizond, impofed their name and dominion on the ancient kincdom 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 Perfian monarch, and the fucceffors of Conttantine acquiefced in this injurious claim, whtch was proudly urged as a right of imememorial prefcription. In the begiuning of the fixth century (A.D. 522.) their influence was reftored by the introduction of Chrifianity. After the deceafe 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 Conftantinople, an orthodox baptifm, a noble wife, and the alliance of the emperor Jultin. The king of Lazica was folemnly invefted with the diadem, and his new patron foothed the jealoufy of the Perfian court, excufing the revolt of Colchos, by the venerable names of hofpitality and religion. The common intereft of both empires impofed on the Colchians the duty of guarding the paffes of mount Caucafus, where a wall of 60 miles is now defended by the monthly fervice of the mufqueteers of Mingrelia. But this honomerable connection was foon corrupted by the avarice and ambition of the Romans. Degraded from the rank of allies, the Lazi were incefliantly reminded, by words and actions, of their dependent Itate. At the dillance of a day's journey bejond the Apfarus, they beheld the rifing fortrefs of, Petra, which commanded the maritime country to the fouth of the Phalis. Inftead of being protected by the valour, Colchos was infulted by the licentioufnefs, of foreign mercenaries; the benefits of commerce were converted into bafe and vexatious monopoly: and Gubazes, the native prince, was reduced

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to a pageant of royalty by the fuperior infucnce of the officers of Juftinian. Difappointed in their expectations of Chrittian virtue, the indignant Lazi repofed fome confidence in the juftice of an unbeliever, and after a private affurance that thicir ambafladors fhould not be delivered to the Romans, they publicly folicited the friendflip of Chofroes. The fagacious monarch difcerned the ufe and importance of Colchos, and meditated a plan of conqueft. His ambition was fired by the hope of launching a Perfian navy from the Phafis, of commanding the trade and navigation of the Euxinc fea, of defolating the coalt of Pontus and Bithynia, of diftreffing, perhaps of attacking, Conftantinople, and of perfuading the barbarians of Europe to fecond his arms and counfels againft the common enemy of mankind. Accordingly he led his troops to the fronticrs of Iberia; they were conducted by Colchian guides through the woods and along the precioices of mount Cuucafus; and a narrow path was formed into a fafe and fpacious highway, for the march of cavalry and even of elephants. Gubazes laid his perfon and diadem at the foot of the king of Perfia; his Colchians imitated the fubmifion of their prince, and after the walls of Petra had been thaken, the Roman garrifon prevented, by a capitulation, the impending fury of the lait affault. But the Lazi foon difcovered that their mopatience had urged them to choofe an evil more intolerable than the calamities which they ftrove to efcape. The monopoly of falt and corn was effectually removed by the lofs of thofe valuable commodities; the authority of a Roman legillator was fucceeded by the pride of an oriental defpot, 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 Chrittian people; and the prejudice of nature or education was wounded by the impious practice of expofing the dead bodies of their parents, or the fummit of a lofty tover, to the crows and vultures of the air. The Lazi were alfo apprized that Nufhervan had given fec:et orders for affaffinating their king, for tranfplanting them into fome diltant land, and for fixing a faithful and warlike colony on the banks of the Phafis. In thefe circumitances the Colchians, apprized of the ruin that awaited them, folicited the clemency and fuccour of Jultinian; who, from motives of policy, determined to expel the Perfians from the coaft of the Euxine. The fiege of Petra (which fee) was immediately undertaken. Thus commenced the Colchian or Lazic war, A.D. 549. Notwithfanding fome fplendid advantages obtained by the troops of Jultinian, the I'erfians occupied the paffes of Siberia; Colchos was enflaved 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 reInquifhed the profecution of the Colchian war, under a perfuation that it is impoflible to reduce, or at leait to hold a diftant country againtt the wifhes and efforts of its inhabitants. The fidelity of Gubazes fuftained trials of the moft rigorous kind; he patiently endured the hardnlips of a favarge life, and rejected, with difdain, the fpecious temptations of the Perfian court. The kiug of the Lazi had been educated in the Chriftian religion; his mother was the daughter of a femator; he had ferved 10 years a filentiary of the Byantine palace; and the arrears of an unpaid falary were a motive of attachment and of complaint. The lieutenants of Jultimian prejudiced the emperor againft him; perfuaded him that a fecond defection was meditated; an order was iffued to tend the king prifoner to Conftantinople, and a treacherous claufe was inferted in it, that he might be law3 H
full ${ }^{-}$
fully killed in cafe of refiftance; and Gubazcs, without arms, or fufpicion of danger, was thabbed in the fecurity of a friendly interview. In the firlt 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, commiffioned a judge of fenatorial 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 defructive though feeble war, Chofroes was perfuaded to renounce his claim to the poffeffion or fovereignty of Colchos and its dependent ftates. Gibbon's Decl. \&c. of Rom. Emp. vol. vii. See Colchis, Mingrelia, and Tbebizond.

LAZISE, in Geography, a town of Italy, in the Veronefe, on the E. bank of lake Garde, with a harbour, a cuftom houfe, and a caftle; five miles W. of Verona.

LAZIVRAD, in Natural Hifory, one of the oldelt names by which we find the lapis lazuli expreffed in an!thors.

LaZULI Lapis, or Lapis Lazuli; Azure Stone, Jam.; Lafurfein, Wern.; Lazulite of Haüy 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 alfo paffing into Berlin blue and fmalt blue, feldom into flky blue: fome varieties fhew a flight tint of greenifhblue.

It occurs generally maffive, in rolled pieces and diffeminated ; alfo indiftinctly cryftallized. The regular cryftal 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 ail to the real azure ftone, is as yet undecided.

Its internal luftre is gliftening and glimmering. Fracture uneven, fine-grained.

Fragments indeterminately angular, more or lefs fharpedged, and flightly tranlucent on the edges.

It fcratches glafs, and is eafily frangible.
Specific gravity of the Perfian, (according to Briffon and Blumenbach,) 2.771; 2.896, (Kirwan); of the Siberian 2.945 , (Briflon).

It is infufible before the blowpipe; but at a ftill higher degree of heat its natural colour gives way to a bluifhgrey, and it runs into a whitifh enamel. Klaproth obtained a dark-coloured, femitranfparent, glaffy globule, covered with grains of iron. If previoully calcined it forms a jelly with acids. This latter obfervation was firt made by Marggraf, who, as early as the year 1788, publifhed an analy fis of the lapis lazuli, in which he fhewed that its colour is by no means produced by copper; his analyfis has been confirmed by Klaproth, who found alfo alumine as a conifituent part, which had been overlooked by his celebrated predeceffor. Its compolition, as determined by Klaproth, is the following:


## L A Z

The refuit of an analyfis given by M. M. Clement and Deformes, differs from the preceding: they obtained

| Silica | - | - | - | - | - | 34 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Alumine |  | - | - | - | - | 33 |
| Sulphur | - | - | - | - | - | 3 |
| Soda | - | - | - | - | - | 22 |
| Lors | - | - | - | - | - | 8 |

They confider thefe conftituents as effential, and look upon the 0.024 of lime, and the 0.015 of iron, which they have fometimes found, as accidental ingredients. Thefe chemifts have alfo obferved fome peculiarities in the characters of the earth, mentioned as pure filica in the above analyfis. This difcrepancy in the refults of the analyfes points out the necefficy of fubmitting the lapis lazuli to new chemical examination, which may throw light on the nature of the matter that produces the vivid and intenfe colour of this fubitance.

But little is known refpecting the geognoftic fituation of this mineral. We fee it diffeminated in, and mixed with, a fcaly cryftalline lime-ftone; alfo with quartz, and noft frequently with iron pyrites. The Siberian azure fone (which is diltinguifhed from that called the Perfian by its lefs vivid colour) is faid to be the production of a vein near the lake Baikal in Siberia, where it is accompapied with feldfpar, garnets, and pyrites.

The fineft azure-ftone 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 ftates, is found in great quantities in the ifland of Hainan, in the Chinefe fea, (whence it is fent 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 ftones, 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 roundnefs was owing to their friction againlt each other in the carriage; though fometimes they were found by chance as boulders in torrents, and that thefe were of the moft vivid blue.
According to Laxmann, who refided feveral years in Eattern Siberia, rolled pieces of lapis lazuli are found on the fhore of the lake Baikal, in a kind of gulf to the fouthward, called the Koultouk ; but he fearched in vain for the mountains from which thefe 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 Perfia among the countries that furnifh this valuable fubftance, becaufe a traveller well verfed in the fludy of precious ftones denies its ever having been found there. "In the copper-mines of Perfia," fays Tavernier, "veins of lazur have been found ; which colour is much ufed in the country for painting flowers on the ceilings and roofs of apartments. Before thefe were difcovered, the Perfians had no other lazur than the real kind which comes from Tartary, and is exceedingly dear. The Perfian lazur is a fort of copper-ore, which, when pounded aed fifted, forms a fine paint, which appears very bright and pleafant.

## L. $\mathrm{A} \mathbf{Z}$

After this difcovery, the Perfians were no longer permitted to purchafe the Tartarian lapis lazuli; and Mahomet Beg iffued an order that painters fhould not ufe any but Perfian blue. This prohibition, however, did not long continue: for the Perfian pigment would not fland the effects of the atmofphere like the real kind, but, in the courfc of time, became dark and of a difreal colour. Sometimes it was full of fcales, and would not adhere to the end of a foft hair brufh; on which account it was foon neglected as a pigment, and the lapis lazuli of Tartary again introduced.

The lapis lazuli is fufceptible of taking a good polifh, and is therefore ufed for various ornamental and other purpofes, fuch as the engraving of gems: (See Gems.) The variety containing diffeminated pyrites, which the ignorant frequently miltake for gold, is preferred for mofaic and other inlaid work, \&cc. Moft profufely it was ufed for the lalt-mentioned purpofe, in the magnificent marble palace which Catherine II. built at Peterburg for Orlof, her favourite, and which has fome apartments completely lined with lapis lazuli brought from Great Bucharia.
Maffes that contain much quartz are lefs efteemed by the lapidaries, and particularly by thofe who prepare from it the ultramarine, a beautiful blue colour, fo called becaufe it was originally brought from the trading towns of the Levant. See Ultramarine.
Pliny ditinctly defcribes the lapis lazuli, but as a variety of fapphire.

The lapis lazuli was formerly reckoned of fome ufe in medicine : it was prepared by calcining and wafhing it feveral times; which done, it made an ingredient in the famous confection of alkermes.

The alchemical writers have given us procefles 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 glafs-houfe furnace, equal quantities of the faireft lattimo, and the whiteft cryftalline glafs; when this is in fufion, mix into it, by fmall parcels at a time, the blue fmalt ufed by the painters; make frequent proofs of the colour, and when it is right let the whole ftand 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 fubftance, reprefenting the plain blue parts of the natural lapis lazuli. Neri's Art of Glafs, p. 117.

A counterfeit lapis lazuli may be alfo made by fufing ten pounds of either of the compofitions for hard glafs (fee Colouring of Glass) with an ounce and a half of zaffer, and half an ounce of magnefia, till a very deep tranfparent blue glafs be produced. When the mafs is cold, powder it, and mix with it three quarters of a pound of calcined bones, horn, or ivory, by grinding them together: then fufe this mixture with a moderate heat, till the ingredients are thoroughly incorporated, and form the melted mafs 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 frefh veins as are defired, and then put into a furnace of a moderate heat.

LaZULITE, or Lasulite of Werner (not that of Haïy, for which fee the preceding article) ; Azurite, Jamefon ; Siderite, Tromfdorff.

Colour indigo blue, from which it paffes into fmalt blue.
Is found maffive, diffeminated, and cryftallized, as it would appear, in four-fided and fix-fided prifms. Mr.

## L E A

Bernhardi obferved the fame forms in the variety from Salzburg, but alfo the regular octahedron with truncated edges, paffing into the regular rhomboidal dodecahedron. In general, the cryftals are very indittinct and fmall; and they occur always imbedded.

It is gliftening and thining, and of rather refinous luftre.
Longitudinal fracture imperfectly foliated, crofs fracture uneven. Fragments indeterminatcly angular. Its hardnefs is inferior to that of common feldfpar.

It is brittle, eafily frangible, and not particularly heavy.
The chemical characters of lazulite, which diftinguifh it from blue iron earth, are, according to Klaproth, firft, its crumbling before the blowpipe into a whitifh carthy mafs; fecondly, its giving a clear light wine yellow, glaffy pearl, with borax, and a tranfparent white pearl with falt of phofphor; and, laftly, its not being operated upon cither by acids, or caultic alkali.

Klaproth found the variety from Vorau, near Wienerifch Neuftadt, in Stiria, to be compoled of filex, alumine, and iron, but could not, from the fmellnefs of the quantity he operated upon, afcertain their proportions. An analyfis of the fane, by Heim, gave 0.6 ) alumine, and 0.30 iron.

Tromiderff's analy fis of the variety from Salzburg has given the following refults:


Mr. Tromfdorff thinks that alumine and magnefia mult be confidered as the effential parts of this mineral fubitance ; hence Mr . Bernhardi is inclined to refer it to the fpinelle ruby, with which Haïy has already united the cejlanite, or pleonaft, and which the lazulite refembles alfo with refpect to its cryftallization. But is not the hardnefs of the latter much inferior to that of finelle?

To the above two localities where the lazulite has been found, we may add that of Krieglach; for, indeed, the fubitance known by the name of blue feldfpar of Krieglach appears to agree in all its characters with thofe of Stiria and Salzburg. In all thefe places it is found in, azd grown together with, white quartz, imbedded in a kird of mica flate.

LAZZI, a denomination given by the Saxons to that rank of people who were born to labour, and being of a more fervile ftate than our fervants, becaufe 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 thofe of a fervile condition. See Edhiling.
$\left.\begin{array}{l}\text { LE roy le veut, } \\ \text { Le roy s'advifera, }\end{array}\right\}$ See Le Ror.
LEA, in Ancient Geography, a fmall inand of the Ægean fea. Pliny.

Lea, in Geography, a river of England, which rifes in Bedfordhire, paffes by Hertford, Ware, \&c. and falls into the Thames a little below London.

Lea of Tarn, is ufed in fome parts of England for a certain quantity of yarn. At Kidderminfter it ought to contain, two hundred threads, on a reel four yards about. Stat. 22 \& 23 Car. 1 II .

LEACH.

## LE A

LEACH-Brine, a word ufed by the Englifh fatt-workers to exprefs the brine which runs out from the falt, when it fands in the bafket to drain, immediately after being taken out of the pan; and alfo the liquor left in the pan, when no more falt will fhoot. This is alfo called the noobere-brine, and bittern. In the German falt-works they ahways throw this liquor away. In our brine-falt works in Chefhire they alsays preferve it, and add it to the next boiling ; and in the Newcalte, and other fea-water falt-works, they fave it for the making the bitter purging falt, called Epfom fait.

LEAD, in Mineralogy', Plumbun, Lat.; Plomb, Fr.; Bley, Germ.; Saturnus, Alchem. The colour of lead is of a bluein-white; when tarnined, it becomes yellowifh.white, then blueifh, and at latt blueinh black. Luttre, when untarnifhed, 3 ; hardnefs, 5 ; and fpecific gravity fomewhere between It and I2. According to Briffon, it was $1 \times .35_{2}$; and a fecimen tried by Gellert, which was found at Freyburg, was eftimated at 11.44$)^{\circ}$. 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 Graviry.) The heavieft is reckoned the beft. It itains paper and the fingers. Next to tin, it is the molt fufible of all the metals. It is foluble in molt of the acids, though more readily fo in the nitrous diluted than the others. By expofure to the muilt atmofphere, it rufts or oxyds. It is mallealle and unelattic, and its oxyd is eafily fufible into a tranfparent yellow glafs. Having given this general defcription, we fhall now conlider the feveral combinations under which it is found in vature.

## Ores of Lead.

Sp. ro Lead Glance. Bleiglanz. This fpecies contains two fubfpecies: (I) Common lead-glance, the colour of which is of a lead-grey, of different kinds of intenfity; in fome varieties it inclines to a blackihh calt. The lead-grey

## LEA

frequently contains the greatel proportion of filver. It fometimes prefents fuperficially an iridefcent tarning. It occurs maflive, dificminated, in membranes, in angular pieces, and in grains ! fometimes it is met with reticulated, fpecular, corroded, and amorphons; feldom cylindrical, but often cryltallized. The crythaline furm exhibits feveral varieties : t, in the fhape of a cube, in which the planes are either flraight or fpherical convex; 2 , the cube having angles more or lefs deeply truncated; 3, the cube having its edges and angles truncated at the fame time, but of thefe the later the molt deeply; 4, octahedron, either perfect or truacated on all its angles; 5 , octahedrun having its angles and edges truncated at the fame time; 6 , rectangular four-fided prifms, acuminated on both extremities by four planes, which are fet on lateral edges; 7, fix-fided prifms, acuminated by four planes; 8, three-lided tables, in which the terminal planes are bevelled. The cryflals are ufually fmall, or at moft middle-lized, either grouped on one another, implanted, or folitary. The planes of the cryltals are fometi:nes fmooth, fometimes drufy, and fometimes rough. Internally it alternates from fpecular fplendent to glitening; on the external furface it is lefs bright, but its luitre is metallic. Its fracture is more or lefs perfect foliated, and its fragments are cubical. In mafs it is often compoled of granular, and rarely of lamellar dittinct concretions, which are much grown together, and whofe fracture has a radiated afpect. It is foft, perfectly fectile, eafily frangible, and the fpecific gravity is from 6.2 to 7.8 nearly. Before the blowpipe it fies to pieces, and emits a fulphureous odour. It is eafily tufible, and may be readily reduced on coal before the blowpipe. When it is alternately heated and cooled, it at length difappears entirely ; and if it contain filver, a globule of that metal remains behind. According to Vauquelin, lead-glance contains the following ingredients:

| From Kirfehsald, in Deux Ponts. |  | Kampfiein. | Ecalerberg. | Kantenlach. | Cologne. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Lead | 54 | 69 | 68.69 | 64 | 63.3 |
| Sulphur | S | 16 | 16.18 | 18 | 12. |
| Carbonated lime and filex | 38 | 15 | 16.13 | 18 | 19.67 |
| Oxyd of iron | - |  | - | - | 3.33 |
|  | 100 | 100 | 101 | 100 | 98.1 |

Dr. Thomfon gives the following as the refult of his experiments:

| Lead <br> Sulphur <br> Oxyd of iron |
| :--- |
| Lofs -85.13 <br> 13.02 <br> 0.5 |
| 98.65 <br> 1.35 |
| 100 |

Hence, as is erident from the above tables, the proportion of lead varies from 54 to rather more than $\delta j$ per cent. The proportion of filver varies confiderably alfo; and it appears to have an effect on the external afpect of the varieties. It fometimes alfo contains a fma-ll portion of iron; and gold has even been found in lead-glance. It is, next to pyrites, the molt common of metalitic ores, and is found in beds and veins in primitive, tranfition, and fecondary mountains. It occurs almolt always with biende and calamine, with which it appears to have a flrong geognoftic affinity. It is frequently
accompanied with filver ores, and fometimes with copper ores. To mention all the places in which it is found, would be to mention almolt all the known mineral diftricts in the world. It is very abundant in Germany, and alfo in many places in our own country. The lead-mines in Britain are fituated in Cornwall, Devonfhire, and Somerfethire, in Derbyhire, Durham, Lancahhire, Cumberland, and Weft. moreland ; in Shrophire, in Flinthhire, Denbighfhire, Merionethhire, and Montgomery@hire; at the lead-hills in Scotland, on the borders of Dumfriesfhire and Lanarkfhire, in Ayrfhire, and at Strontian in Argylefhire. Lead-glance is alfo found at Konigferg in Norway; in various parts of Lapland, and in Denmark and Sweden; in feveral diltricts of Saxony, Hungary, Tranfylvania; in France, Italy, and Spain. Molt of the lead of commerce is procured from this ore: it is alfo ufed without farther preparation in the potteries for coarfe work, and alfo in the fmelting of filver ores. Lead-glance is now generally ufed as a fcientific name, in preference to the lefs fignificant but common one salena, on account of its luftre, which forms a friking feature in the external afpect of this mineral. (2) The fecond fabferecies

## LEAD.

is compar lead-glanse. The colour of this is very fimilar to that of the common lead-glance. It occurs in mafs, diffeminated, and fpecular. The latter is externally fmooth, fhining, and fplendent; internally it is glimmering, and its luftre is metallic. Its fracture is even. It acquires a poliifh by friction; its ftreak is thining, almoft fplendent; not fo eafily frangible as the preceding fubfpecies; but agrees with it in the other charachers. Its fincific gravity is about $7 \cdot 4 \cdot$ It occurs in veins, and is ufually accompanied with the common lead-glance. When the two fubfpecies occur together, the compact always forms the fides of the vein, and this probably owing to its having been in a lefs perfect flate of folution. It is accompanied with black blende, common iron pyrites, copper pyrites, quartz, and heavy fpar. It is found in the lead-hills in Lanarkfhire, and in Derbyfhire; in divers parts of Germany, and in the valley of Chamouni in Switzerland.

Sp. 2. Blue lead ore. Blaubleyerz, Wern. Mine de plomb bleue, Broch. The colour of this fpecies is intermediate between dark indigo blue and lead-grey. It occurs maffive, and crytallized in perfect fix-fided prifms, which are ufually fmall, low, fometimes bulging, with a furface rough and dull. Internally it is feebly glimmering, and its luftre is metallic. The fracture is even, paffing into the fine-grained uneven and flat conchoidal. Its fragments are indeter. minately angular. It is opaque, gives a fhining metallic ftreak, is foft, fectile, and eafily frangible. Its fpecific gravity is 5 -46. It eafily melts before the blowpipe, burns with a weak blue flame, emits a ftrong fulphureous vapour, and is reduced to pure lead. It is conjectured to be a compound of lead, oxyd of lead, and fulphur; and is fuppofed by Werner to be intermediate between lead-glance and black lead ore. Klaproth difcovered in it phofphoric acid. It occurs in veins, accompanied with black lead ore, white lead ore, malachite, radiated copper azure quartz, fluorfpar, and heavy fpar. It is not often to be met with, and has hitherto been found only at Zfchoppau 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 clovebrown. It occurs maffive, and is cryftallized in fix-fided prifms. The furface of the cryftals is blackifh and rough. Interually it is gliftening, and its luftre is refinous. The fracture is fmall and fine-grained uneven, and fometimes paffes into fplintery. It is foft, not very brittle, but eafily frangible. Its fpecific gravity between 6.60 and 6.98 . It melts eafily before the blowpipe, without being reduced; and, during the cooling, fhoots into acicular cryftals. It does not effervefce with acids. According to Klaproth, a fpecimen from Brittany contained,

| Oxyd of lead <br> Phofphoric acid <br> Muriatic acid |
| :--- |
|  |
| Lofs $\quad-\quad$78.58 <br> 19.73 <br> 1.65 |
| 99.96 <br> 4 |

It is found at Miefs in Bohemia; alfo in parts of Hungary, Sax̣ony, and Lower Brittany. In Bohemia it is ufually found accompanied with lead-glance, white, black, and green lead ores, copper pyrites, blende, quartz, heavy fpar, \&c. It occurs in veins.

Sp. 4. Black lead ore. Schroarz bleyerz, Wernu La nine de plomb-noire, Broch. The colour of this fpecies is greyifh-black, of different degrees of intenfity. It occurs in mafs, diffeminated or cellular, or cryftallized in fix-fided prifms. It is externally fplendent, and internally only thining. Fracture fmall. grained uneven, which fonetimes paffes into imperfect conchoidal and fiplintery. Fragments indeterninately angular; itreak greyifh white; rather brittle; cafily frangible, Specific gravity about 5.S. Before the blowpipe it decrepitates, and is quickly redeced to a metallic globule. According to Lampadius it confilts of,


It occurs in veins, and is almolt always accompanied with white lead ore and lead-glance, and ufually in the upper part of veins, and in new lead-glance formations. It very frequently encrufts lead-glance, and is covered with white lead ore, and fometimes by green lead ore. It is found in the lead-hills of Scotland ; in different parts of Bohernia, Saxony, Salzburg, Lower Brittany, and in Siberia. Previoufly to the analyfis of Lampadius, Haïy fuppofed it was a phofphate of lead; and Werner fufpected that it was a compound of lead, carbonic, and fulphuric acids.
Sp. 5. White lead ore. Wies-bleyerz, Wern. Mine de plomb blancle, Broch. This is a carbonate of lead: its colour is a greyih or yellowih-white, with very many different Thades. It occurs maffive, diffeminated, but moft frequently in a cryftallized ftate. The chief varieties are, 1 , the cunciform octahedron; 2 , the pyramidal dodecahedron; 3 , the preceding, with a fix-fided prifm interpofed 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 prifm, with fummits compofed of four planes; 6 , the fame, with fummits compofed of fix planes. The crytals are ufually fmall. Externally, it is fpecular fplendent, feldom gliftening: internally, it alternates from highly fplendent to glittening, and its luttre is adamantine, inclining fometimes to femi-metal ic, 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 tranflucent to tranfparent, and is duplicating. It is foft, brittle, and eafily frangible. Its fpecific gravity is from 6 to 7.24 , according to the different fpecimens that have been analyfed. Before the blowpipe it flies to pieces, becomes red, yellow, and laftly melts into a globule of metallic lead. It makes a Itrong effervefcence with acids. Its furface becomes black, when expofed to the vapour of fulphuret of ammonia. Its conftituent parts are as follow :

From Siberia,
analyfed by Macquer.

| Lead | 67 |
| :---: | :---: |
| Carbonic acid | - 34 |
| Oxygen | 6 |
| Water | 3 |
|  | 300 |

From the Leal-hills in S otland, analyied by Kitaproth.

Carbonic acid - 16
Oxygen
Warer $\quad 5$
Water • - 2

But according to two other able chemilts, they are as follow:


It is almoft always accompanied with lead-glance, and occurs in a kind of repofitory. It occurs in veins that traverfe tranfition rocks; though it is found with different minerals, in different parts of the world. It is not a rare mineral, but is feldom found in fufficient quantities to make it worth while to feparate it from the adhering fpar, for the purpofe of fmelting. The fineft fpecimens of this ore that are found in Britain come from the mines of Derby hire, the Lead-hills in Scotland, and Minera in Denbighhire. It is allo found on many parts of the continent.
Sp. 6. Green lead-ore. Grün Blejerz, Wern. La mine de plomb verte, Broch. The colour of this fpecies is grafsgreen, which paffes on through the feveral fhades into green-inh-white. The olive and piftachio-green colours are the moft common. It occurs maffive, fometimes reniform, but moit commonly cryftallized. The varieties are, I. Six-fided prifms, having fometimes the lateral and terminal edges truncated. 2. When the lateral edges of the prifm converge towards their extremities, an acute, double, fix-fided pyramid is formed. The crytals are fmall; externally fmooth and fhining ; internally gliftening; the luftre is refinous. Fracture fmall-grained, uneven. Fragments angular and blunt-edged: it is foft, rather brittle, and eafily frangible. Specific gravity 6.27 to 6.94 . Before the blowpipe it does not fly to pieces: it brcomes white and melts eafly into a greyih-globule, but without being reduced even with charcoal. It diffolves in acids without effervefeence. Its conftituent parts are, according to

Fourcroy

| Oxyd of lead |  |  | 79 |
| :---: | :---: | :---: | :---: |
| Phofphoric acid |  |  | 18 |
| Oxyd of iron |  |  | I |
| Water | - |  | 2 |
|  |  |  | 100 |
| Vauquelin |  |  |  |
| Lead | - | - | 45.18 |
| Phofpho | acid | - | 18.17 |
| Oxygen | - | - | 4.05 |
| Silica | - | - | 32. |
| Lofs |  |  | $\begin{array}{r} 99 \cdot 40 \\ 60 \end{array}$ |
|  |  |  | 100 |

Green lead-ore is, when of a pale colour, apt to be confounded with the preceding fpecies; but it may be diftin.

| Frout Ildelankoi. | Firl Analyfis. | Second Analyfis. |
| :---: | :---: | :---: |
| Lead | - 74.0 | 77.50 |
| Carbonid acid | - 15.0 | 15.0 |
| Oxyd of iron | 0.25 | 8.25 |
| Alumine | 1:0 | 0.0 |
| Lime | 1.0 | 0.0 |
| Silicia | - 0.25 | 0.50 |
| Water | 4.0 | 0.0 |
| Lofs | 95.50 | $94.25$ |
|  | 100 | 100 |

guifhed by the following characteritics: 1. The fracture in this fpecies is fine-grained, uneven, but in white lead-ore it is more or lefs conchoidal. 2. Its luftre is refinous, 3. It is harder than white lead-ore. 4. It is of a greater Ipecific gravity. 5. Its cryftals are often aggregated: and 6. Its prifms are generally fhorter than thofe 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 moft commonly cryftallized in broad four-fided prifms, and but rarely maffive, diffeminated, or in membranes. The cryftals are middle-fized : the furface of the cryftals is ufually fmaoth, fometimes longitudinally ftreaked. Both externally and internally it is fplendent, and its luftre is intermediate between adamantine and refinous. The fracture is foliated, and the fragments indeterminately angular. It fometimes inclines to tranfparency. It is foft, and in the intermediate fate between very brittle and fectile: eafily frangible, and its fpecific gravity is fomewhere between 5.6 and 60. It melts before the blowpipe into a blackifh fcoria, and may be partly reduced with borax. Specimens have been analyfed by


This mineral occurs in veins in gneifs and mica flate, where it is accompanied with lead-glance, green lead-ore, iron pyrites, brown iron-ftone, native gold and quartz" It is found in Siberia; at Annaberg, in Auftria; and at Upper Faucigny, in Savoy. It is much ufed as a pigment, on account of its beautiful colour, its durability in the atmofphere, and its mixing readily with oil.

Sp. 8. Yellow lead-ore. Gelbes Bleyerz, Werner. Yellow lead-fpar, Kirwan and Hatchett. Plomb molybdate, Haüy: La mine de plomb jaune, Brochant. In this fpecies, which has long been known to mineralogits, the lead is mineralized by a particular metallic acid, called the molybdic acid. It occurs fometimes maffive, more commonly cry ftallized in fmall cryftals; the forms of which are rectangular tables of four fides, or of eight fides, bevelled ; the cube, octahedron, equiangular eight-fided table, and double eight-fided pyramid. The tables are ufually broad and thin, and alternate from fmall to very fmall, but are feldom middle-fized.

They are fometimes united, frequently interfect one another, and form thus the cellular external fhape. Its colour is wax-yellow, and its luffre diftinetly waxy: it is tranflucent, foft, and cafily frangible. Its fpecific gravity is rather more than 5. It decrepitates before the blowpipe, then melts into a clobule of a grey colour, in which are diffeminated farticles of metallic lead. It gives a blueifh white colour to borax : it occafionally produces a glafs, which is greenifh-blue, and fometimes deep blue. Its conftituent parts are, according to

Klaproth's Analyfis
Oxyd of lead - $\quad 64.42$
Oxid of molybdena

## Hatchett's Analyfis,

| Oyxd of lead |  |
| :--- | :--- |
| Molybdic acid |  |
| Oxyd of iron |  |
| Silica |  |

58.40
$3^{8.0}$
2.08
0.28
98.76
I. 24

100
Macquart's Analyfis

| Lead | - | 58.75 |
| :--- | :--- | :---: |
| Molybdena | - | 28.0 |
| Oxjgen | 4.76 |  |
| Carbonate of lime | - | 4.50 |
| Silica | - | 4. |

It occurs on compact lime-ftone which is much traverfed by veins of calc-spar, and is accompanied with molybdena and yellow lead-earth; 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. Blée vitriol, Werner. Native vilriol of lead, Kirw. Plomb fulphatè, Haïy: Le vitriol de plomb natif, Broch. The colour of this mineral is yellowifh grey, paffing to the greyif-white; the lighter varieties incline much to white. It occurs only in cryftals, the form of which is rectangular octahedrons with obtufe pyramids. The pyramids are often varioully truncated. Externally it is fhining; internally it ${ }^{5}$ is fplendent. The frature is compact; it is more or lefs tranfparent : is foftih, rather brittle, and its fpecific gravity is about 6.3. Ic is eafily reduced, when expofed to the flame of the blowpipe; and is infoluble in the nitrous acid. Specimens have been analyfed by Klaproth; the conftituent parts are as follow: viz. of that from

| Oxyd of lead |  |  | nglefea | Wanlock-head |
| :---: | :---: | :---: | :---: | :---: |
|  |  | - 7 | 7 I | 70.50 |
| Sulphuric acid |  |  | 24.8 | 25.75 |
| Water of cryftallization |  |  | 2 | 2.25 |
| Oxyd of iron |  | - | 1 |  |
| Lofs |  |  | 98.8 | 98.50 |
|  | - | - | 1.2 | 1.5 |
|  |  |  | 100. | 100. |

It occurs in lead-glance veins at Wanlock-head, and in brown iron-ftone in the ifland of Anglefea. It has alfo been found in lead-glance veins in Andalufia in Spain.

Sp. 10. Lead-arth. Bleyerde, Wern. is divided into two
fub-ipecies; 1, the cohcrent; and 2, the friable. 1. The coherent, or indurated, named Verbärstec bleierde by Werner, and Le plomb endurci by Brochant, is of a yellowifh or greenifh-grey colour. It is fomatimes of a fmoky-grey, and lometimes of a li,ht brownih-red. It occurs in mafs. Internally it is glimmering, pafling into gliftening, and its luftre is refinous. Its fracture is fine-grained, uneven, paffing into fine fplintery and earthy, alfo into flat conchoidal. It is opaque, or, at moft, fightly tranflucent on the edges. It gives a brownih Atreak, is loft, palfing into friable, not britile, 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 analyfed, but is fuppofed to be in intimate combination with white lead ore, alumine, and lime. It occurs with the other ores of lead, and is ufually accompanied by iron pyrites, malachite, and quartz. The yellow varieties are found in Derbythire, in fome parts of Germany, at La Croix in France, and at Nertichink in Siberia. The other varieties are to be met with at Wan-lock-head, in the Lead-hills in Scotland, in Saxony, Silefia, Poland, \&c. 2. Friable lead-earlh. Zerreibliche bleierde, Werner. Le plomb terreux friable, Brochant, is of a yel-lowifh-grey, approaching to fulphur-yellow. It occurs friable; fometimes mafive and diffeminated. It is compofed of dull dufty particles, which are more or lefs cohering, and foil a little. It has a roush feel, and is heavy. It occurs on the furface, or in the hoilows of other minerals, and is ufually 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 Berefowfkoi in Siberia. It is in fome inftances obferved pafling into folid lead-earth, and is probably formed by the decompofition of lead-glance, as it is frequently met with as a cruft upon it.
Sp. 11. Another ipecies is denominated a triple fulphuret of lead. Its colour is dark-grey inclining to black. It occurs cryftallized. Its primitive figure is a rectangular tetrahedral prifm, befides which it prefents the following varieties. I. The primitive cryftal with folid 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 dibedral fummits joined together at their bafes, forming a rectangular crofs. The crytals are large and middle-fized, with a fplendent metallic luttre both externally and internally. Its fracture is coarfe-grained and uneven. It is brittle and eafily 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 fplits; but if gradually heated it melts, and on cooling forms a giobule of a dull metallic grey colour. According to an analyfis made by Mr. Hatchett, it confiifts of

| Sulphur | - | - | - | 17 |
| :---: | :---: | :---: | :---: | :---: |
| Lead | - | - | - | 42.62 |
| Antimony | - | - | - | 24-23 |
| Copper | - | - | - | 12.8 |
| Iron | - | - | - | 1.2 |
| Lofs | - | - | - | $97.85$ |
|  |  |  |  | 100 |

It is found in a mine at Huel-Boys in Cornwall.

The exiftence of native lead, which has been maintained by feveral mineralogitts, is extremely doubtful. What has been regarded as a native oxyd of the metal, appears to be rather an earthy carbonate.

Aflay and Analyfis of Leal Orcs.-The mont common lead ore, galena, is very eafily analyfed, fince it is in general compofed of fulphur and lead only. Thofe ores in which the lead is combined with other metals, fuch as filver, copper, antirrony, bifmuth, or arfenic, are attended with more difficulty in their analyfis. If the analyfis be made with a view to fmelt the ore, it will be proper to make the affay in the dry, as well as the humid way. The latter will not only give the proportion of lead, but its other conflituents, by which the fmelter is directed to ufe the molt proper fluxes. When, however, the analyfis is made for publication, it fhould be made by the humid procefs only, and with the greateft accuracy.

The common galena may be analyfed by diffolving 100 grains in dilute nitric acid: the lead will be diffolved, and the refiduum will be fulphur, which may be feparated by walhing. The folution of lead may now be treated with fulphat of foda. The lead will be precipitated, with the fulphuric acid in the ftate of fulphat of lead. The precipitate being collected, and dried at the temperature of 212, mult he 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 fqueezed into lumps, after being wafhed in clean water. The lead obtained by this procefs is fuppofed to contain a fmall portion of the zinc. It will, therefore, be proper to digeft the metallic precipitate, for a fhort time, in very dilate fulphuric acid, and then wafh the lead with warm diftilled water.

A feccimen of galena containing filex was analyfed 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 refiduun 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 rco of fulphat to contain 75.72 of metallic lead. He then faturated the liquor with ammoniac, which threw down 3.3 per cens. of oxyd of iron, and obtained from the remaining liquor, by carbonat of putafh, 3 per cent. of carbonat of lime.
A fpecmen of lead ore from Cornwall, confifting of lead, filphur, antimony, and copper, was analyfed by Mr. Hatchet.

To 200 grains of the ore, in a matrafs, he added $20 z$. of muriatic acid. While the mixture was heated, he added, from-time to time, fmall quantities of nitric acid, juft to keep up an effervefcence, till the metals were oxydated and diffolvec. After being gently heated for an hour, the folution was complete, and of a green colour, owing to the prefence of the copper. The fulphur was feparated and floated on the liguid, which being collected was digelted in muriatic acid. When dricd 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 diftilled 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 $\sigma_{3}$ grains.

When the liquid, which had paffed through the filter, including the wafhings, was cold, fome muriat of lead was depofited in cryltals, owing to the fparing folubility of that
falt. The whole was evaporated to a fmall quantity of liquid, fufficient to hold the copper in folution. This liquid, being feparated from the folid muriat of lead, contained a fmall portion of that falt. A few drops of fulphuric acid being added, however, feparated it in the flate of fulphat of lead. The mafs of muriat of lead left by cvaporation, was now re-diffolved in boiling water, and decompofed by fulphat of foda. The fulphat of lead here formed was added to that produced from the feparated liquid, which, on being wafhed and dried on a fand bath, weighed 120.2 grains. The green liquid containing the rentainder of the mineral was now faturated with ammonia and an excefs added, which rediffolved the oxyd of copper, forming a vivid blue folution. A quantity of oxyd of iron now fubfided, which, when feparated, weighed 2.4 grains.

The folution of copper was now evaporated nearly to drynefs, and boiled with pure potafh, when the black oxyd of copper was left at the bottom of the veffel, which being wafhed, feparated, and dried, weighed 32 grains.

In this analyfis the fulphur is the only fubfance feparated in a ftate 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 520.2 grains of fulphat 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 analy fis will fand as follows, when reduced to 100.

| Sulphur | - | - | - | 17 |
| :---: | :---: | :---: | :---: | :---: |
| Antimony | - | - | - | 24.46 |
| Lead | - | - | 6 | 42.61 |
| Copper | - | - | - | 12 |
| Iron | - | - | - | 1.2 |
| Lofs |  |  |  | 97.27 |
|  | - | - | - | 2.73 |
|  |  |  |  | 100 |

If filver had been a conflituent of the ore, the above procefs would have been a little varied. In the firft operation the ore would have been diffolved in dilute nitric acid, the antimony would bave been in part diflolved, and left at the bottom of the veffel in the tlate of ishite oxyd. When the fulphur and the antimony, by dilution with water, are feparated, muriatic acid muft be added. The lead will be in part, and the filver entirely precipitated. The muriat of lead may be feparated, 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 feparated as in the laft procefs. Arfeniated lead ore requires a itill different treatment. It was analyfed by Vanquelin as follows: 100 parts of ore were roafted for half an hour, occafionally adding a little tallow, which ferved to reduce the arfenic and facilitate its efcape. By this treatment it loft $3^{8}$ parts, which was prefumed to be oxyd of arfenic ; the remaining mafs was boiled with ftrong muriatic acid for an hour. A quantity of oxymuriatic acid efcaped, the liquid afumed a red colour, and white needle-formed cryftals of muriat of lead were depolited. The lead by this mears was converted into a meriat, 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 1.1 phat. The liquid thus freed from lead being treated with pure ammonia, afforded a precipitate equal to 39 grains, confifting of oxyds of iron and arfenic. The circumttancs of oxymuriatic acid being given out, when the oxyd of lead was di-

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gefted with muriatic, induced Vauquelin to conclude that it was in a ftate of peroxyd.
In this account the latt part of the procefs appears incomplete, in the circumftance of the oxyds of arfenic and iron being mixed together. The former of thefe may be feparated, boiling the two in nitromuriatic acid, which will convert the oxyd of arfenic into arfenic acid, and which may be feparated by walhing.
Carbonat of lead was analyfed by Klaproth by the following procefs. He introduced 100 grains of this ore into 200 grains of nitric acid, and diluted it with 300 of water. The carbonic acid efcaped in the form of gas, making a lofs of weight equal to 16 grains. Into this folution was fufpended a cylinder of zinc. In 24 hours the lead was precipitated in the metallic ftate, 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 firft roatted at a red heat, and loft two grains, fuppofed to be water. The remainder was then heated to rednefs in a platina crucible, with 400 grains of carbonat of potafh. By this treatment a yellow reddifh mafs was obtained, which, on being digefted 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 paffed through the filter contained the fulphuric acid of the fulphat of lead, with excefs of alkali ; this excefs was faturated with nitric acid, and the liquid acetat of barytes was added, which caufed a precipitation of 73 grains of fulphat of barytes: this he allows to contain 25 grains of real fulphuric acid. Hence the refult is

| Oxyd of lead | 72 |
| :--- | ---: |
| Sulphuric acid | 25 |
| Oxyd of iron | 1 |
| Lofs by roafting | 2 |

## 100

We have alfo the analyfis of phofphat of lead by the fame ingenious experimenter.
One hundred grains of this native falt were diffolved in dilute nitri acid; into this folution nitrat of filver was dropped till it ceafed to precipitate : the infoluble fubftance, which was muriat of filver, weighed II 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 $7^{8.4}$ of oxyd of lead. The
excef3 excer( of fulphuric acid was feparated by adding nitrat of barytes, and then nearly neutralized with ammunia. On adding pitated, contad, 82 grains of phofphat of lead were preciwas now containing 18.37 of phofphoric acid : muriatic acid The dry mafs was digefted with alcohol, which diffolved the muriat of iron, the prefence of which was detected by pruffiat of potafh, and was found equal to $\frac{1}{\mathbf{T} 5}$ th of a grain of the oxyd.

Molybdat of lead was analyfed 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 wafhed: 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.

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phuric acid was diluted with 16 parts of water, and fatu. rated with ammonia; when a little oxyd of iron was precipitated. The folution was now evaporated to drynefs, and a frong heat given to fublime the fulphat of ammonia. The remaining mafs, when boiled with nitric acid to drynefs, afforded molybdic acid of a yellow colour.
Although the analyfis of the different ores may have pointed out general methods for the feparation of lead from other metals, fome hints may, neverthelefs, be neceffary for the analyfis of the alloys of lead. Lead is moit 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. Moit of the tin will be precipitated in the flate of white oxyd, by the addition of water. If fulphuric acid be now dropped into the folution till the precipitation ceafes, the lead, in a flate of fulphat, 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 thofe bodies ape diffolved in pure nitric acid. The filver may be precipitated in the flate of muriat, by adding muriat of foda. The lead may be afterwards precipitated by fulphuric acid.
To feparate lead from bifmuth, diffolve the alloy in nitric acid, then add a large quantity of water, which will precipitate the greatelt part of the bifmuth in the ftate of white oxyd. The lead mult then be precipitated by fulphat of foda, and the remainder of the bifmuth by potah.

The feparation of lead from antimony may be performed by the fame procefs ufed for feparating tin.
It may be here noticed, that in all cafes where fulphur is prefent in the ore or fubftance to be analyfed, if the nitric acid be employed, it muft be very dilute, otherwife the fulphur will combine with its oxygen, forming fulphuric acid. In order to know when this takes place, the folution mult be telted with nitrat of barytes. If, however, lead be prefent, it will combine with the fulphuric acid as it is formed, and fall to the botiom of the veffel.
Reduation of the Ores, or fmelling of Lead.-Two proceffes 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 ufed throughout Derbyfhire and North Wales, and is undoubtedly the beft, where coal is not very fcarce. In the former of thefe methods the ore and the fuel are mixed together, and expofed to the blaft. 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. Thefe together conititute the flag or fcoria. 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 furface. The liquid lead is let off from time to time, always retaining a portion for the fcorix to float upon. When the whole of the lead is to be drawn off, the blaft muit be flopped, and fome lime thrown upon the liquid fcoria, which renders it concrete, while the lead, being flill liquid, can be run off.

The reverberatory furnace employed for fmelting lead is made on the fame plan with thofe commonly ufed 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 terlength of the hearth, from the place where the fire en-
ters, to the the fire conftitutes the throat of two feet of this length next the fame is four feet, and its depth about fix inches ; 3 I

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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 rett 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 dillance of two feet from the throat, feven feet two inches in the middle of the hearth, five fect cleven inches at two feet diltance from the chimney, and two fect ten where the flame enters the chimney at two apcrtures, each ten inches §quare. Thefe 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, fuppofing a ftraight horizontal line, drawn from the lower plane of the throat of the chimney to the oppofite fide of the furnace; the lowelt 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 reft of the hearth is co:sormably concave.

On each fide of the furnace are three openings, each about ten inches fquare, provided with iron doors, to be removed as occation may require. They are arranged at equal diftances from each other, between the commencement of the hollow hearth and the entrance into the chimney. The lower part of thefe apertures is on a level with the horizontal line above alluded to, being for the purpofe of ttirring and raking the ore, \&c. Befides the larger openings there are twa fmall 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 fome diftance above the firft aperture. The firft is a taphole for the lead, and the fecond for the fcoria. The ore is introduced by a veffel in the flape of a hopper, placed in the roof of the furnace.

Previous to the ore being fmelted, it requires to be feparated as much as poffible from the earthy matter in which it is imbedded. Although galena, which is the ore ufed for fmelting, is moft frequently accompanied by fulphat of barytes, fluats and carbonat of lime, it is found to exift in cryitallized diftinct maffes, and can be feparated from it by mechanical ineans 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 paffing it through iron rollers preffed together by great weights. After the ore has been thus reduced, the earthy matter is feparated by wafhing. The powder to be wafhed 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 fpecific gravity, is retained. This procefs requires great dexterity, which can be acquired by experience only. There are, however, fome impurities which cannot be feparated by this mechanical procefs, and are generally fmelted with the ore. Thefe are blind, or blackjack, called by the fmelter mock ore; pyrites, or fulphuret of iron, named Brazil by the workmen. When the ore abounds much with thefe fubtlances, the procefs of fmelting is more dificult, and requires an extra affiftance of flux to reduce $1 t$.

In the ftate above defcribed, the ore is introduced at the hopper in the middie of the roof of the furnace, and fpread upon the concave hearth, to expofe it as much to the flame as poffible, in order to facilitate the efcape of the fulphur. This thould be performed by a long continued heat which is not virlent, in order that the fulphuret itfelf may not be volatilized, an effect which, more or lefs, always takes place. The moment the fulphur has left the bead it begins
to combine with oxygen. The oxyd of lead, thus formed, combines with the earthy matter, which it renders fo fulible as to become liquid upon the fulphur of the melted lead, and defends it from the future action of the oxygen. At this flage of the procefs the fire is raifed to feparate as quickly as poffible the melted lead from the liquid fcoria. The latter is now let of at the upper tap hole, leaving a fmall portion ftill upon the lead to preferve it from the air. The fire at this period is lowercd, and a quantity of coalflack thrown in upon the melted mafs. This ferses as well to facilitate the cooling, and to caufe the reduction of fome oxyd of lead, which alfo tends to tiffen the melted fcoria. This lait 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 pufhed to the oppofite fide by means of a rake, and taken out of the furnace at the different operings on the fame lide. The liquid lead is now let out, at its proper aperture, into a large iron pan, or ciftern, from whicnce it is laded into moulds to caft 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 fcoria. In this cafe a certain quantity of fluat of lime is added, which has the property of forming a very fufible compound with fulphat of barytes, an ingredient very common in the ore.
This flux has been ufed from time immemorial for the fame purpofe, and has no doubt derived its name from its properties as a flux. See Fluat of Lime.

The concrete fcoria, which is taken out of the furnace, is found to contain fome lead, independent of that in the thate of oxyd, and chemically combined. This is generally lodged in the cavities of the fpongy mafs. Thele maffes are taken to a kind of blaft furrace, called a flag-hearth. By this fecond fufion of the fcoria, the lead drops through the liquid mafs into the lower part of the hearth, where it is not acted upon by the blaft, and from thence is let off and caft into pigs. This lead is faid to be of an inferior quality. Some ores of lead contain filver. The great affinity of lead for that metal is fuch, that the whole of it is found in the lead (fee Silver), from whence it is afterwards feparated.

Pbyfical and chemical Properties of Lead.-Lead is of a bluinh-white colour, when made as bright as poffible. This is belt effected by fcraping and burnifing. This polifh it foon lofes by expofure to air.
Its foftnefs is fuch, that a cylinder of one inch in diameter and twelve inches long, may be eafily bent by a perfon of ordinary ftrength: indeed, it is the molt foft and flexible of the metals. Its fpecific gravity, according to Brifon, is 11.3523 , and io far from being increafed by the hammer, agreeably to that change in other metals by the fame effect, Mufchenbroeck afferts that it is diminifhed. It may be here proper to obferve, that thofe metals which are fufceptible of the moft perfect cryltallization, will undergo the greateft condenfation by the hammer, provided the metal be fufficiently malleable. Hence we find this property the mott confpicuous in brafs, and in blittered fteel. See Metal.
Lead, in cormon with its foftnefs, is the leaft elaftic of the metals; ro which alfo may be attributed its little tenacity. Its hardnef's is increafed by hammering, and its temacity in a proportionate degree.
Lead is exceedingly malleable, which connected with its exceflive foftnefs, admits of its being rolled into thin Gheets with little power. Its tenacity, according to. Dr.

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Thomfon, is fuch, that a wire of $\frac{1}{12.6}$ of an inch will fupport only 18.4 pounds. Lead fufes at about $600^{\circ}$ of Fahrenheit, and if raifed to a much higher temperature, will be found to diminifh by cvaporation. If lead be melted and poured into an iron mould, it will be found to concrete on the fides next the mould, while the middle part will be liquid for a fhort time. If this liquid part be poured off, or let out at a plug-hole at the bottom, the interior furface of the folid part will exhibit a crytalline form. The eryftals will be larger and more diftinct as the cooling is flower.

Lead is much employed in the axts, particularly for buildings and citterns. For the former of thefe purpofes it has many advartages. It is eafily worked into any fhape on account of its great foftnefs, and is fufficiently malleable to fold two edges over each other, fo as make it watertight without ioldering. This is a very great advantage, fince, when the pieces are foldered together, the expantion and contraction, by a change of temperature, foon breaks it to pieces.

Although it is at prefent in general ufe for water-cifterns, pumps, and pipes for conveying water, ferious objections have been made to it by different philofophers, particularly Dr. Lambe, fo far as regards its effects on the human economy.

A very ingenious paper was fome time ago publifhed by Morveau, in which he fhews that the water expofed to the leaden veffels would frequently be pernicious, if fome fulphuric acid were not prefent, which never fails to precipitate lead from any of its folutions. Thus we fee that lead is the leaft objectionable for mineral waters containing the fulphuric acid, which is very general in almoft all fprings.

Great mifchief has been produced by the ufe of lead in dairies; although we lament to fay that this practice is ftill followed up to a certain extent. If the milk runs into the flightet acidity, we muft expect fome lead to be diffolved, and its probable confequences if taken into the flomach.

The difeafe called the Devonflhire colic, was proved by fir George Baker, in feveral excellent papers written by him, and publifhed in the Philofophical Tranfactions of that time, to be occafioned by lead diffolved in the cyder, and which had been furnihed from the cyder prefles, which were lined with that metal; but was in confequence of this valuable difcovery laid afide.

We have heard of a fimilar difeafe in the Weft Indies, acquired by drinking new rum. The rum was found to contain lead, which had been taken from the leaden worm ufed for the condenfation of the firituous 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 ruin is generally put into oak cafks, from whence the liqour extracts a quantity of tan and gallic acid. Thefe fubltances combine with the lead in folution, forming a perfeatly infoluble fubltance, which falls to the bottom of the cafk. Thefe facts fhew that lead fhould not be ufed in any fituation where fermented liquors are prefent, fince in every ftage of their exiftence, they contain more or lefs acetic acid. And it mult not be forgotten, that all diftilled fpirits will contain the fame acid, from the circumftance of its being volatile and coming over with the fpirit.

We have, however, abundant fatisfaction in knowing that the exiltence of lead and gallic acid in fpirits, wines, or
other fermented liquors, are incompatible: and that all liquors which have been kept in oak cafks for a certain time muft be freed from lead. If we find the prefence of gallic acid by a folution of iron, we may pronounce fuch liquid free from lead.

Thefe obfervations, which may appear out of place, are given with a view 'to guide thofe who may be making or ufing veffels of lead, which, under fome circumftances, are attended with deplorable confequences.
Alloys of Lead formed wwith other Metals.- One part of tin and two of lead form an alloy, fufible at about $35^{\circ}$ of Fahrenheit, and ufed by tinmen and others under the name of foft folder. See Solmer.

Lead forms an imperfect alloy with copper. The metal ufed for common brafs-cocks is an alloy of thefe two metals. The lead is fo imperfectly combined with the copper, that when a piece of the metal is expofed to a certain heat, the lead feparates 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 cafily 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 eafily formed. Indeed lead is frequently ufed 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, deflitute of metallic luftre.

The alloys in any proportion have the fingular property of being of lefs \{pecific gravity than the mean, the very contrary of which is obferved in moft other compounds of metals. The following is a table given by Mr. Hatchett exhibiting thefe facts.

| Metals. | Grains. | Specific Gravity of Alloy. | Bulk before Eninon. | $\begin{aligned} & \text { I. ulk } \\ & \text { a tier } \\ & \text { Union. } \end{aligned}$ | $\begin{aligned} & \text { Expan- } \\ & \text { fion. } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Gold <br> Lead | 442 38 | 18.08 | 1000 | 1005 | 5 |
| Gold Copper Lead | $\begin{array}{r} 442 \\ 19 \\ 19 \end{array}$ | ${ }^{17.765}$ | 1000 | 1006 | 6 |
| Gold Copper Lead | $\begin{array}{r} 42 \\ 30 \\ 8 \end{array}$ | 17.312 | 1000 | 1022 | 22 |
| Gold Copper Lead | 442 34 4 | 17.032 | 1000 | 1035 | 35 |
| Gold Copper Lead | $\begin{gathered} 442 \\ 37.5 \\ .5 \end{gathered}$ | 16.627 | 1000 | 1057 | 57 |
| Gold <br> Copper <br> Lead | $\left\{\begin{array}{c} 44^{2} \\ 37.75 \\ -25 \end{array}\right.$ | 17.039 | 1000 | 1031 | $3{ }^{1}$ |

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When lead is expoled to the air for a little time, it foon appears of different colours, not unlike the prifmatic colours. By a longer expofure, affitted 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 ftill more by the fumes of acetic acid or vinegar. It is by this means that the white lead of commerce is made, of which we thall treat hereafter.

If melted lead be expefed to the oxygen of the atmofphere, a greyith-jellow powder begins to form upon the furface. By keeping it expofed for lome time, the powder becomes more yellow. In this fate it is called mafficot, 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 recefs for expoling the melted lead. On each fide, and a little below the level of the hearth, is a fire, the flame of which paffes flowly over the hearth, giving fufficient heat to keep the lead melted, and paffes up a chimney near the mouth of the furnace. As foon as the lead is melted, a perfon is conflantly employed to agitate it, in order to expofe greater furface to the air. This manual operation is performed by a rake fufpended from a chain, fo that the perpendicular part of the rake dafhes through a portion of the inelted lead, by merely moving it backwards and forwards. By the fame motion, the oxyd which is formed is pufhed away from the furface of the lead, leaving it free to the action of frefh oxygen. This procefs being kept up, the lead is at length converted into a greenifh-yellow powder, mixed with lumps of metallic lead. This powder is ground in a mill and then wafhed, 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 fee.

This oxyd appears capable of combining with more oxygen by a lecond expofure. For this purpofe the yellow powder, after being wafhed and dried, is returned into the furnace above-mentioned, or one of limilar conftruction, kept for this fecond procefs only. The heat is kept uniform but not great, and the oxyd raked about to expofe as much fur$\mathrm{face}_{\text {as }}$ as poffible. It gradually changes colour, and ultinuately affumes a fplendid red. In this fate it is called minium ; which fee. Although during this procefs the oxyd appears gradually to pafs through all the fhades of orange colour from yellow to red, the two latter can only be conlidered as diftinct oxyds, the intermediate tints being mixtures of the two.

If we confider the yellow as the firft or protoxyd, the red will be the fecond, and the brown, yet to be treated of, the third and the peroxyd. Proult, however, has given fome reafon to believe that the yellow is not the firft. The oxyd which is precipitated from the nitric acid when heated to rednefs, to drive off the water and carbonic acid, is found to be the yellow oxyd in a very perfect ftate. The author above-mentioned informs us, that if cryftals of the common nitrat of lead be boiled with fome pieces of metallic lead, fcaly yellow cryftals are formed. This falt, decompofed by potafh, affords an oxyd which Prouft fuppofes to contain lefs oxygen than the yellow. Dr. Thomfon repeated his experiment ; he found the oxyd not to differ in appearance from the yellow, and makes it to confitt of lead, 91.5 lead, and 85 oxygen. This appears to be rather lefs oxygen than, according to his own analy tis, is contained in the yellow. But there is reafon to believc, that in Dr. Thomfon's analyfis of the yellow oxyd, the oxygen is rated too high. The
fame oxyd, according to Bucholz, is compofed of 100 lead and eight of oxygen, equal to 7.4 per cent. This analyfis appears to have been made under fuch circumftances as to entitle it to much credit. From the average of three analyfes of the yellow oxyd, obtained from acetat of lead, the writer of this article made the ox ygen 7.4 per cent. Hence we have abundant reafon to doubt the exittence of an oxyd below the yellow oxyd, fince it appears, from Dr. Thomfon's own account, that the oxyd, faid to confift of lefs 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; $\frac{1}{1,}$ 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 procefs 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 pafs through the mixture. The oxyd gradually becomes of a deeper colour, and is at laft diffolved. From this folution the brown oxyd is precipitated by potafh. 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 ftrong fmell of fulphurous acid. According to the analyfis of Prouft, this oxyd is compored of 79 lead and 21 oxygen. Dr. Thomfon 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 firft, according to Prouft, contains 9 per cent.; Thomfon, 10.3; Bucholz, 7.4 ; the writer of this article, 7.4: the average of all thefe being 8.5 . The red oxyd, by Dr . Thomfon's analyfis, contains 12 per cent.: the brown, according to Prouft, contains in the 1c0, 25 oxygen; Dr. Thomion makes 18.4: the mean of thefe is 19.7.

Agreeable to the average refults of thefe different analyfes, we cannot help being forcibly ftruck with the beauty of Mr. Dalton's hypothefis 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 chemift, it will be feen that he holds the neceffity of bodies combining atom to atom, or in fome multiple of the fame; as, 2 to 1,3 to $1, \& c$. The firft oxyd of lead, agreeably to the above data, muft be 1 to 1 , or 9 ; to 7 ; the fecond oxyd, 95 to 14 ; and the third, 95 to 21 . Hence thefe proportions reduced to 100 , will fland as follows: $\frac{95+7}{7}$ $=\frac{100^{\circ}}{6.86}$, or 6.86 in the 100 , for the firft oxyd. Then, for the fecond, $\frac{95+14}{14}=\frac{100}{12.84}$, or 12.84 in the 100. Lafly, for the third or peroxyd, $\frac{95+21}{21}=\frac{100}{18.1}$, or 18.1 in the 100 . The proportions by analyfis give, for the firlt, 8.5; fecond, 12 ; and the third, 19.7: by theory, $6.86,12.88_{4}$, and 18.1 .

The fecond and third oxyds of lead give out oxygen, by expofure to heat in a crucible, and are reduced to the flate of the firft oxyd. If the heat be raifed a little above red-
nefs, the yelldw oxyd fufes into a glafs, in which ftate it is called the vitreous oxyd of lead. It becomes fo exceedingly fluid, as to run through the common crucibles. In this fate it has the power of oxydating, and combining with the oxyds of all the metals which are oxydatic, by expofure to air with heat: and hence is employed to great advantage in the cupellation of the nobler metals. Sec 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 ftate it is called litbarge; which fee. It confifts of the yellow oxyd, united to a portion of carbonic acid. For this part we are indebted to Dr. Thomfon.

Lead combines with fulphur and phofphorus.
Sulphuret of lead may be formed by projecting fulphur into melted lead, or by ftratifying thin plates of the metal with the fulphur. The compound is very brittle, of a dark grey colour. It may be cryttallized by flow cooling; under which form it exhibits a brilliant fracture, refembling the native fulphuret, or galena. This fulphuret, according to Dr. Thomfon, confilts of 86 lead and 14 fulphur. According to Dalton's hypothefis, it confifts of one atom of lead to one of fulphur: 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 analyfes very nearly.

Lead appears capable of combining with a fecond dofe of fulphur, conltituting a compound, which is more brilliant, and of a lighter colour. It may be eafily diftinguifhed 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 hypothefis, muft confift of one atom of lead and two atems of fulphur, which would give $\frac{95+2 \times 13}{26}=$ $\frac{100}{21.5}$, or 21.5 per cent. Dr. Thomfon makes it 25 per cent. It is to this chemift we are indebted for our knowledge of this fubftance.
$P h o / p h u r e t$ of lead may be formed by mixing together equal parts of filings of lead and phofphoric glafs; the misture being fufed in a crucible. It is of a filvery blueih-white colour. It poffeffes flight malleability, and may be cut with a knife. It is compofed of 88 lead and 12 of phofphorus. Dalton makes the atom of phofphorus to weigh 9 : hence this compound of $I$ to $I$ will give $\frac{95+9}{9}=\frac{100}{8.6}$.

Salts of Lead.-Moft of the acids combine with the yellow oxyd of lead, forming peculiar compounds. By far the greatef proportion of thefe compounds is infoluble in water. All thofe which are foluble have a fweetifh tafte, attended with a roughnefs which it leaves on the tongue, fimilar to that of red port, and fome other wines. This property has caufed it to be ufed for the villainous purpofe of mixing with four wine, which does not only take up the acid, but adds a roughnefs and fweet vinous flavour, exceeding impofing upon the palate. Some have fufpended bags of fhot in the calks 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 thofe liquors. Water impregnated with fulphuretted bydrogen gas will
inflantly 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 obfezved, the exiftence of lead and that acid are incompatible in the fame liquid.

Sulpbat of Lecad.-Lcad is fearcely acted upon by the ful. phuric acid, in the cold. If the acid be boiled with the lead, fumes of fulphurous acid will be given out, and 2 portion of the lead oxydated, which combines with the acid, forming a whitifh palty compound. If the acid be in excefs, and the mafs wafhed in water, the fubftance becomes divided into two portions, namely, the fulphat of lead, which is inioluble, and the fuperfulphat, which is flightly foluble, and will be depofited in cryttals.

It is from the circumflance of the infolubility of the fulphat of lead, that the metal can be ufed with fuch advantage for the lead houfes, ufed in making fulphuric acid, and for making veffels which have to hold this acid. The fulphat which firft forms upon the furface defends the lead not only from the action of this acid, but from any other folvent of this pernicious metal. Sulphat of lead may be beft formed by adding fulphat of foda to the acetat of nitrat of lead. A denfe white precipitate is formed, which is fulphat of lead. This falt 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 ftandiug 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 thefe is 24.86 acid, and 75.14 bafe. Calculated by Dalton's theory, the atom of fulphuric 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 bafe.

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 expofed to a red heat, the acid is difengaged, 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 ftate of yellow oxyd. The acid is converted into the fulphuric, and combines with the oxyd, forming the ful: phat of lead.
Dr. Thomfon gives the proportions at


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 diffolved, forming nitrat of lead: This confills of the yellow oxyd of the metal united to a portion of the acid. If the folution be evaporated, it affords cryltals of tin, in fix-fided pyramids of a dilvery white colour. This falt diffolves in $7 \frac{\pi}{2}$ of boiling water. When the cryftals are heated, they undergo a night detonation: the fame takes place when they are rubbed with fulphur in a hot mortar.

## According

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Aocording to experiments of Dr. 'Thomfon, this falt confits of,

$$
66 \text { oxyd, }
$$

$$
3+\text { acid. }
$$

When the cryftals of the laft falt are boilcd with metallic lead, yellow fcaly cryitals are formed, condtituting, according to Dr. Thomfon, a fubnitrat, contifting of

> 81.5 oxyd,
> IS.5 acid,

## 100

By Dalton's theory the weight of an atom of nitric acid is 19 : in mof of the nitrats he fuppofes one atom of the bafe to unite with two atums of acid. The nitrat of lead, already defcribed, fhould, according to the above analyfis, confint of at lealt two atoms of acid to one of bafe, for $\frac{102+2 \times 19}{3^{8}}=\frac{100}{27.14}=27.14$ of acid, and 72.86 of bafe.

The acid here falls confiderably fhort of that in the ana1 yfis of Dr. Thomfon. The latter falt, which we have called the fubnitrat, fhould have one atom leifs of acid.
Hence $\frac{95+7+19}{19}=\frac{100}{15.7}$, which gives 15.7 acid, and $8_{+3} 3$ of oxyd $=100$.

Muriat of Lead.-Muriatie acid has a very feeble action on lead, but it readily diffolves the yellow oxyd, forming the muriat of lead. This falt may be alfo formed by adding muriat of foda to nitrat of lead. The precipitate which is formed is the falt in quettion. It diffolves in 22 parts of cold water. This is the fact only when no excefs of this acid, or when no other acid is prefent; fince the falt is foluble in molt 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 depofited in cryttals of a filvery-white colour. When heated they readily melt, and on cooling affume a flight tranfparency, from which it has been called Plumbum corneum.

On the application of greater heat fome of the falt eraporates in a white fmoke, leaving behind a fubftance, which is faid to be a fubmuriat of lead.

The compofition of muriat of lead is, according to Klaproth,

$$
\begin{aligned}
& \text { Acid } 13.5 \\
& \text { Oxyd } 86.5 \\
& \frac{100}{}
\end{aligned}
$$

By Kirwan's account,
$\begin{array}{ll}\text { Acid } & 17 \\ \text { Oxyd } & 83\end{array}$
100
The weight of the atom of muriatic acid being 22 , we Shall have by Dalton's theory $\frac{95+7+22}{22}=\frac{100}{17.74}$, by
which we have 17.74 acid, and 82.26 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, conflituting 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 fubltance 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 foluble in water, or that the excefs 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 fubftance is by adding to the muriat of foda a much larger quantity of litharge than would be neceffary to faturate the acid of the falt. We are indebted to Vauquelin for the beft account of the nature of this anomalous decompofition. At the fame time the muriat of lead is decompofed by foda. We have the fact before our eyes, that an oxyd of lead will completely decompofe the muriat of foda. If we flate the experiment of Vauquelin we fhall 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 conliftency of thin foup. This was frequently ftirred for feveral hours. The litharge gradually loft its colour, and ultimately became white. It increafed in bulk, and fo much water was abforbed as to make it neceflary to add more. At the end of four days the chemical action had entirely fubfided, when the refult was examined. The liquid part, when feparated by the filtre, had a ftrong tafte of foda, with a tafte of muriat of lead, but no muriat of foda was prefent. The liquid afforded cryitals of carbonat of foda by evaporation. The fubllance from which the liquor had been feparated, when wafhed and dried, was of a dirty white colour, and was found to have increafed in weight $\frac{1}{8}$ th of the whole oxyd employed. When this fubttance was heated to a certain degree it affumed a fine yellow colour, by which it loft $\frac{1}{4}$ th of its weight. This was, perhaps, carbonic acid and water.

Some cauftic foda was added to a part of this fubftance, which changed its colour to that of a dirty yellow, and the refiduum was found to be a mafs of cryftals of muriat of lead. By the teft of an alkaline hydro-fulphuret, the foda appeared to hold a great quantity of the oxyd of lead in folution.

The one part of muriat of foda, ufed in this experiment, confifted of .44 of acid, and .56 of foda. 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 fuppofing the true muriat to be formed; but if a fubmuriat were formed, it muft confilt of more than one atom of lead united to one of acid. Suppofe it one of acid to two of oxyd, then $.44+2 \times 2.4=.4+4.8=$ 5.2 of fubmuriat, Atill there would be free oxyd left. But the author tells us that the yellow fubllance was infoluble in water, or that the water would not take the muriat from the excefs 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, Iet us fuppofe them three to one, we fhall then have $.44+3 \times 3.4=$ $.44 \times 7.2=7.64$ of a fecond fubmuriat. If, therefore, we are to rely upon the fact, that the muriat of lead could not be diffolved, leaving the excefs of oxyd, we mult regard

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this yellow fubtance as a legitimate compound. If the contrary be the cafe, we mult regard it as a mixture of the true nuriat mixed with the yellow oxyd of lead. This fubitance has been manufactured under a patent by Mr . Turner, of Newealtle-upon-Tyne, and is deemed a valuable pigment for painting.

Phorpbat of Lead.-The phofphoric acid does not act upon lead in the cold, and but very feebly by heat. The refult of this action is the formation of an infoluble compound, which is the phofphat of lead.

This fait may be more eafily formed by adding together the folutions of phofphat of foda and the nitrat, or acetat of lead. A denfe white powder fubfides, which is the falt in queftion. This falt is infoluble in water, but it diffolves readily in nitric, and alfo, when affitted by heat, in the muriatic acid. On the latter folution cooling, cry fals of muriat of lead are depofited; a proof that a partial decompofition takes place. It is alfo decompofed by the fulphuric acid, by the affitance of heat.

When this fait is heated it melts, and on cooling affumes a cryffalline appearance.

It is from this falt that phofphorus is generally obtained; for when it is expofed to a great heat, in an earthen retort, with charcoal, both the lead and the phofphorus lofe their oxygen, the latter being diltilled over.

Mr. Dalton makes the atom of phofphoric acid to weigh 23 , then $\frac{95+7+23}{23}=\frac{100}{18.4}$; fo that this falt, from thefe data, confifts of 18.4 of acid, and 88.6 of oxyd, which is very near the proportions of the native falt.

Carbonat of Lead-Carbonic acid does not act upon lead, but it combines with the yellow oxyd of lead, forming an infoluble white powder, which is manufactured under the name of zwhite lead.

This falt may be formed by adding a carbonat of potafh to the acetat or nitrat of lead. The ptecipitate, being wathed and dried, is fnowy-white powder, appearing to the ese well 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 fame with the manufactured, their difference, in point of denfity, is very remarkable. The proportions of the conftituents of this falt are, according to Bergman, 16 acid, 84 oxyd; to Chenevix, 15 aci ${ }^{2}$, 85 oxyd; Proult, 16.15 acid, 83.85 oxyd ; and Klaproth, 16.33 acid, $\$ 3.67$ oxyd in the 100 .

The manufacture of white lead has been known long before any idea was entertained of its compofition, cr the theory of the procefs; and it is rather fingular that no more improvement has been made in the common procefs, which has long appeared to chemitts as clumfy and uneconomical.

The procefs confifts in expofing thin theets of lead to the fumes of vinegar at a certain temperature. The lead is calt into fheets about two feet long, five or fix inches broad, and about $\frac{1}{8}$ th of an inch thick. Thefe are coiled up, rather fpirally, into a cylindrical thape, about five or fix inches diameter. The yinegar is. placed in the bottom of earthen pots, which are different in fize at different manufactures; fome holding three pints and others five or fix. 'there is a ledge round the pot, in the infide, about an inch deep, for the purpofe of fupporting the cylindric coil of lead, which ftands upon it like a chimney. The pots thus fitted, with the lead and vinegar, are arranged in rows, upon a flratum of horfe-litter, or, what is now ufed as being cheaper, the refufe bark of tanners. The ends of all whe
cylinders of lead are covered with a plate of the fame metal, to confine the whole as much as pofible to the action of the vapour. The pots thus placed are covered over with liteer or bark, and a new Itratum of pota arranced in a fimilar way over them. Several tons of lead are fometimes expofed in this manner at one time. 'The heat arifing 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 fubllance was formerly thought to be furnifhed by the fermenting fubftance in which the pots wele imbedded : it is now, however, known, that the vinegar is decompofed, and furnithes the carbonic acid. White-lead works are at prefent carried on, both on the continent aod in this country, in which the heat is furnifhed by artilicial means only; and of cour'e the carbonic acid can come from no other fource than that of the vinegar.
After the lead has been expofed 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 thicknefs. The white carbonat thus formed is very brittle and very hard. The fleets are now paffed through rollers for the purpofe of breaking the white lead from the uncorroded metallic lead. The powder is now taken to a pair of ftones, and ground in a manner fimilar to corn. After this it is levigated to get it of the greatelt poffible finenefs, and it is then gradually dried in ftoves for the purpofe.

Denfity and whitenefs are the molt valuable properties of white lead. Thefe properties do not depend upon the proportions of its elements, but upon the mechanical treatment. The denfity 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 feparated from the fheet, are much harder than others, even in the fame bed. This hardnefs and denfity are fometimes fo great as to render the picces fonorous. In this ilate it is the molt valuable. Hence the whitelt and denfeft picces are felected. for making the beautiful fubfance called flake rubitte.

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 ftate, is much whiter than the beft 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 fpecimen will be found to take a much greater quantity of oil than the other, and its whitenefs much diminifhed. The common white lead will have loit fo little of its whitenefs, that the contraft will be very ftrikingly in favour of the latter. This fact is exceedingly apparent, on mixing together tranfparent media of different denfities. The whitenels of fnow depends upon the mixture of fmall particles of ice with air; for when the fame are mixed with water, the whitenefs difappears. All colourlefs traufparent bodies become white on being reduced to powder. This is obferved in pounded glafs and in falts which lofe their water of cryitallization. Whitenefs may therefore be faid to arife from a confufed refraction of light, rather than from reflection. See Ligilt.

Fluat of Lead. - Fluoric acid docs 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

## LEAD.

formed better by adding the fluat of ammonia to nitrat or acetat of lead, the fluat of lead falling down in a ttate 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 !fate which the acid is capable of affuming, melts into a colourlefs glafs before the blowpipe.
Acetat of Lead.-Acetic acid has little or no action upon lead when the metal is immerfed in it; but the furncs of the acid in contact with air is capable of oxydating lead, as we have fhewn in the manufacture of white lead. The oxyd thus formed is eafily taken up by the acetic acid, forming a foluble compound of a fweetifh and aftringent tafte. If the folution be evaporated, an excefs of the acid being prefent, the falt is obtained in needle-formed cryltals, and of the luftre of fatin. It diffolves in about four times its weight of water at $60^{\circ}$. It is fingular that this falt is decompofed by the carbonic acid. It is from this circumftance that we always find it decompofed, in fome degree, by diffolving it in water, which generally contains more or lefs of that fubftance. This falt is ufed in medicine, uncryftallized, under the name of Goulard's extract.
The acetat of lead is an article of extenfive manufacture in England, France, and Holland.

Common diftilled vinegar is firlt 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 cheapeft procefs. The folution fhould have a little excefs of acid, elfe it does not form the real falt. By flow evaporation this folution cryftallizes, in which itate it is ufed in abundance in the arts, particularly by the calico printers, for the purpofe of getting the acetat of alumine, by double decompofition with alum.

The analyfis of this falt, according to Dr. Thomfon, is 26 Acid 58 Yellow oxyd
16 Water

## 100

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 $\frac{102+36}{3^{6}}=\frac{100}{26}$, which gives 26 of acid and 74 of yellow oxyd $=100$.

Subacetat of Lead-When the laft falt is boiled for fome time with the yellow oxyd of lead, a peculiar falt is formed, confifting of two atoms of oxyd, and one of acid. It is lefs foluble in water than the acetat. It was firlt noticed by Thenard, to whom we are indebted for the following analyfis:

$$
\begin{aligned}
17 & \text { Acid } \\
78 & \text { Oxyd } \\
4 & \text { Water. }
\end{aligned}
$$

If it confilts of two atoms of bafe to one of acid, its analyfis, according to the data in the acetat, will be $\frac{2 \times 102+36}{3^{6}}$ $=\frac{100}{15}$, which gives 15 acid, and $850 x y d=100$.

Oxalat of Lead.-This falt is formed by diffolving the oxyd of lead in oxalic acid. In all probahility there are two falts of this fpecies. That given by Dr. Thomfon is formed
with the fecond oxyd, and an excefs of acid, and is the fiiperacetat. According to Bergman's analyfis it contains

| 41.2 | Acid <br> 58.8 <br> Red oxyd |
| :--- | :--- |
|  |  |

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 fuppofing it the fuper falt $\frac{95+14+39 \times 2}{39 \times 3}$ $=\frac{100}{41.7}$, which gives 41.7 acid, and 58.3 red oxyd $=$ 100.

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 ftate of infoluble powder. From the above data it ought to confift of 27.7 and 72.3 yellow oxyd.

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. Thomfon 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 prefence 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 diffolved.

Arfeniat of Lead. The arfenic acid is capable of oxydating lead, and then combines with its oxyd, forming arfeniat of lead, which is sompletely an infoluble compound. It may alfo be formed by adding the arfeniat of potafh to a foluble falt of lead. From the analyfis of Chenevix it' confifts of 33 acid, 63 yellow oxyd, and 4 of water. According to Thenard, it is compoled 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 fpecies 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 reddifh-yellow colour. It is foluble in potalh and foda, from which it may be precipitated without changing its properties. It is foluble in nitric acid, but it is decompofed by the muriatic and fulphuric acids. See naiive falt.

The cther feecies of the falts of lead are not of importance.

The alkalies and fome of the earths diffolve the oxyd of lead.
Potafh and foda, when pure, diffolve the greatelt proportion. By expofure to the air, however, the carbonic acid of the atmorphere combines with the oxyd of lead, as well as the potafh. The lead is precipitated in a fate of carbonat.

Thefe alkaline folutions of lead have the property of ftaining hair, wool, and horn. The tint commences with a light fawn colour, and ultimately becomes of a deep and beautiful reddifh-brown. Thefe colours are not permanent, being quickly faded by expofure to the light and the air.

Lime water, and probably folutions of barytes and fronrian, diffolve the oxyd of lead, but in fmaller quantity. A liquid formed by boiling lime and litharge in water, has alfo the property, of ftaining wool, but the colour is fomewhat different to that given by the alkaline folution. The brown colour has lefs of the red and more of the ycllow tint. A compofition of common pearl-afh, red lead, and quicl lime, is ufed to give horn the appearance of tortoife fhell. In effect, this compofition is a folution of the oxyd of lead in potafh.

Lead, as we have already feen in the preceding part of this article, is much ufed in building, particularly for covering, gutters, pipes, and in glafs windows. For which ufes, it is either calt inso theets in a mould, or milled; which latt, fome have pretended, is the leaft ferviceable, not only on account of its thinnefs, but alfo becaufe it is fo excecdingly ftretched in milling, and rendered fo porous and fpongy, that when it comes to lie in the hot fin, it is apt to fhrink and crack $*$ ad confequently will not keep out the water. Others have preferred the milled lead, or flatted metal, to the caft, becaufe it is more equal, fmooth, and folid.

The lead ufed by glaziers is fritt calt into fiender rods, twelve or fourtcen 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 lead.

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 ftrewing on it fome pulverized refin; under this they place a chafing-difh of coals till fuch time as the refin becomes reddifh, 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 caft on.

Lead is much ufed in varnihes and painting with oil, both as a colour and as a dryer. It is alfo ufed in the preparations of enamels and of porcelain as a flux, and makes the bafis of the.glazing of almof all pottery wares; and by means of lead the moft perfect metals are refined and aflayed.

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 greateit caution, and to be rather calculated for outward application. Its ore is fo poifonous, that the fleam arifing from the furnaces where it is worked, infects the grads of all the neighbouring places, and kills the animals which feed on it. The poifonous 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 walhed, 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 houfe, in which lead ore had been kept for fome time, though afterwards made very clean, and bedded with fern, infected calves which were put into it, fo that all died in a very thort time; and it is a too melancholy obfervation, that children often die ftrangely and fuddenly about thefe places. Philofophical Collections, $\mathrm{N}^{2}$ 2. p. 6.

Its beft preparation is faccharum faturni, or the fuper-acetate of lead; which, though capable of doing great. good in hxmorrhages, and fome other cafes, is apt, however, to bring on colics of fo violent a kind, thát the remedy often proves worle than the difeafe.

The internal ufe of lead is dangerous, on account of the colics and palfies that are occafioned by it. Culinary veffels, lined with a mixture of tin and lead, which is the ufual Vol. XX.
timning, are apt to communicate to acid foods pernicious qualitics, and require to be ufed with great precaution. The fame thing has been alfo faid of liquors kept in glazed ware and of cyder made in veffels, where lead is ufed, and of wines adulterated with litharge, \&c. See the article Lead, fupra, and Colica Pictonum.
M. Navier has lately difcovered that the liver of fulphur, and particularly liver of fulphur of Mars, is an excellent antidote againft the poifon of lead; and he advifes patients labouring under its pernicious effects to drink larecly of acidulated liquors, to make afterwards the liver of fulphur the principal part of the cure, and to finif the cure with gentle purgatives.
The Dutch have been charged with correting the more offenfive expreffed oils, as that of rape feed, fo as to fubllitute them for oil olive or oil of alnoonds, by impregnating them with lead: in order to detect this abufe, nix a little of the fufpected oil with a folution of orpiment made in limewater: on fhaking them together, and fuffering them to reft, the oil, if it has any faturnine taint, will appear of an orange-red colour: if pure, of a palc yellowifh. The lead is difcovered in wines by the fame fulphureous folution, which changes the colour of wines impregrated with this metal to a brownifh red or a blackifh 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 visegar and fugar of lead, and all the ointments and plafters which contain cerufs, minium, or litharge, eminently poffefs thefe qualities. See the following articles and references.

For the laws relating to lead, and the ftealing of it, fee ${ }_{27} \mathrm{Ed}$. III. ftat. 2. c. 1. 3. 15. 38 Edw. III. itat. I. 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 coarler forts of black lead itfelf. This was probably the method by which prince Rupert is faid to have made black lead run like a metal in á mould, fo as to ferve for black lead again. Birch's Hift. Royal Soc. vol. iii.

The German black-lead pencils, and thofe 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 blueifh flame, with a ftrong fmell like that of brimitone, difcovers their compofition. Pencils of this kind are hard and brittie, and cut or fcratch the paper or wood inftead of marking them. The true Englifh pencils are formed of black lead alone, fawed into hlips, which are fitted into a groove made of the foftef wood, as cedar, and another 1lip 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 oue pencil, the fore-part being commonly pretty good, and the relt of an inferior kind. To avoid thefe inconveniences, fome take the finer pieces of black lead itfelf, which they faw into gips, and fix for ufe in port-crayons. Lewis's Commerce of Arts, p. 328.

By our laws, entering mines of black lead, with intent to fleal it, is made felony. See 25 Geo . II. c. 10. See Larceny.

Lead, for the manufalure of, fee Plumbery.
There are various preparations of lead, ferving for various purpofes, fome of which are now difufed, and others, under one form and name, or another, ftill continued.

Lead,

## LEA

Lead, Balfam of, an extemal medicine, formerly famed for its effects in old and flarp ulcers. It is made by mixing one ounce of fugar of lead with two of oil of turpentine, and ferting this mixture in a fand-heat till the falt is diffolved. By this means the oil acquires a red colour, and is called ballum of lead.

Lead, Burnt, plumbum ufum, is a chemical preparation ufed in mediciue, made of plates of lead, melted in a pot with fulphur, and reduced by fire into a brown powder.

Lead continued in fufion and firred, fo that frefh furfaces may be expofed to the air, will gradually change into a powdery dujky-coloured calx, bearing this name.

Burnt lead is only intended for exterual ufe. It has the farne virtues afcribed to it, in ointments and plafers, as litharge or minium. Mixed into an unguent with lard alone, it makes a grood ointment for the piles.

Lead, Bufter of, is a kind of liquid, anguent made of vinegar and lead, incorporated with rofeate oil, and commended for the curc of tetters. It is calied butyoum faturni.

Leid, Calcined, or calja of leud. Sce Calx, Cerusse, Grass of Leid, Lithaikee, Massicot, Mixium, Scc. and Alloys of Le.id, fupra.

Leid, Cafing of. Sec Castive.
Lead, Cerate of Super-acetate, Ceratum plumbi Juper-acetatis, the "Unguentum ceruflx acetatx" of P. L. I7 87 , is prepared in the following manner: Take of fuper-acetate of lead two drachms, white was, two ounces, and olive oil, half a pint. Diffolve the wax in feven fluid-ounces of oil, then gradially add to it the fuper-acetate of lead, feparately rubbed down with the remaining oil, and ftir the mixture with a wooden fice, until the whole has united.

Leid, Compound cerate of. See Ceratum lithargyri acetati comprofitum.

Lead, Cobefion of. See Conesion.
Lead $D_{u f /}$ is a preparation ufed by the potters; made by throwing charcoal duft into meted lead, and ftirring them a long time together: to feparate the coal again, they only walh it in water, and dry it afrefl. Its ufe is, to give a varnith and g!ofs to their works.

Lead, Entrat of, or Saturn, is prepared by fimmering together as many pounds of the litharge of gold as quarts of vinegar for an hour and a quarter, and often Atirring 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 ufe. If this liquor be made into the common ronfiftence of an extract, it muft boil yet Inger after its feparation from the mafs, and will acquire a reddifh colour. This is Goulard's extract (fee Lead, fupra), and the bafis of all his preparations of lead. It evidently differs in no refpect from fugar of lead, and vinegar of litharge, but in the degree of concentration. The only circumftance in which the extract feems to bave the advantage of fugar of Iead, appears to be in the greater quantity of the acetous acid contained in it, which proves an excellent affiftant in many cafes, and the fugar of lead, when once cryftallized, cannot be brought back to that flate of folution in vinegar in which it was before; yet where a large quantity of watery menftruum is added, as in Mr. Goulard's faturnine water, it is as well to make a Colution 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 Ufe of Preparations of Lead, \&c. p. 2. See Vinegar of Lead.

In the London Pharmacopeia of 1587 , this was denominated "A qua lithargyri acetati ;" and in the lait 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 fcmisvitreous oxyd of lead, with a gallon of acetic acid, and boiling down to fix pints, conftantly ttirring ; then fetting it by, that the feculencies may fublide, and Atraining. T'his is a denfe liquor, of a decep brown colour, and confifte of a faturated folution of fubace tate of lead. It was reltored in the laft Pharmacopeia, in confequence of the celcbrity it had obtained under the name of "Goulard's Extract." The "Aqua lithargyri acetati compofita" of P. L. 1787, called in the laft edition "Liquor plumbi acetatis dilus," or "diluted folution of acetate of lead," is prepared by mixing a drachm of folution of acetate of lead, a pint of ditilled water, and a flui-drachm of weak fopirit. When this mixture is made, even with diftilled water, fome precipitation takes place; and when, as is more common, ordinary water, containing any muriates or fulphates, is ufed, this is much more abundant from double decompofition, and gives the liquor a milky al surance when diffufed through it. To this it owes its common name of " white wafh."

## Liad, Glufs of. See Glass of Leid.

Lead, Magiflcry of, is the calx cf lead purified and fubtilized. It is made of lead diffolved in aquafortis, pouring filtrated falt water into it ; whence refults a magittery extremely white, which, when foftened by feveral lotions, is mixed with pomatums for the face and complexion.

Lead Mime. See Mining.
Lead, Mock, a name given to a glittering fubflance found in lead-mincs. See Galeva inariis, and Blinde.

Lead, Native. See Lead, fupra.
Lead, Ointments of, Preparalions of. See Unguent.
Lead Pluficr. See Emplastrum Commune.
Lead Pipes, Manufadure of. The common method ufed for making lead pipes, confilts in cafting the lead upon a fmooth fteel mandril placed in a mould, alfo of metal, to form the outfide. Thefe pieces are about 18 inches long. They are afterwards joined together by a procefs, called lining.

A very great improvement has been made in the manufacture of lead pipes, by drawing them in a manner fimilar to wirc. The lead to form the pipe is caft upun a mandril of the diameter of the infide the pipe, but of fuch a thicknefs as to equal the whole pipe in weight: it is then faftened upon one end of a cylindric fteel mandril, and the lead is pulled through different lized holes, till the pipe is of fufficient length and thicknefs. Thefe 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 alfo liable to flaws; for, if the cafting happen to be imperfect, the imperfection is much increafed and extended by the procefs 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 fucceffion. The power required is much lefs than that required for drawing; and the pipes are faid to be fuperior in other refpects. For a more particular account of this manufacture, fee Lead Pipes.

Lead, Red, a preparation of mineral lead calcined and rubified; ufed by painters, potters, and furgeons. See Minium, and Oxyds of Lead.
Lead, Salt or Sugar of, Saccbarum faturni, Superactat plumbi, fuperacetate of lead, is an effential falt of vinegar, incurporated with the proper fubltance of lead, or cerufs, diffolved in fpirit of vinegar. See Saccharum Satarni, and Lead, fupra.

## L E A

Lead, Timaure of. See Tinctura Sahrnina.
Lead, Vinegar of, or of Libharge. 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 fpecific in exzernal inflammations, particularly of the eye, for wafhing ulcers, cancers, fcrofulas, contufions, phlegmons, eryfipelas, piles, chilblains, tetters, gangrenes, de. But a folution of the faccharum faturni whl have the fame effect.

Lead, White. See Cerusse, and Lead, fupra.
Lead Nails. See Nails.
Lead, in the Manege, is a termufed to exprefs the part that begins any motion firft. A horfe going in a ltraight Line always leadis, or cuts the way with his right foot. This is called in French entamer le chenin.
LEADWORT, in Botany. See Prumbago. LEADERS, in the Military Art. See File-leaders, le $\mathbb{L} N A$, the lionefs. See Lioness.
L.EAF, (Forium, ) in Botany and $V_{\text {Cegetable Pby }}$ Pology, is a very general, but not univerial, organ of the herbage of plants, of the firlt importance to vegetable life, being, in many refpects, equivalent to the lungs of animals ; infomuch that when leaves are not prefent in the ufual manner, their office muft be performed by fome other part, which is generally the ftem. Leaves are, for the molt part, remarkable for their expanded form, in which the object of nature is manifeefly to prefent to the atmofphere as wide an extent of furface as poffible, greatly exceeding that of all the relt of the plant. "Their colour is almoft univerfally green, their internal fubftance pulpy and vafcular, fometimes very fucculent, and their upper and under furfaces co:nmonly differ in hue, as well as in kind or degree of roughnefs." "-How great a fhare the foliage of plants has in contributing to the beauty of the vegetable creation, and how widely their utility extends, in the fuftenance they afford to the animal world, not to mention their various economical ufes to mankind, is too evident to require much illuftration. Their curious functions, and their real ufe to the plant that bears them, has not till lately been properly underftood or juftly appreciated. The feience of chemitry was, for a long time, nut fufficiently advanced to throw the neceffary light upon this fubject; and even at the prefent day, when applied to the phyfiology of vegetables, it ferves rather to help us to conceive what may be, than to fee clearly what is, tranfacted in their apparently fimple, but truly elaborate, frame.

The firt who attempted to reafon upon the ufes and properties of leaves was Ciefalpinus, who merely fuppofed them a fort of clothing, or protection againt cold and heat. It is not worth flaying to confider his reafons, for an opinion which is fo inadequate to what it attempts to explain. This writer conceived the foliage of plants to originate from, or to be, a fort of expanf:on of, their bark.

Some of the firit practical obfervations that tended to difcover the importance of leaves, were made by garaeners, who, in their various treatment of fruit trees, foon found they were not to be flripped of their leaves, even partially, without caution, and that a general injury to the foliage infallibly ruined the fruit. They have alfo univerfally difovered, 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 fecretions, or corrupted exBalations, of thefe bodics, might injure the growing plant.-

When goofeberyy or currant but es are frijped of their leaves, by the voracity of caterpillars, every body knows that the fruit, if not withered, is altogether tallelefs. Wecansoot even yet precifely trace the mode in which this efie:t is produced, except that it evidently arifes from a great, thoun ha only temporary, injury to the conllitution of the flarub, caufed by its premature and violent defoliation. This injury is repaired in the enfuing feafon.

The abforption and perfiration of leaves could not lorg remain unobferved, when thefe organs came to be confidercid with any philofophical attenticn. Hales and Lonnct have made the beft and molt numerous experiments on this par: of their functions. The former firft fuggefted the probability of their imbiling air as well as morlure, nur did the action of light upon them efape his fagacity, though fubfequent chemitis and phyfiologifs have purfued thefe fubjects to a far greater cxtent. The fading of a leafy branclo of any plant when gathered, and its revival, on leeng immerfed fer a hort time in water, fufficiently evince the perfpiring and abforbing powers of the leaves. Dr. Hales firit determined the proportion of each, by experiments upon the great annual fun-flower, the vine, cabbage, \&c. On the firit-mentioned plant he beftowed particular attention, and the refult of his obfervation was that it loft Ilb .14 oz . weight in the courfe of a hot dry day, but in a dry night only three ounces. In a rainy night it gained two or three eunces 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 abforption by the roots was fo much the more rapid, in order to make up the lo ${ }_{5}$ which took place in the herbage. Compared with the ordinary isfenlible perfpiration of the human body, that of the fun-flower is only as 15 to 50 ; but the bulk or folid fubfance of the two being extremely different, that of the vegetable being fo much nore dilated, it is found the latter peripires feventeen times more, in proportion to its bulk, than the human frame. Thefe proportions of courfe vary in both, according to circumitances. If the roots be plentifully watered, the evaporation by the leaves is the more copious and rapid. In newly removed plants, the abforption by the leaves fupplies the wants of the vegetable body, till the roots have fhot forth new fibres in order to obtain moifture in that their natural direction ; but if fuch plants be immoderately watered, they may be killed by excefs of moitture; for no evaporation by the leaves being allowed to take place, nothing can be imbibed by the roots. In certain ftates of the atmolphere, fom plants are frequently exhaufted by their perfpiration, and droop for want of adequate fupplies from the roots; while others are fo conftructed as to perfipire very flowly, and therefore to refift the effects of the molt parching air or furn Such is the nature of the cuticle that covers the leaves of aloes, and of all fucculent plants, more or lefs, that althougk they perfpire but very flowly, they abforb with great facility. Hence thefe plants are admirably adapted to thrive on diy funny rocks, or amid the molt arid fandy deierts of $A$ frica, where the rare and trivial fupplies of rain which fall to their lot during a great part of the year, prove fufficient for their fupport in confequence of their tardy perfiriation. It is truly worthy of remark, that this differcnce, in their powers of imbibing and giving out moiture, 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 thicknefs. Evergreens are found to perfire much lefs than other fhrubs, while the Ccrnus mafcula, or Comelian clerry, a plant with a thin dry leaf, wast

## LEAT.

found by Du Hamel to perfpire to the amount of twice its whole weight in 24 hours.--See Persphation of Plants.

The bef obfervations on the abforbing power of leaves, and its difference in different plants, have been made by Bonnet, and are recorded in his book entitled Recherches fur l'Ufage des Frailles. 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 fpecies with the under, fide applied to the water, he obferved in which fituation they continued longeft in health and vigour ; and alfo how far different fpecies differed from each other in this refpect. In general, herbaceous plants futained the longett 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 fpecies of Potumogeton, as well as the Zannichellia, the Chara, and all the fubmerfed Alya, they are entirely under water ; or whether, like the Njmphban, they float on its furface; appear in general to be very rapid; fuch plants, however juicy, drying with great rapidity wh $n$ taken into the air. They are, for the molt part, bighly vafcular, and, no doubt, have an equal faciity in imbibing and in giving ont water.

Although moit leaves are fo formed as to have decidedly an upper and an under furface, the fword-flaped plants (fee Ensates) are an exception. Their foliage is vertical, and has little or no upper furface, except where it embraces the ftem; what is analogons to the under fide of ordinary leaves, being in fact fo circumaltanced in thefe, as to conHitute their whole furface. Other leaves are fo cylindrical, that no difference of fides can be traced. In all thefe the abforbent veffels and the perfipiring ones mult be difperfed alike over the whole expanfion of the leaf; as they are over ftalks, and efpecially over the ftems of plants that have no leaves at all, in which neverthelefs all the known functions of leaves neceffarily take place. This latter is the cafe in the whole genus Stapelia, and in many fpecies of Catus, as well as in feveral rufh-like planits, and thofe fingular productions the Cufcuta and Cafyther.

There are, in a very few inftances, ftrange abersations of configuration in leaves, deftined to the accomplifhment of fome particular purpofe. Thus, thofe of the Dionach, (fee that article, ) bear an appendage like a rat-trap, the toothed lobes of which, when Itimulated, clofe upon each other, and imprifon any infect that may have happened to alight upon them. The leaves of the Sarracenica are tubular, and thofe of the Ncpenthes bear each a tubular appendage with a lid. Thefe are found for the molt 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 fuppofed of the Sarracizis, from the atmofphere. This water is the refort of infects, who mollly perifh in it, and the materials of their decompoling bodies are fuppofed to minilter to the health of the plant. The Drofere, found in our bogs, entrap infects by the vifcid and irratable hairs of their leaves, apparently for a timilar purpofe.

This leads us to conlider the effects of air and light upon vegetables, through the medium of their foliage, which, in this puint of view, is tranfeendently important.

Grew and Malpighi, independent of each other, but about the fame period, detected, in the leaves of plants, abumdance of velicles full of air, as alfo the fpiral-coated tubes or veffels of the ftems, confidered by their difcoverers,
as well as by fubfequent phyfiologifts till very lately, in the light of air-veffels likewife, becaufe, like the arteries of tho animal frame, they appeared, on diffection, to be empty, or at lcaft not occupied by the fap or juices of the plant: On the detection of thefe veficles, phyfologitts theoretically fuppored leaves to imbibe air, "which the fpiral vef. fels were believed to convey all through the plant, in order that it might act on the fap as it docs on the animal blood. 'The analogy thns underlloed was not correct, becaufe air' is conveyed no futher than the lungs of animals; but without this hypathefis no ufe could be found for the fuppofed longitudinal air-veffels." Now it is proved that thefe longitudinal fpiral-coated tubes do reaily tranfonit the fap from one part of the vegetable frame-to-ancthier, finally conveying it into the leaves, vihere it is acted upon by the air, either of the above-mentioned velicles, or of the atmufphere. The analogy with animal refpiration holds good, therefore, much more correctly than the authors of, the above hypothefis imagined. On this fubject we need not repeat what is faid under the article Circulation of the Sap.

Dr. Hales's experiments with the air-pump, to proye the tranfmifion of air through the vegetable body, are to ba regarded with caution, as merely fhewing that air will pervade their longitudinal vefficls, when a branch is cut, and its vital principle probably in fome degree injured ; at lealt when the natural movement of its fap is by no means going on, nor that fluid remaining in its natural fituation. Air is obtainct 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 perifh very foon in an exhaufted receiver. Hales rightly remarked, that air is not only taken in by plants very copioully along with their food, but alfo 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 perfpiring to a ftrongly imbibing itate." Such a difference between night and day feems merely to regard the watery abforption and perfpiration 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 fhare iu the refult. Nor did this efcape the lagacity of Hales, who, after concluding that "one great ufe of leaves is to perform in fome meature the fame office for the fupport of the vegetable life, that the lungs of animals do, for the fupport of the animal life; plants, very probably, drawing through their leaves fome part of their nourihment 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, refpecting leaves, principally elucidate their abforbing powers, proving them to be " furnifhed with a fyftem of cuticular abforbents, which carry fluids into their fap-veffels, fo, as to enable them, infonie degrie, to difpenfe with fupplies from the root." This philofopher has not improved upon the ideas of Hales, refpecting 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; till lefs of their effecting any change in 'its properties. He was not aware that the bubbles he oblerved clinging to leaves, whether dead or living, when placed under water, and expofed to a bright fun, were feparated, by the action of light, from the water itfelf; fo that he has no right to be conlidered as the difcoverer of the expiration of plants.

The great Dr. Priefley firlt pointed out a property in

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growing rigetables, 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 refpirable air. Dr. Ingenhoufz improved upon this important difcovery, by obferving light to be neceffary to thefe functions, remarking that in the dark leaves give out a bad or carbonic air, and that fruits and flowers almoft invariably give out the laft-mentioned kind of air, at all times, but efpecially in the dark. Aquatic or bor plants, as the Epilobium and Nympbea, were found by there 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 moll cales, performed very quickly. A vine-lcaf in an ounce phial of carbonic acid gas, that immediately extinguifhed a candle, being fet in the fun, without water, changed it to pure refpirable air in an hour and a half. Dr. Prieflley found fome of the bog-plants to alter even unmixed inflammable air, or hydrogen. Succulent leaves afford molt of the purified air in queltion, becaufe of the abundance of their cellular parenchymatous fub. Itance, in which the chemical operations of leaves are performed, and in which their green colour chielly refides. This colour therefore does not exilt in leaves never expofed to the light, in which confequently no fuch chemical operations ever take place. The fickly white obfervable in that part of celery falks, or of the fprouts of afparagus, indeed of all plants, which is under the furface of the ground, is entirely owing to the abfence of light; for when expofed to light fuch parts become green like the reft of the herbage. It is found that expoling plants to the ation of hydrogen gas will produce the fane green colour, even if they are kept in the dark.
Every perfon attentive to the growth of plants mult have obferved the conflant direction of the upper furface of their leaves towards the light. When the fituation of branches nailed to a wall is altered, and the pofition of their leaves dilturbed, the latter refume their natural poffure in a day or two, and the more fpeedily in proportion to the brightnefs of the weather. It has long been known that Jighta acts beneficially upon the upper furface of leaves, and hurffully upon their under fide; for if the latter be repeatedly turned to the light, or forcibly kept in fuch an unnatural pofition, the leaves grow fickly, black or difcoloured fpots appear about the veins at their backs, and the cuticle Pcalles off. Thus we have feen ths Magnstia grandiflora, whofe rigid leaves do not readily change their pofture, very materially injured, by nailing it to a wall in hot and bright weather. The under furface of its foliage became fpoited, ard the colour of the other fide fickly; the leaves fell prematurely, and the plant was long in recovering its health. One great ufe of footftalks to leaves appears to be to facilitate their turning to the light, and varying their pofition as the fun furfues his courfe; as may be feen in clover and other papilionaceous plants more efpecially. Leaves feparated from their parent branch, and fufpended delicatcly by a fine thread, turn to the light as effectually Is if in their matural fituations. This power, hovever, of turning to the light, is not equally obvious in all leaves. Such as are very mucli folded or plaited, necefiarily prefenting, on that account, about an equal portion of their furface to the fun in every pofition, are often lefs moveable; and this may account perhiaps for the infenfibility obferved by Bonnet in the mallow. Sword.flaped leaves are always vertical, and do not alter their poffition. Thofe of the paplilionaceous tribe are, as wee have already hinted, among the matt fenfible. Light feems, in many inflances, the fole
caufe of their expanfion, for when it is withdrawn, they fold together and droop as if dying ; fuch a ftate of relaxation being very elegartly, and indeed, as it appears, very correctly, termed by Linneus the fleep of plants, on which fubjećt he has left us a curious diftertation in lis Amocnitates Academice, v. 4. p. 333. He there juftly remarks that the general afpect of a lictd, a garden, or a hot-houfe, is wonderfully changed during a fummer's night in Sweden, fo as to puzzle the moft experienced butanitt, owing to a general alteration in the polture of the foliage of plante. Sime fold the two fides of the leaf together; others tarn their leaves upward, fo as to enclofe the flowers, which they thus thelter from 1.0 external dews that min he interfere with theis impregnation; and many prefs their foliage downwards, clofe to the $1 t e m$ or branch, whofe buds they thus perhaps protect from cold. Such movements evince a portion of that irritability, dependent on life, which is more ftrikingly difplayed in the fenfibility of fome leaves to the touch of any extraneous body. Several fpecies of ATimofa, called for that reafon fenfitive plants, as well as a few others of different genera, fold up tleir leaves when any cuncufion is given to the plant. If any of their leaflets be faken or injured, the irritation is communicated to the neighbouring ones, and thence, with accelerated velocity, to the reft, even to other leaves on the lame branch or root. The leares of the Hedyarum gyrais of Bengal are remarkable for a Spon:ancous movement, apparentiy independent of external itimulation. They are ternate, and their fmall lateral leaflets move frequentiy, but irregularly, up and down, inde. pendent of light, requiring only, for the performance of this action, a warm and ftill air. This, like all other movements of leaves, 15 mofl confpicuous in fuch as are young.

In confequence of the obfervations of Prieftley and Ingen. houfz, confirmed, variouny extended, and explained upors the principles of improved chemiltry by fucceeding philofophers, the effects of light, heat, and atmofpheric air upon leaves, and, where thefe are wanting, upon the green ftems of plants, are now, as far as concerns all vegetables in common, tolerably well underftood. It is agreed that in the day-time the parts in queftion imbibe from the atmo. fphere carbonic acid gas, which they decompofe, abforbing the carbon as matter of nourifhment, 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 feparated from that fluid. Air contaminated with this gas by the burning of a candle, or the brathing of animals, ferves therefore as food for vegetables, who in their tura purify it again, and render it ht for the fupport of animal lite, by the oxygen given out from their leaves under the influence of light. Hence arifes a mutual and effential dependerce of the animal and vegetable kingdoms on cach other, for the difcovery of which, one of the molt curious and beataiful in natural philofophy, we are prircipally indebted to Dr. Priefley, that great name from which far aticifm would gladly tear, if it could, even the laurels of fcience.

The abore view of the functions of leaves exactly coincides with Mr. Kright's theory of vegetation, of which we have given an outline in our article Cruculation of the $S a p$. That gentleman has proved, that rery little alburnum, or new wood, is fecreted when light is kept from the leaves. We are alfo thus enabled to underftand how effential oils may be produced, which, as well as fugar, are known to te compofed of oxygen, hydrogen, and carbon in different pro. portions. The various modifications of mucilage, detected an diftioguifhed in the vegetahle body by modern chemiftry, are perhaps, as more deperdant on the vital principle for

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their formation, more inexplicable by clemical laws. It is perhaps in vain to attempt to explain how any particular fecretion is elaborated. Still lefs can we comprehend how different tribes of plants, growince in the fane foil, even vegetating in the fane ditilled water, flowuld regularly produce, as far as the health of the individuals wader experiment will allow, their own peculiar fecretions, ever prefervang the molt effential qualities of their fecies in this refpect. How the nutritious $\oint_{\text {ap }}$, originally fimilar in thefe different plants, can be fo operated upon, by the very fame agents, in the this and tender ttructure of the different leaves, as to produce fubltances fo totally unlike each other as we meet with in plants, whence their various flavours and qualities originate; all this $\pm$ inexplicable in our prefent Itate of knowledge, thnugh tranfacted every moment before our eyes. The different fecretions in various organs of the fane individual vegetable body; the acrimony of the leaf, the bitter of the bark, the perfume of the bloffom, the fweetnefs and acidity of the fruit; all thefe are no lefs wonderful. We underlland euough indecd to conceive how the relt may ve accompifled, and may congratulate ourielves on being allowed ever a glimple of thofe mytteries of nature, which our finite powers are inadequate fully to comprchend.

Having faid fo much on the phyfology of leaves, it is negeflary to conlider them in another point of view, for the purpofes of fcientific botamy. In difcriminating the fpecies of plants a knowledge of the various forms of leaves is of the utmolt importance, nor are they entircly ufelefs in the difcrimination of natural tribes or orders. It is univerfal 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 oppofite, in others alternate; in fome genera evergreen, in others deciduous; but thefe later circumftances are liable to various exceptions. Trees and fhrubs of North America, and even thofe of Europe, generically related to them, have a general tendency to affume very brilliant colours in their foliage, as it verges towards decay. Grafles, on the other hand, are very uniform and conftant in their green colour, which is feldorn changeable. Everg:een leases are commonly darker coivured, though more thining than others, and will often thrive with a lefs proportion of light than is neceffary for other trees. The lower leaves of herbs that grow in lofty and windy ftations, are frequently much lefs divided than the upper coses, while the reverfe is the cafe with molt aquatic plants, whofe lower leaves, inmerfed in the water, are fometimes quite capillary, while the uppermoft are broad, and float on its furface; witnefs the Rananculus aquatilis, whofe white flowers bespangle our pouds in fummer. 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 atmofphere, caufes them to be the more eafily diflodged by autumnal florms, when their connection with the brauch or tem has already become gradually loofened by their approaching decay. See Deciduous, and Fall of the Leeaf.

Leaves are, in the firft place, to be confidered as to thenr fituation and pofition.

Folia rudicalia, radical leaves, fring from the root, as in the Primrofe and Cowflip; caulina, them-leaves, grow on the item, as in the White Lily; ramea, branch-leaves, if different from thofe of the main item, require to be diltinguilhed from them, as in Purple Cow-wheat, Melampyrum arvense.

Alterna, alternate leaves, fland folitarily on the ftem or branches, as in Willows and many common plants ; oppofila, oppofite ones are found in the Lilac, and many others equally common; $\sqrt{2} a r f a$, are fcattered without any order, 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 thofe of the Lily of the Valley ; terna, ftand three together, as in the fweet Verbcnatriphylla, and often in the Fuch/fa; quaterna, quina, fena, \&c. are when four, five, fix, or more, furround the ftem in a whorl, as in fome kinds of Heath; verticillata, whorled leaves, ufed without any reference to the number, expreffes this mode of growth, as exemplified in the Woodruff, Madder, and many plants of the fame as well as different families.

Fafciculata, tufted leaves, are feen in the Larch and Cedar; imbricata, lying like tiles upon a houfe, in the Common Ling; decufata, fland in pairs croffing each other, as in the Caper Spurge, Euphorbia Lathyris; diflicha, two-ranked, fpread in two directions, yet are not regularly oppofite at their origin, as in the Yew ; fecunda, are unilateral, leaning all toward one fide, as in the Solomon's Seal.

Alpreffa are clofely prefled to the ftem, as in fome kinds of Xeranthenum and Spurge, in which cafe the back of each leaf only is prefented to the light ; varticalia, thand perpendicularly, with both fides equally at right angles with the horizon, like the Lactuca Sariola, but fuch a cafe is rare, except in fivord-fhaped leaves; cretfa, are fuch as grow nearly upright, forming a very acute angle with the ftem; pateritia fpread more in the ufual manner ; borizonsalia, or patentiflima, fpread in the greatelt pofible 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; oliqua, are twitted, 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 Alftrame. ria pelegrina ; depreffa, are radical leaves preffed stofe to the ground, like the Hoary Plantain, Plantago media, or any fuecullent omes that are vertically flattened, in oppoition to zomprefla, fiattened laterally ; natantia, float on the furface of water'; denerfa, inmerfa, or fubmerfa, are plunged beneath it ; cmerfa are raifed above the water, others upon the fame plant beng funk below its furface.

The infertion of leaves means the mode in which they are connected with the parent plant.

Peliolata, ftand on footitalks (pectioli) either long or fhort, fimple or compound; peltata, have the footfalks inferted, not into the bafe as ufual, but into the middle of each leaf, like the arm of a man holding a flield, as in the Common Nafturtium or Troprolum; feffilia, feffile leaves, fpring immediately from the item, branch or root, without eny footlalk, of which examples are frequent; amplexicaultia, clafp the ftem with their more or lefs dilatec' bafe, being ufually alternate; connata, or connato-jerfoliata, are oppofite leaves, united at the bafe, fo that the flem runs through them; perfoliata, have the ftem running through them in any way whatfoever, as Bupleurum perfoliatum, called Thoroughowax, from suax to grow, in allution to this circumftance; vratinantia, are fuch as fheath the Item, or each other, with their bafe, which is exemplified in moft graffes, and many liliaceous plants that have no ftem ; equitantia, embrace each other with their compreffed bafe, while they fpread upwards in two ranks, of which the genus Iris affords many examples; dicuricatia, decurrent,

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run down the flem or branch in a leafy border or wing, as in many Thifles, and the Great Mullein; forifera, bear the flowers out of their cifk or margin, as in Rufous and Xylopbslla.

With regard to form, the firlt thing to be confidered is whether leaves are fimple (fimplicia) or compound (comppfita). Of the former kind are thofe of graffes, Orchifes and Lilies, which are not only fimple but undivided, white thofe of the Vine and Mallow are fimple, but lobed; the Hop bears fome leaves lobed, other's undivided, as does Laurus SuTJafras, and the Paper Mulberry. Compound leaves are obiervable in Rofes, Jafmine, and the Un belliferous tribe in general, and confilt of leaflets, or partial leaves, ( foliola, ) connected by a common ftalk, and falling off alorg with it. In compound leaves the footitalk is cuther fimple, as in the Jafmine and Rofe, or compound, as in Parfley, Hemlock, and Fumitory. "In fimple leaves the footitalk, if prefent, mult of courfe be fimple, while in compound ones it mult always be prefent, though nat always fubdivided."

The following are the principal forms of fimple leaves, confidering their outhize only.
Orbiculatum, as nearly a perfect circle as poffible, of which inftances are very rare.

Subrotundum, roundilh, is not uncommon.
Ovatum, the thape of an egs cut longitudinally, a very common form of leaves.
Obvatum, is the fame figure reverfed, the little end being downward.

Ellipiticum, oval, of an equal breadth at each end.
Oblongum, of an indeterminate oblong flape, three or four times longer than broad.

Spatulatum, roundifh, or obovate, with a long taper bale, like a furgeon's 〔patula.

Cureiforme, like a wedge, broad and abrupt at the extremity.

Laiceolatum, 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 pofible, fuch as the leaves of moft grafles, the various Species of Narcififus, the Rofemary, and many different plants. Linear-lanceolate leaves are of an intermediate fhape between this and the laft, or but flightly lanceolate, of which the gradations are numerous, often upon the fame plant.

Acerofum, needle-fhaped, linear and evergreen, mofly acute and rigid, almoft peculiar to the Fir and Juniper tribe. Such leaves have ufually a joint where they unite with the branch, at which they feparate from it when they fall.
Triangulare, having three prominent ang'es, of whatever meafurement or direction, as in Goofefoot, and fome leaves of Iry.

Quadrangulare, having four angles, as in the Liriodendrum or Thulip-tree, a very peculiar kind of leaf.

Quinquangulare, with five angles, like the Cyclamen, and Ivy.

Deltoides, deltoid, or trowel-fhaped, having three angles, of which the terminal one is much further from the bafe than the two lateral ones, as in Cbenopodiun Bonus-Henricus. Linnæus in lis Pbilofopbia Botanisa, p. 43, cites his fig. 58. of that work as an example of this leaf, which is a mittake, that figure being a reprefentation of the fucculent three-edged leaf, (fol. trigonum,) of Mefembryantbemum deltoides.

Rhombeum, rhomboid or diamond-haped, approaching to a fquare, though the fides are fearcely ever equal. This is feen in Trapa zatans, and the Stinking Goofefoot.

Reniforme, kidncy-flaped, a flort broad rounded figure, hollowed out at the bafe, as in A farabacca.
Cordatum, heart-fhaped, ovate hellowed out at the bafe, according to the vulgar idea of a heart ; a form very frequent in leaves.

Lunulatum. crefcent-fhaped, like' a half-moon, whether the points be directed backward, as in Sagittaria obtufifolia when its leaves are fhorter than ufual, or forward, as in Paffifora lunulata, Sm. Ic. Pict. t. I.

Sagithatum, arrow-Thaped, like Sagitharia farithifolia, and feveral fpecies of Sorrel, Rumex: In the Great White Bindweed, Convolvulus fepium, the polterior angles are abrupt or lopped.

Hafatum, halberd-flaped, triangular, hollowed out at the bafe and fides, the lower lobes fpreading horizontally, at right angles with the foothalk, as in Sheep's Sorrel, and the upper leaves of the Woody Nightflade, Solanum Dul. camara.

Panduriforme, fiddte-fhaped, oblong, blunt and dilated at each end, hollowed out at each fide, of which remarkable figure the Fiddle Dock is a ltriking, and almoff fingular example.

Runcinatum, runcinate or lion-toothed, that is re-uncinatum, hooked backward, being cut into many tranfverfe acute fegments, whofe points are diretted backwards, like the Dandelion.

Lyratum, lyrate, fo named in allufion to the antique lyre, but reve:fed. This leaf has a broad rounded extremity, with feveral tranfverfe rounded ferments, gradually leflening towards its bafe, as in Eryfinum Barbarea. It is molt frequent in the Cruciform and Compound clafles, and by en uccafional deep feparation of the fegments, oftea becomes a compound or lyrato-pinnate leaf.
Fiffim, cloven or fplit, when the margins of the fifures and liegments are ftraight, not rounded, as in the Ginkgo or Maidenhair-tree. Bifidun, trijfdum, mulfifidum, \&ic. exprefs the number of the fegments, but thefe terms are alfo ufed with lefs limitation, to indicate the number of divifions, of whatever fhape, when the latter circumfance does not come under confideration.
Lobatum, lobed, when the margins of the fegments are rounded, as is molt generally the cafe; witnefs the Hepatica. Dilloum, trilobum, \&cc. indicate the number of the lobes.
Sinuatum, finuated, cut along the margin into deep, rounded, or wide openings, like Statice finuata, Mefembryanthemuns pinnatifidum, Curt. Mag. t. 67 , and the Common Oak.
Partitum, deeply divided, almoft to the bafe, like the Mulk Mallow. Bipartitum, tripartitum, multipartitum, exprefs the number of divifions.

Laciniatum, laciniated, cut, or as it were torn, into numerous irregular portions, which may be feen in various fpecies of Senecio, denominated on that account Ragwort.
Incijum and $D i \sqrt{f}$ chum, cut or jagged, are nearly fynonymous with the laft, but exprefs a lefs deep divilion of the whole leaf.
Palmatum, palmate or hand-fhaped, cut into fcreral oblong, rearly equal or uniform fegments, about half way, or rather more, towards the bafe, leaving an entire fpace there, like the palm of the hand, as in the common Blue Paffionflower, whofe leaves however are frequently fill mure deeply divided, and the Fig.
Pinnatifdum, pinnatifid, or wing-cleft, cut eranfverfely into feveral oblong parallel fegments, like feveral \{pecies of Thifte, Carduus, and on a fmallier fcale, though more deefly,

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deeply, Lepidium petraum and alpinum; as well as Coronopus didymaz of 11. Brit.

Bipinnatifidum, doubly fo divided, as in the Long Roughheaded Poppy, Papaver Arsemone, and Eriocalia major; fee that article.

Pectinctum, pectinate, a fine and elegant fort of pinnatifid leaf, whofe fegments are fo narrow and fo regularly parallel, that they refemble the teeth of a comb, exemplified in the Water Violet, Hortomin paluffris.

Incquale, unequal, fometimes called oblique, is when the two halves of a leaf are manifetly unequal in dimentions, efpecially at the bafe, where they are not at all parallel. This is the cafe with moft fpecies of Eucalyphus and Begonia, but it is hardly obfervable in any Britifh plants, except in a fmall degree.
'Interrum, undivided, expreffes a leaf or leaflet being deftitute of all fegment, divifion or lobe, without any reference to its margin, whether toothed or not.

The various terminations of leaves are thus diftinguifhed.
Folium truncatum, an abrupt leaf, has the extremity cut off, as it were, tranfverfely, by a ftraight line, as the Tuliptree, Liriodendruna tulipificra.

Pramorfum, bitten, or jagged-pointed, is blunt with various irregular notches, a very unufual termination, but charactcriftic of Dr. Swartz's genus Aërides, a tribe of Indian Orchidere. Hibifcus pramorfus, Linn. Suppl. has a more dilated leaf with a fimilar termination.

Retufim, retufe, blunt with a broad fhallow notch, like the Mountain Sorrel, Rumex digynus.

Emarginatum, emarginate or nicked, having a fmall acute notch at the fummit, which is rot uncommon.

Obtuf um, blunt, terminating in a fegment of a circle, like the Primrofe leaf, and many others.

Acutum, fharp, ending with an acute angle, as is fill more ufual.

Acuminatum, pointed, having a taper point, like many graffes, and various other plants.
Obtufum cum acunine, blunt with a fmall point, like the Sea Lavender, Statice Limonium.

Mutronatum, or Cu/pidatum, fharp-pointed, tipped with a rigid or pungent fpine, like the Thille tribe.
Tridentatum, three-toothed, when there are three terminal, nearly equal, points.
Triculpidatam expreffes the fame thing.
Cirrofum, cirrofe, tipped with a tendril, as in Gloriofa and Flajellaria, two Indian plants.

The different margins of leaves are defined as follows, 'and are very important to be well underfond, and correctly applied, in forming fpeciñc characters of plants.

Folium intezerrimum, an entire leaf, is dellitute of all marginal teeth, notches or incifions, as in the Orchis and Lily tribes. This term, aliuding folely to the margin, has no reference to, or comparifon with, integrum, which concerns the general figure, or dilk, of the leaf.

Spinofum, fpinous, befet with prickles, though otherwife -perhaps entire, as in Thiltles, and Eryngos. The veins and ribs are fuinous in fome kinds of Solanum, and many Rofes and Brambles.

Inerme, unarmed, is oppofed to fpinous.
Glasiduly fum, glandular, bordered with pores that exude fome peculiar fluid, as in Salix pentandra, the Bay-leaved Willw, and fome cthers.

Cilictun, fringed, bordered with foft parallel hairs, as in Rliododendrumn bivjutum.

Ciariluginemze, cartilaginous, having a hard or horny edge, like feveral fpecies of Saxifrage.

Dintatium, toothed, befet with directly projecting teeth,
of its own fubflance, as in fome fpecies of Plantain and Hawkweed. .

Denticulatum, finely toothed, is much more ufual than the laft.

Serratum, ferrated, having fharp teeth pointing forward, like thofe of a faw, either in a fimple row, like the Nettle, or with fmaller intermediate ferratures, as in the Strawberry tree, (Arbutus Unedo,) various Rofes, and others. Such leaves are called duplicato-ferrata, doubly ferrated.

Serrulatum, minutely ferrated, is ufed when the teeth are very fine, even fo minute perhaps as to be fcarcely perceptible 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 Suxifrages, fome of which are fharply crenate. The two Britifh fpecies of Salvia are examples of doubly crenate leaves.

Erofum, jagged, irregularly cut or notched, like fome fpecies of Senecio or Ragwort.

Repandum, wavy, bordered with fmall projections ard fhallow fegments of circles alternately, as in Fringed Waterlily, Menyanthes nypbroides.

Revolutum, revolute, turned or rolled backwards, as in Rofemary. As this term always regards the margin only, in modern botanical phrafeology, it is needlefs to fay mare gine revolutum.

Involutum, involute, is the reverfe of the laft, as in Butterwort (Pinguicula).

Conduplicatum, folded, when the margins are clapped flatly together, as in Rofcoea purpurea, Sm. Exot. Bot. t. 108, and the bafes of fword-fhaped leaves.

Terms defcriptive of the furfaces of leaves, no lefs requifite to be clearly underftood than the former, are as follows.

Folium glabrum, a fmooth leaf, is ufed in contradiftinction to all kinds of hairinefs or pubefcence.

Lave, fmooth and even, is oppofed to all kinds of roughnefs 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, polifhed, fmooth and fhining, like Laurel.
Vifcidum, vifcid, exuding a clammy juice, as in Butterwort.
$V$ errutofum, warty, befprinkled with hard tubercles, like * the Pearly Aloe, or fome fpecies of Echium; the warts of the latter moflly bearing rigid brittes.

Papillofum, papillary, covered with fofter tubercles, like the Ice-plant.

Scabrum, rough to the touch, from any little rigid inequalities, oppofed to lave.

A/per, is a greater degree of the laft, of which one of the moft eminent examples is Symphytum a/perrinum, Sims in Curt. Mag. t. 929.

Hi/pidum, briftly, befet with rigid or pungent brifles, like the Borage.

Urens, ftinging, when each briftle difcharges a venomous irritating fluid, as in the Nettle; fee Pilus under the article Fulcra.
Hirtum, or Pilofun, hairy, clothed with foft hairs.
Tomentofum, downy, very foft to the touch, as in the Marfh Mallow, and others of that tribe.

Villo fum, fhargy, clothed or befprinkled with long fhaggy hairs, like Hiefacium villofum, and others.

Lanatum, woolly, covered with denfe, entangled, often branched hairs, as in feveral fpecies of Mullein (Verbafcum). Incanum, hoary, whether arifing from clofe filky depreffed hairs, as in Wormwood, and the White-Willow, or

## LEAF.

from a fealy kind of mealinefe, as in Atriplex, and fome fpe. cies of Alyfum.

Glaucum, glaucous, clothed with a fine mealinefs, of a fea-green colour, which eatily rubs off, as in the Cabbage, the $C$ btora, and many others.

Maculatum, fpotted, befprinkled with fpots or ftains of a different colour from the prevailing green of the leaf. In Lamium maculatum thefe fpots are white, in Hypocharis machlata they are of a dark purple.

Coloratum, coloured, is ufed when a leaf, or any part thereof, is of any other colour than green, as in Amaranthus tricolor.

Punalatum, dotted, cither fuperficially, as in Rhododendrum funtatum, Andr. Repof. t. 36 , or with pellucid cells filled with an entential oil, like Hypericum perforatum, and the whole natural order of Juffieu's Aturantia.

Rurooum, rugged, having the veins tighter than the intermediate fpaces, fo that the latter become tumid, as in the Garden Clary, and many other fpecies of Salvia.

Ballutum, bliftery, a more remarkable degree of the laft, frequent in the Garden Cabbage.

- Plicatum, plaited, when the difk of the leaf, efpecially towards the margin, is acutely folded up and down, as in Mallows, and Ladies' Mantle.

Undulatum, undulated, when the dik near the margin is waved obturely 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.

Crifpun, curled, when the border is fo much more dilated than the dik, that it neceffarily becomes curled and twifted, which is the cafe with the Curled Mallow, and fome varieties of Mint, for this mode of growth is juftly fufpected by Linnzus, to be but a variety, or preternatural luxuriance.

Concavum, hollow, depreffed in the centre, owing to a tightnefs in fome part of the circumference, as in Cyamus Neiumbo.

Canaliculatun, channelled, having a longitudinal depreffion, like feveral fpecies of Narcifus.
$V_{\text {enffum, }}$ veiny, when the veliels by which the fiuids are conveyed through the leaf, are branched, fubdivided, and more or lefs prominent, frequently forming an elegant network, in which cafe the leaf is faid to be reticulated, either on one or both its furfaces.

Nervofum, or Coftutum, (fee the latter article,) ribbed, when the veffels extend in fimple lines from the bafe to the point, or towards it. The greater clufters of veffels are generally called nervi or coffo, nerves or ribs, the fmaller vena, veins, whether branched or fimple.

Avenium, veinlefs, and En.rve, riblefs, are oppofed to the lalt-mentioned terms.
Trintrve, three-ribbed, is a leaf with three great or principal ribs, all allke diftinct and feparate from the very bafe, as well as remote from the margin, like the beautiful Blakea zrinergis.

Bafi trinerve, three-ribbed at the bafe, has the bafe cut away, as it were, clofe up to the lateral ribs, as in the Burdock, and Great Annual Sunflower.
Triplinerve, triply-ribbed, is when the fide-ribs branch off from the middle one, at fome diftance above the bafe, as in Laurus Cinnamomuns and Camphora, and many fpecies of Sunflower. The fine and ample South Amcrican genus Melaftoma, is remarkable for the confpicuous ribs of its leaves, which are ufually five, feven, or more, the lateral ones either branching off from the central, or all of them diftinct to the bafe.

Nudum, naked, implies that a leaf is ceffitute of all kinds of clothing or hairinefs, as in the Orchis.

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Variegntum, variegated, is a fort of varicty or difeale, in which it differs from coloratum, the latter being natural, and proper to the fpecies. Variegation of leaves confifts in white or yellow irregular blotches, as in the Elder, Roundleaved Mint, Holly, ard Aucuba japonica. Such plants are wfually more tender, and difficult of increafe, than when in their natural ftate, as gardeners experience in Gc. raniums.
The following terms exprefs the fublance, peculiar configuration, or fume other circumftance relating to leaves, not included in the foregoing lifts.

Fclium feres, or cylindraccum, cylindrical, is feen in Conchium gibbofun, and fome others of that getus. Sce Conchilm.
Semicylindraceum, femicylindrical, flat on one fide, which is generally the upper, like Salfola fruticofa, and Chenopodium maritimum.

Subulatum, awl-fhaped, tapering from the bafe to the point, like Sa'fola Kali.
Tivulofum, tubular, hollow within, as in the Onion, and fome other fpecies of Allium, forre Rufhes, \&c. T'he tube is double in Labelia Dorimanna.

Carnofum, flefhy, of a thick pulpy fubftance, as in all thofe called fucculen: plants, belonging moftly to the genera of Sedum. Crafula, Aloe, Mrefembraanthcmum, \&c. Of the fingular power in fuch leaves of refifting drought, we have already fooken. When bruifed they foon dry or corrupt.

Giblum, gibbous, fwelling on one fide or both, as in Aloe retufa.

Compreffim, compreffed, flattened iaterally.
$D_{\text {epref }}$ Jum, deprefied, flattened vertically, as already mentioned. Various kinds of Mefembryanthcmum exemplify thefe.

Carinatum, keeled, when the back is longitudinally prominent, like the keel of a boat.

Enfiforme, fivord-fhaped, compreffed, 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 laft.
Acinaciforme, fcimitar-flaped, and Dolabriforme, hatchetfhaped, are two kinds of fucculent leaves appropriated to two fpecies of Mefembryanthomum, that bear the fame names.
Trigonum, three-edged, has three longitudinal fides ard as many angles, like Mefembryanthemum deltoides, Linn. Phil. Bot. f. 58.
Triquetrum differs from the laft only in being more precifely applied to a three-fided awl-fhaped leaf.
Tetragonum, four-edged, has four prominent angles, as in Iris fuberofa.
Lingulctum, tongue-fhaped, is a thick oblong blunt figure, generally cartilaginous at the edges, as in Saxifraga Cotyledon, and fome of its near relations.

Membranaceunt, membranous, expreffes a thin pliable fort of leaf, the reverfe of fucculent.
Coriacemm, leathery, is thick and tough, without being pulpy or iucculent, like Magnolia grandiflora, Aucuba, Laurel, and many others.

Sempervirens, cevergreen, permanent through one, two, or more winters, fo that the branches are never itripped.
Deciduum, deciduous, (fee that artic'e, ) fuch as falls off at the approach of winter, as in moft trees and flrubs of cold climates.
Alienatum, alienated, when the firf 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 Mimo $\int$ se of New Holland.

Cucullatum, hooded, when the edges meet in the lower 3 L
part
part and expand in the upper, forming a fleath or hood, of which the genus Sarracenia is a curious example. The Common Lime, Tiflizeuropad, is liable to a varicty 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 fuppofed 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.

Appendiculalum, furnifhed with an appendage, or additional organ, for fome purpofe not effential to a leaf, as the irritable lobes at the end of the foliage of Dionaa mufripula; and the pouch with a lid, upon that of $N_{\text {teperthes difillatoria; }}$ of both which we have already treated. Allrovanda and Utricularia bear numerous bladders on their leaves under water, which feem to fecrete air for the purpofe of floating the plants, elpecially perhaps at their flowering feafon.

Foliz comispfita, compound leaves, confitt of two or any Erexter number of partial leaves, connected by a common foottlalk, whether finple or branched. Such partial leaves are termed folizla, leaffets.

Folium articulatum, a jointed leaf, confilts of one leaflet, or pair of leaflets, growing out of the fummit of another, with a fort of joint, as in Fagara tragodes.

Digitatum, fingered or digitate, has feveral leafets at the top of one common ftalk, as in many Potentille.

Binatum, binate, confitts of a pair of leaflets only on one footltalk, as in Zygophyllum, fome Minofe, the Great Everlafting Pea, and other feccies of Latbyrus.

Ternatum, ternate, has three leaflets, like the Trefoil and Strawberry.

Quinatum, quinate, has five.
$\widetilde{P}_{\text {innatum, }}$ pinuate, a very common kind of leaf, is formed of feveral leaflets, ranged laterally aiong one foottlalk, either with or without partial ftalks, and in an oppofite or

- alternate manner. There is ufually a terminal leaflet, as in Rofes, Jafmine, and Elder, which mode of growth is called foliuns pinnatum cum impari, and is that always undertood, when nothing is particularized; abrupte pinnatum means that there is no fuch terminal or odd leaflet. Sometimes its place is fupplied by a tendril, as in Veiches and Peas, and fuch a leaf is termed pinnatum cirrofiun. Interrupte pinnatum, interruptedly pinnate, is when the principal leaflets are ranged alternately with one or more intermediate feries of fmaller ones, as in our Englifh Spirax, and Potentilla anferina. Articulate, juintedly, is when there are apparent joints in the common footitalk, as in IV einmannia pimnata. In the Japanefe flurub Nandina domeflica the leaflets all feparate by a joint at their bafe, very foon after the leaf is gathered. Decurfioc̀, decurrently, is when the leaflets run down the footfalk at their bafe, like Eryngium campefire. Lyrato, in a lyrate manner, has the terminal leaflet largeft, the reft graduaily fmaller, often with intermediate leaflets, as in Germ, and the Turnip. This and the true lyrate leaf often vary iuto each other, in the fame plant or fpecies. Verticillato, in a whorled manner, has the leafers cut into fine divaricated Jegments, embracing the footltalk, of which the curious Sium verticillatum, Fl. Brit. is an inftance.

Auriculatum, an auricled leaf, bears a pair of leaflets at its bafe, that often indeed unite with it, as in the Diffacus $p_{i-}$ lofus, and Salvia trilcba. Hedyfarum gyrans, the Moving Plant, mentioned above, has properly an auricled leaf, rather than a ternate one, the auricles being what move up and down fpontaneoufly.

Conjugatun, conjugate or yoked, confints of one pair of leaflets, and is much the fame as binutum.' Bijurum, trijugum, quadrijugum, multijusum, exprefs particular numbers of pairs
of leaflets, as is fometimes neceffary in the fpecific characters of Mimofe.

Pedatum, pedate or foot-like, is in the firf inftance ternate, but the two lateral leaflets are compounded in their fore part, which may be feen in Helleborus fatidus and $H_{\text {。 }}$ niger. "There is an afinity between a pedate leaf, and thofe fimple ones which are three-ribbed at the bafe.:'

The different degrees in which leaves are compounded are thus diftinguifhed, without any reference to the mode.

Folium compofitum is a fimply compound leaf, as in Rofes.
Decompgitum, doubly compound, is exemplified in the Gout-wced (AEgopodium), and many other umbeliferous plants.

Supradecompofitum, more than twice compounded, is feen in fome cominon umbelliferous plants, as the Hemlock, and in many AImofa.

The following terms exprefs not only the degree but the mode.

Bigeminatum, twice paired, and Tergeminatum, thrice paired, are found in fome Miniffa.
Biternatum, twice ternate, is feen in AEsopodium, and Triternatum, thrice ternate, in Frmaria lutea.

Bipinnaturn, doubly pinnate, Tripiznatum, triply pinnate, are found in many exotic leguminons plants.

Some botanifts, amon, It whom Forfkall feems to have taken the lead, ufe the word lamina for the expanded part of a leaf, that is, for the leaf itfelf, fo that the term is entirely fuperfluous, and is befides appropriated to the border of the petals in a polypetalous corolla. (See Lamina.) What is not le fis footitalk (pectiolus), the part which ufually fupports the leaf, and whofe different kinds will be explained under the article Petiolus. Another appendage to leaves, but not always prefent, any more than the footitalk, is the Stipula. See Fulcrum and Stipula.

In the ufe of the various terms above explained, it is often found neceffary to combine two of them; in order either to exprefs fome intermediate figure, or to provide. for that variety or mutability of fhape, 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-lancolatum implies a dilatation about the middle. Or fuch compound terms may exprefs, that the foliage, generally lanceolate, occafionally verges towards either of thofe 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 Mimofe; whereas their meaning is conjugata, or digitata, in the firft inftance, and pinnata as regarding the fecondary divifons. Sub is commodioufly prefixed to many terms, when our application of them is doubtful, or not precife, $2 s$ fubbotundum, roundifh, fubfyflik, nearly feffile; but it fhould be fparingly ufed. It too often indicates a want of decifion or perfpicuity in the writer, rather than any uncertainty in his fubject. An acute oblerver can generally feize what is effential, in parts that are the leaft variable, in each paricular tribe; paffing 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 wliole, the moft commodious Specific diftinctio :s, as being obvious, molt generally prefent, and independent of the parts of fructification, from which the generic characters are taken. In few cales are the leaves of any gerius fo uniform or fimilar in all the fpecies, as not to exhibit abundance of clear fpecific differences, efpecially when their ltipulas and footllalks are taken likewife into conlideration.

The Leaves of Plants have, in one inflance only, as far as we know, been reforted to for the purfofe of forming

## LE $\Lambda$

## L. E A

a [yftem of botanical arrangement. The celebrated Dr. Sauvages of Montpellicr publithed, in 1751, a Alethodus Foliorum, or an arrangement of the wild as well as garden plants about Montpellier, according to their foliage. It is preceded by an epittle to Limaxus in French, and an introduction in the fame language. His orders are eleven: Aphylliz, Cajpititia, Angufifolia, Latifolie, Adverfifolia, Verticillatu, Digitate, Palmate, Pinnate, Deccmpjfita, and Laciriate. But they offer, in many inftances, 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 fyltem was ever expected to be prevalent ; but if fo, the author, truly able and excellent in other departments of fcience, and even of fyltematic arrangement, has, in this cafe, bcen totally difappointed.

Leaf, in Agriculture, fuch parts of trees and fhrubs as are annually thed 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 aug. menting the manure-heaps of the farmer. And it is advifed by Mr. Young, in his Calevdar, that, in wooded counties, all the leaves that can be had at little expence fhould be raked up in October, and carted to the yards and flanding folds, for littering and making them into dung: he does "it," he fays, "at three-pence per one-horfe cart-load. They do not rot eafily, but that is," he thinks, "no objection to them ; they are a fponge to be faturated with urine, and if not touched previoufly to carting on the land, will convey to the field much of what might otherwife be loft; and they are extremely ufeful in aiding the main object of bedding the yards" in the autumn and winter feafon; and of courfe fave ftraw where that article is fcarce.

Leaf, in Gardening. Leaves are of great ufe in the garden where they can be collected in proper fupplies for mixing in hot-beds and other preparations, where gentle heat is required. They arc, likewife, beneficial as light coverings againtt frolt and fevere feafons in many cales. See Leaf, in Botany.

Leaf-eared, in Rural Economy, a provincial term applied to horfes when their ears are low and badly placed.

Leaf, Indian, in Botany. See Tamalapatra.
Leaf, Water. See Hydropiivlluar.
Leas is alfo applied to the finelt and moft 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 thofe of the reft of the plant, the former are called by botanits petala, the latter folia.

Leaves, in Arclitecture, are an ornament of the Corinthian capital, and thence borrowed into the Compofite; confirting in the reprefentation of a double row of leaves cosering the vafe, tympanum, or neck of the column.

Thefe leaves are ufually formed in imitation of thofe of the acanthus; fometimes of thofe of olive, and fometimes of laurel.

The leaves are divided; each making three ranges of leffer, and are bent at top one-third of their height.

Leif-gold. See Gold-leaf.
Leaves, in clocks and watches, are ufed for the notches of their pinions.

## Leaf-filver. See Silver.

LEAGUE, an extent of ground, confidered lengthwife; ferving to meafure the dittances of one place from another; and containing more or lefs geometrical paces, according to the different ufages and cuftoms of countries.

The word comes from leuca, or leuga, an ancient Gaulifi word, for an itinerary meafure, and adopted in that fenfe by the Romans. Some derive the word leuca from neuvo, subite ; becaufe the Gauls, in imitation of the Romans, marked the fpaces and diftances of their roads with white ftoncs. The Gallic leuca was $=1 \frac{1}{2}$ Roman mile $=$ 2415,522 yards.
A fea-league is ufually reckoned 3000 geometrical paces, or three Englifh miles; the large leagues of France arc ufually 3000 , and in fome places 3500 paces; the mean or common league is 2500 paces, and the little league 2000 . Chorier obferves, that the ancient Gaulifh leagues were but 1500 paces; and the modern French league is $=2500$ toifes $=5328,75$. Englifh yards. The term licue, or league, is applied in different parts of France to very dif-
ferent ditances. The aftron ferent ditances. The aftronomical league of 25 to a degree meafures 486 , Englifh yards. The legal lieues, of two French miles, by which the highways were meafured, contain each 4263 Englifh yards. The marine leaguc of 20 to a degree meafures 6o8ı Englifh yards.

The Spaninh leagues are larger than the Frerch, 17 Spanifh leagues making a degree, or 20 French leagues, or $69 \frac{1}{2}$ Englifh fatute miles. The league of Spain is $=$ four an. cient Roman miles $=6441,392$ yards. The large league of Spain is = five ancient Roman miles $=8051,74$ Eng. lifh yards. On roads made fince 1766 , the diftances are laid down at the rate of Sooo varas to the league; that is, 7416 Englifh Yards; fo that five fuch leagues $=21$ Englih miles nearly. But the juridical league is 5000 varas, or 4635 Englifh yards; fo that eight of thefe are equal to 21 Englinh 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 $=9662,0886$ Enylifh yards. The mile or league of Germany is $=200$ Rhenifh yards $=$ $\$_{239}$, 846 Englifh yards.

The Perfian leagues are nearly the fame with the Spanifh; that is, each is equivalent to four Italian miles; which come nearly to what Herodotus mentions of the parafanga, an ancient meafure among the Perfians, containing thirty Itadia; eight of which, according to Strabo, make a miles.

The Perfians mark their leagues by trees, as the ancient Romans did by ftones, lapides; for which reafon they are alfo called agag, a Turkih word fignifying a tree. In Japan, the league contifts of 1800 fathoms. Thefe are all ditinguifhed by little hillocks, raifed on purpofe by the road-fide. See the leagues of molt countries reduced to the Roman foot, under Mile. See alfo Measure.

League alfo denotes an alliance or a confederacy between princes and Itates for their mutual aid, either in attacking fome common enemy, or in defending themfelves. The word comes from liga; which, in the corrupt Latin, was ufed for a confederacy: "Qua quis cum alio ligatur."
There have been feveral holy leagues entered into by the Chrittians, againit the Saracens and Infidels; called alfo crufados, or croijades.
The Leagae, by way of eminence, denctes that famons one on foot in France, from the year 1576 to 1593. Its intent was to prevent the fucceffion 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 deftruction, not only of the Huguenots, but alfo of the minitry. The Spanijh

## LEA

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 Calvinifm, without any alteration of the government.

League, in Grography. See Grisons.
League of God's Houfe. Sce Gon's Houfe.
League, Grey. See Grey League.
League of the Ten Jurifdiztions, one of the three leagnes into which the Grifons are diltributed. 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 compofe it; but as on its firlt union it was formed of ten only, the original appellation is itill retained, although one of the jurifdictions has been fince that period divided into two. This territory was formerly under the dominion of the Vats, whofe authority was limited, as the people poffeffed very confiderable privileges. $Q_{B}$ the death of Donatus, the laft baron, the count of Toggerburg, who married his eldeft daughter, fucceeded to lis poffeffous; and Frederic, one of his defcendants, dying in 1436, without ilfue, the communities united, formed an offentive and defenfive alliance, and erected themfelves into a league. After fome vicifitudes, the communities became free, and their independence was folemnly ratified by the emperor Ferdinand III., foon after the peace of Weltphatia. For further particulars, fee Grisoss.
League, Solemn. See Covevant
LEAK, in Sca Language, is a chink or breach in the decks, fides, or bottom of a fhip, through which the water comes in. A fhip is faid to /pring a leak when fhe begins to leak, or let in the water.
The manner of ftopping 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 fheetlead on the place. See Cavliking, and Fothering.

Seamen fometimes ftop a leak by thrulting a piece of falt beef into it. The fea-wate:, fays Mr. Boyle, being frefher than the brine imbibed by the beef, penetrates into its body, and caufes it to fiveli fo as to bear ftrongly againtt the edges of the broken plank, and thereby tops the influx of the water. Works Abr. vol. i. P. ${ }^{4} 47^{\circ}$

A ready way to find a leak in a hip, is to apply the narrow end of a fpeaking trumpet to the ear, and the other to the fide of the fhip where the leak is fuppofed to be; then the noife of the water iffuing in at the leak will be heard ditinctly, whereby it may be difcovered. See Philof. Tranf. No. 201.

LEAKAGE, the ftate of a veffel that leaks; that is, lets water, or other liquid, ooze in or out.

Leakage alfo denotes an allowance of three barrels in thirty-fix, both of ftrong beer or table beer and ale, and after that rate for any greater or lefs quantity, out of the excife, 43 Geo. III. c. 69 . f. 12. The faid allowance to the common brewer of three upon every thirtv-fix barrels of beer or ale, fhall be in full compenfation for all waite or other loffes whatfoever. f. I3.

LEAKE, Joun, M. I)., in Biography, was born of Scottifh parents in Cumberland, and received his cducation at the grammar-fchool at Bihop-Auckland. This being tinifhed, he fet off for London, intending to engage in the military profeffion: but finding fome promifes, with which he had been flattered, were not likely foon to be realized, he curned his attention to medicine. After attending the hof. pitals, and being admitted a member of the corporation of furgeons, an opportunity prefented itfelf of improving himFelf in foreign fchools; he embarked for Libon, and afterwards vifited Italy. On his return, he eftablifhed himfelf as

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a furgeon and accoucheur in the neighbourhood of Piceadilly; and about that time publifhed "A Differtation on the Pro* perties 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 Phyficians, and removed to Craven-ftreet, where he began to lecture, as well as continued to practife, the obltetric art. In 1705, he purchafed a piece of ground on a bui'ding leafe, and afterwards publified the plan for the inftitution of the Weftminfter Lying-in-Hofpital: and as foon as the building was raifed, he voluntarily, and without any confideraticn, affigned over to the governors all his right on the premiles, in favour of the ho!pital. He enjoyed a confiderable fhare of reputation and practice as an accoucheur, and as a lecturer; and was efteemed a polite and accomplifhed man. He added nothing, however, in the way of improvement, to his profeffion, and his writings are not characterized by any extraordinary acutenefs, or depth of refearch; but are plain, correct, and practical. He was attacked, in the fummer of 1792 , with a diforder of the chicft, with which he had been previotify affected, and was found dead in his bed on the eighth of Auguft of that year. He publifhed, in 1773, a volume of "Practical Obfervations on Child-bed F ever;" and, in 1774, "A Lecture introductory to the Theory and Practice of Midwifery, including the Hiftory, Nature, and Tendency of that Science, Scc." This was afterwards confiderably altered and enlarged, and publifhed in two volumes, under the title of "Medical Inftructions to wards the Prevention and Cure of various Difeafes incident to Women, \&c." The work pafied through feven or eight editions, and was tranflated irto the French and German languages. In the beginning of 1793 , a thort time before his death, he publifhed "A practical Efiay on the Difeafes of the Vifcera, particularly thofe of the Stomach and Bowels." Hutchinfon Biog. Med.

Leake, Ricianid, was born at Harwich in the year 162g, and was bred to the fea-fervice. At the reforation he was made maRer-gunner of the Princefs, a frigate of fifty guns ; and in the firlt Dutch war ditinguinhed himfelf by his ncill and bravery in two very extraordinary actions, in one againft fifteen fail of Dutch men of war, and another in 1667, againt two Danifh fhips 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 firlt rate man of war. In 1673, he was engaged, with his two fons Henry and John, in the battle againt Van Tromp, when the fhip had all her mafts fhot away, nearly four hundred men killed and difabled, and moft of her upper tier of guns difmounted. As fhe lay like a wreck, a Dutch man of war and two fire-flips came down upon her, and captain Rooke, afterwards fir George, concciving it impoffible to defend her, defired the men to fave their lives, and ftrike the colours. Mr. Leake hearing this, ordered the lieutenant off the quarter-deck, and took the command, faying "the Royal Prince flall never be given up to the enemy, while I am alive to defend her." The undaunted fpirit of the brave gunner infpired the fmall refidue of the fhip's company with refolution, they returned to the fight, and, under the direction of this valiant gunner and his two fons, funk both the fire-fhips, and obliged the man of war to theer 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 eldeft fon Henry, who was killed by his fide. Mr. Leake, in confequence of his great merit, was made, in 1677 , maftergunner of England, and flore-keeper of the ordnance at Woolwich. He invented, among other things, the cuthee-

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piece, and contrived a new method of firing a mortar. He died in 1686. He had a furprifing genius for all inventions re'ating to guanery, and alfo in the compofition of fireworks. Heleft a fon,

Leake, Johis, who was but fixteen years of age when he was engaged in the battle juft referred to, and in which he took a confpicuous part. He was Mortly after made captain, and performed many prodigies of valour, and, among others, he executed a defperate attempt of convoying fome viturallers into Londonderry, which obliged the enemy to raife the fiege: he was alfo at the battle of La Hogue. In 1702, being commodore of a fquadron, be deftroyed the French trade and fettlements at Newfoundland, and rettored the Englifh to the poffeffion of the whole inland. On his retura 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 fortrefs of Gibraltar from the combined attacks of France and Spain, and was engaged in the reduction of Barcelona. In the courfe of the following year he relieved that fame city, when it was reduced to the lalt extremity, and obliged king Phlip 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 ifland of Majorca. On his return home, he was prefented by prince George of Denmark with a valuable diamond ring, worth $400 \%$., and from the queen he received $1000 \%$ as a reward of his important fervices. On the death of admiral fir Cloudefly Shorel, in 1707 , he was made admiral of the white, and commander-in-chief of her majefty's flcet. In the following year he furprized a convoy of the enemies corn, fent it to Earcelona, and thus faved the city and the contederate army from the danger of famine. He reduced the ifland of Sardinia to obedience to Charles king of Spain, and affited lo:d Stanhope in the conquelt of Minorca. Returning home, he was ajipointed one of the council to the lord high admiral, and in 1709 he was made rear admiral of Great Britain. He was feveral times chofen menber of parliament for Rochetter, and in 1712 conducted the farces to take poffefion of Dunkirls. On the acceffion of George I. he was fuperfeded, and allowed a penfion of 60 c ., lupon which he lived in a private manner till his death, which happened at his houfe in Greenwich, in 1720. He left no chlldren, 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 firlt perfon who wrote profeffedly on Englin coins: He publifhed a hiitory of Britifh coiss, under the title of "Nummi Britannici Hilloria:" he wrote alfo "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 ufed for a cut or canal.
Leas, in Geography, a high mountain of the county of Galway, Ireland, fituated on the fouth fide of Lough Currib, near the fmall town of Oughterard.

LEAM-KIEN-SAM, a town of Chinefe Tartary ; 42 miles S. of Poro.

LEAM-YOM-HOTUN, a town of Corea ; 600 miles E.N.E. of Pekin. N. lat. $42^{2} 20^{\prime}$. E. long. $128^{\circ} 4^{\prime}$. LEANDER, in Biography, a French Capuchiafriar, was born at $\mathrm{D}_{\text {ijon, }}$ where he died, in the year $166 \%^{\circ}$. His writings are numerous, and by thefe he acquired a high reputation:
he is frequently referred tw by Dupia, in his "Nova Biblion theca Auctorum Feclefialticernm." One of his verrks is entitled "The Truths of the Gofpel;" in two volumes folio. Moreri.

LEAO, in Gengraply, a siver of China, which runs into the fea; 12 miles W. of Lai-clicon

Leao, or I.elb, a river of Chinefe Tartary, formed by the union of feveral rivers, of which no one bears this name till after it has palfed the barrier between Leau-tong and 'Tartary: It rums into the gulf of Leao-tong, about 12 miles W. of Yar-t the.u.

Leso, in Natural /iifory, a minaral fubftance, approaching to the nature of the lapis ingoli, found in the Eatk Indies, and of great ufe in the Cl in fe porcella'n matnifafture, being the fineft blue ties are puriefied of. This tlone is fund in the Itrata of pit-coal, or ia thofe of a yelluwifh or reddith earth, in the neiglbourhood of the veins of coal. There are often found pieces of it lying on the furface or the ground, and thefe are a fure indication, that more will be fuind on digging. It is generaliy fuund in oblong pieces of the fize of a finger, not rourd, bat flat. Some of this is very tine, and fome coarfe, and of a bad coluar. 'The litter is very common, but the fine fort is fcarce, and greatly valuec. It is not eafy to dillinguilh them at fight, but they are found by experiment, and the trying one piece is generaly fufficient for judging of the whole mine; for all that is fuund in the fame place is ufually of the fame fort.
Their manner of preparing it for ufe is this: They forlt wafh it very clean, to 反eparate it from the earth, or any other foulnefs is may have; they then lay it at the bottom of their baking furnaces; and wilen it has been thus calcined for three or four hours, it is taken out and powdered very firfe in large mo:tars of porcelin, with peflles of flone faced with iron. When the puwder is perfectiy fine, they four in fome boiling water, and grivid that with the rell; 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 Atirred. They are fuffered to ttand two or three minutes after this, and then poured off, with the powder remaining in them. This is fuffeed to foblide gradually, and is the fine blue they ufe in their beft works, our common finalt ferving for the blue of all the common low-priced China-ware. Obfervat. fur les Coûtumes de 1-Afie, P. 326 .

It is plain that this ftone is a fort of lapis lazuli; and the ultramarine tlue, ufed by our painters, is made in a manner not wholly unlike this. It is much to be wihhed, that England were well fearched for fuch a ftone as this leac, fince our mines in Deroy frire afford many blue fubitances, which have not been fufficiently confidered ; and if it fhould be found that either this, or any other European nation, produces it, it will be a fine difcovery, as we fhould 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 valt advantage. If England does not poffeis it, it is very'probable thet Ger any does, the mines there affording an aimoft inexhautible tore of coloured ftones: and this being certainly no other than the flony matter of fome cryftalline nodule, accidentally tinged with fome particlez of copper. See Lazuli Lapis.

LEAO-TCNG, in Geography, a province of Chinefe Tartary, more ufually called Chen-yang, or Mougden. (Sce Cuen yang.) The province is extremely fertile; but it is 500 £ar ditant from Peking, and from the centre of

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the empire, to fenid its provifons thither. Befide, carriage is altogether impracticable, execpt in winter: in this frafon, great quantitics of game, and fifh preferved, or inclofed in ice, according to the Chinefe expreflion, are carried from that country to the capital.

Leso-tosg, Gulf of, or Yellozu 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 E. to W. N. lat. $34^{\circ} 45^{\prime}$ to +1 .

LEAO-COU.HOTUN, a town of Corea, on the S. fide of the Yatou river; 370 miles E. of Peking. N. lat. $40^{\circ} 9^{\prime}$. E long. $125^{\prime \prime} 4^{\prime}$.

LEAP, in Agriculture, a meafure of capacity, fignifying half a buflel, fometimes termed lip.

Le.tp, in ATufic, is when the fong does not proceed by conjoint degrees. For inttance, when there is an interval of a third, fourth, fifth, \&c. between two notes, the Italians call it a late, falto.

It is to be obferved, that there are two kinds of leaps, regular and irregular, called by the Italians fulli regolari $\mathcal{O}^{\circ}$ irregolari.

The regular leaps are thofe of a third major or minor, whether natural or accidental, fourth, fifth, fixth minor, and octave, and thefe either afcending or defcending.

Irregular leaps are the triton, fixth major, feventh major, the ninth, tenth, and, in general, all beyond the compats of an octave:, at leaft in vocal mufic.

Befides thefe, there are others which may be ufed, but with difcretion; fuch as the diminifhed fourth, the falfe fifth, and flat feventh. The difference between the regular and irregular leaps is, that the former are performed by the voice, without any great dificulty or effort; whereas, the latter require more attention and pains to execute.

Leap, in Fibsing, is ufed for a net, engine, or wheel, made of twiys, to catch fifh in. Stat. + \& 5 Will. \& Mary. cap. 23 .

Leap, in the Manoge, an air of a ftep and a leap.
LEAPING-HORSE, in the MTanege, is one that works in the high manege, or one that makes his leaps with order and obedience between two pillars upon a Atraight line, in volts, caprioles, balotades, or croupades. Ufe excludes a .gallop a terra a terra, and corvets from the number of leaps; becaufe the horfe does not rife fo very high in thefe. Each leap of the horfe ought not to gain, or make above a foot and a half of ground forward.

LIEAP.YEAR, the fame with Biffertile; which fee.
It is thus called, becaufe, in the common year any fixed day of the month changes fucceffively one day of the week; but in the leap-year, it fkips or leaps over one day.

The common year hath three hundred and fixty-five days in it, brit 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-eicht.

To find the leap-year, the rule is,
" Divide by 4, what's left fhall be,
For leap-year, 0 : for paft, 1,2 , or 3."
For example; is the year 1812 a leap-year, or commonyear.

$$
\text { 4) } 1812(453
$$

There is o remainder, fo that it is leap-year.
LEASBURG, in Geography, a town of Amcrica, being the capial of Cafwell county, in North Carolina: concaining a court boufe, gacl, and a few houfes.

LEASE, from the French laifer, dimittere, to lett, in Lawe, a demife, or letting of lands, tenements, or hereditaments, unto ancther for life, term of years, or at will, for a rent referved.

A contract for the poffeffion of lands or tenements, for fomo 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 perfon who granteth a leafe, and the leffe, the perfon to whom it is granted, and the leffee enters thercon. (Litt. §58:) If the leafe be but for half a year, or a quarter, or any lofs time, this leffee is reputed as a tenant for years, and is fo flyled in Come legal proceedings; a year being the fhortelt term which the law takes notice of in this cafe. A year is a determinate and well-knowtr period, confilting commonly of 365 days. (See Bissextile.) A month, (fee Montir) in law, is a leafe month, or 2 S days, unlefs otherwife exprefled; and, therefore, a leafe for "twelve months"" is only for 48 weeks; but if it be for "a twelve-month" in the firgular number, it is good for the whole year. (6 Rep. 6I.) Thefe eltates, for years were originally granted to mere farmers or hufbandmen, who every ycar rendered fome equivalent in money, provifions, or other rent, to the leffors or landlords; but, in order to encourage them to manure and cultivate the ground, they had a permanent intereft granted then, not determinable at the will of the lord. Their pofteffion, 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 eftate: but their intereft exifted after their deaths in their executors, who were to make up the accounts of their teftator with the lord, and his other creditors, and were entitled to the ftock upon the farm. The leffee's eflate might alfo, 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 fubfilting, unlefs afterwards renewed by the recoveror, whofe title was fuppofed fuperior to his by whom thofe leafes were granted. Ettates for years, whillt they continued precarious, were ufually of fhort 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, becaufe any longer poffeffion (efpecially 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 Inftruments,"" fome leafes for years, of a pretty early date, occur, which confiderably exceed that period; and long terms, for 300 or 1000 years, were in ufe in the time of Edward III., and probably of Edward I. But when, by the flatute $21 \mathrm{Hen}$. VIII. c. 15 . the termor (that is, he who is entitled to the term of years), was protected againft thefe fictitious recoveries, and his interelt rendered fecure and permanent; long terms began to be more frequent than before; and were afterwards extenfively introduced, being found extremely convenient for family fettlements and mortgages ; continuing fubject, however, to the fame rules of fucceffion, and with the fame inferiority to freeholds, as when they were little better than tenancies at the will of the landlord.

Every eftate which mult expire at a period certain and prefixed, by whatever words created, is an elate for years; and, therefore, this eftate is frequently called a term, terminus, becaufe its duration is limited and determined; for every fuch eftate muft have a certain beginning and certain end. (Co. Litt. 45.) But "id certum eft, quod certum reddi poteft ;" therefore, if a man make a leafe to another, for

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fo many years as $\mathbf{J}$. S. fhall name, it is a good leale for years (6 Rep. 35.) ; for though it is at prefent unccrtain, 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 eitate, it begins from the making, or delivery, of the leafe. (Co. Litt. 46.) A leafe for fo many years as J. S. fhall live, is void from the beginning (Co. Litt. 45.) : but a leafe for 20 or more years, if $\mathbf{3}$. S . fhall follong live, is good, for a certain period is fixed, beyond which it cannot laft, though it may determine foolicr, on the death of J. S. An eftate for life, even if it be pur auter vie, is a freehold; but an eftate for 1000 years is only a chatel, and reckoned part of the perfonal eftate. A leafe for years may be made to commence in futuro, though a leafe for life ca:not. Becaufe no livery of feilin is neceffary to a leafe for years, fuch leffee is not faid to be firech, or to have true legal feitin of the lands. Nor, indeed, does the bare leafe velt any eitate in the leflee; but only gives him a right of entry on the tenement, which right is cailed his "interelt in the term," or interefle ternini ; but when he has actually fo entered, and thereby accepted the grant, the ellate is then, and not befure, vefted in him, and he is poffefoct, not properly of the land, but of the term of years (Co. Litt. 46.) ; the poffeffion, or fcifin of the lund remaining titl in him who hath the freehold. Thus, the word "term" does nat merely figuify the time specified in the leafe, but the eftate alfo and intcrett that paffes by that leafe; and, therefore, the "term" may expire during the continuance of the "time," as by furrender, forfeiture, or the like. See Tenant.

Eflates at will, another fpecies of eftates not frecho'd, are thole 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 poffeflio. (Litt. $\$ 65$.) Sach tenant hath no certain indefeafible eltate, nothing that can be affigned by him to any other; becaufe the leffor may determine his will, and put him out whenever he pleafes. But every eftate 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 plesfure. If, indeed, the tenamt at will fows his land, and the landlord, before the corn is ripe, or before it is reaped, puts him out, yet the tenant fhall have the enblements, and free ingrefs, egrefs, and regrefs, to cut and carry away the profits. (Co. Litt. 56.) But it is otherwife, where the tenant himfelf determines the will; for in this cafe the landiord fhall have the profits of the land. (Co. Litt. $55^{\circ}$ ) And if rent be payable quarterly, or half-yearly, and the leffee determines the will, the rent fhall be paid to the end of the current quarter or half-year. (Salk. 414.' ${ }^{\text {I Sid. 339.) Upon }}$ the fame principle, courts of law have of late years leaned as much as poffible againtt conitruing demifes, where no certain term is mentioned, to be tesancies at will; but have rather held them to be tenancies from year to year fo !ong as both parties pleafe, efpecially where an annual rent is.refervec, in which cafe they will not fuffer either party to determine the tenancy even at the end of the year, without reafonable notice to the other, which is generally underftood to be fix months. For another fpecies of eltates at will, fee Copyhold. See alfo Sufferance.

A leafe is either written, called an indenture decdfoll, or leafe in writing; or by word of mouth, called leafe-parol. See Parol.

All eltates, interells of frechold, or terms for years in lands, \&c. not put in writing and figned by the parties, thall have no greater effect than as eftates at will ; unlefs it be of leafes not exceeding three years from the making; whereip the rent referved hall be twothirds of the value
of the things demifed. (Stat. 29) Car. II: cap. 3.) Leafés excceding three years mult be made in writing, and if the fubltance of a leafe be put in writing, and ligned by the parties, though it be not foll ch, it that have the effect of a leafefor yeare, \&cc. Wcod's $I_{11} \mid$. 266 .

But a leafe in writing, therygh net under feal, cannot be given in evidence, unleft to be liamged. (1 Tern. Kep. 7.35 .) Articles with covenants to make a leate to let and make a keafe of lands, for a certais term, at fo. much rent, hath been adjudgedaleafe. (Cro. Eliz. 48゙ $)$ In a coverant, with the words "have, poffefs, and oceapy lants, in confideration of a yeariy rent, whtiont the word demife," it was held a good leafe; and a licence to occupy, take the profi:s, \&ec which palfeth an interet, amounts to a leafo. (3 Bult. 204. 3 Saik. 223.) All agrecment (f the partice, that the leflee thall enjoy the lands, will make a leale; but if the agreement hath a reference to the leafe to be made, and impries an intent not to be per!ected till then, it is not a parfećt leale till made afterwards. (Brinly. 13. 2 Sl:ap. Abr. 374.) If a man, on promife of a leate to be made to him, lays out money on the premifes, he fhall oblige the leffor aftervards to make the leafe; the agreement being exceuted on the leffee's part, where no fuch expence hath been, a bare promife of the leafe for a turn of ycars, though the leffee have poffiffion, thall not be good witho fonce writing. A leafe for years may begin from a day paft, or to conic, at Michaelmas dat, Chriknas next, three or fous years after, or after the death of the leffee, \&c. thou:gh a term cannot commence upon a contingency which depends upon another contingency. (i Inft. 5. I Rep. 15\%) If one makes a leafe for a year, and fo from year to jear, it is a leafe for two years; and afterwards it is but an eftate at will. (I Mod. 4. I Lutw. 213.) And if from three years to three years, it is a good leafe for fix years; alfo, if a man make a leafe for years, without fpecifying the number, it may be grood for two years, to anfwer the plural number. (Wood's Intl. 26\%.) Of all kinds of powers the moll frequent is that to make leafes. In the making of fuch leafes all the requiftes fpecified in the power mult be trietly obferved; and fuch leafes mult contain all fuch beneficial claufes and refervations as ought to be, for the benefit of the remainder-man; the principle being, that the eftate mult come to him in as beneificial a manner as the ancient owners held it. By Itat. 29 Gec. II. c. 3 I. 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, Lancafter, and Durham, or to the courts of great felfion of Wales, by petition or motion in a funmary way, and by the order of the fe courts refpectively, fuch 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 comprifud therein. Joint-tenants, tenants in common, and coparceners aray make luafes for life, years, or at will, of their own parts, which fhall bind their comparions; and in fome cafes, perfons who are not feifed of lands in fee, \&c. may make leafes for life or years, by fpecial power enabling them to do it ; when the authority muft be exactly purfued. (Wood's Init. 267.) But there is a difference, where there is a general power to make leafec, and a particular power. (8 Rep. 69.) If joint-tenants join in a lcafe, this fhall be but one leafe, for they have but one frechold ; but if tenants in common join in a leale, it fhatl be feveral leafes of their feveral interelts. 3 Rol. Abr. 64. Com. Dig. title Eflatis (G. 6.) Bac. Abr. Leafes (1. 5.)

A leffor may take diltrefs on the tenements let for the rent; or may have action of debt for the arrears, \&ic. Tenants fuffering houfes to be uncoyesed, or in decay, taking away wainfcot,

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wainfcot, \&c. fixed to the frechold, unlels put up by the lefiee, and taken down before the term is expired; cutting down timber trees to fell, permitting young trees to be dettroyed by cattle, Sic. ploughing up ground that time out of mind hath not been ploughed, not keeping banks in repair, \&cc. are guilty of waltes. (I Intt. 52: Dyer 37. 2 Salk. 368.) Leffees are bound to repair their tenements, except the contrary be mentioned in the leale. Although a leffee for years is not obliged to repair the houfe let to him, which is burned by accident ; if there be not a fpecial covenant in the leafe, that he fhall leave the houfe in good repair at the end of the term; yet if the houfe be burnt by negligence, the leffee thall repair it, although there be no fuch covenant. (Pafch. 24 Car. B. R.) A lefiee at will is not bound to fultain or repair, as tenant for years is. A leffee who covenants to pay rent, and to repair, with an exception of cafualtics by fire, is liable upon the covenant for rent, though the premifes are burnt down, and not rebuilt by the leflor after notice. (I Term Rep. 310.) A provifo in a leafe for two years, that the landiord firall re-enter, on the tenant's committing any act of bankruptcy, on which a commiftion thall iffue, is good. ( 2 Term Rep. 233.) An affignee of a bankrupt, a devifee, and a perfonal reprefentabife, are affignees in law to the purpofe of being liable to adions on a covenant for rent in a leafe to the bankrupt, devifor, or inteltate. (Dongl. 184.) Perfons for whofe lives eftates are held by leafe, \&c. remaining beyond fer, or being ablent feven years, if no proof be made of their being alive, flall be accounted dead. (See 19 Car. I1. c. 6.) Where the term of a leafe is to end on a precife day, then, there is no uccedtion for a notice to quit ; becaule the leafe of courfe is at an end, unlefs the parties come to a fre ha agreement. In the cafe of a tenancy from jesr to year, there mult be half a year's notice to quit, ending at the expiration of the ycar. Six calendar months' no:ice is not fufficient. And there is no diltinction between houfes and lands as to the time of giving notice to quit. I Term Rep. 54-159. 162, 3. Blackit. Com. b. ii. Tomlins's Jacub, tit. Leaje.

Lease ly fatute. There are three kinds of perions, who may make leafes for three lives or twenty-one years, and not exceeding this term, by flatutes, that could not do fo heretofore, wiz. tenants in tail, binding their iflue in tail, but not in remainder or reverfion; hufband and wife, of the wife's land; and perfons feifed of an eftate in fee fimple in right of the church, except parfons and vicars; by the flat. 32 Hen. VIII. c. z8. called the "enalling fatute."

But this flatute fpecifies feveral requifites in order to render the leafes binding: they mutt be by indenture, and not by deed-poll, or parol. They mult commence from the day of making, and not at any greater diftance of time: the old leafe, if thire be any, mult be firt abfolutely furrendered, or be within a year of expiring: it mult be either for twentyone years, or three lives, and not for beth; it mult not exceed the term of three lives, or twenty-one years, but may be for a fhorter time: the leafe mult be of corporeal hereditaments, and not of fuch things as lie merely in grant ; for no rent can be referved out of thefe by the common law, as the leffor cannot refort to them to diftrain : :hough now by 5 Geo. III. c. 17. a leafe of tithes or other incorporeal hereditaments alone, may be granted by any bifhop or ecclefiatical or eleemofynary corporation, and the fucceffor fhall be entitled to recover the rent by an action of debt, which, in cafe of a frechold lea?e, he conld not have brought at the common law. The leafe mult alfo be of lands and tenements commonly letten for twenty years palt ; and the cultomary rent for that term referved; and leafes mult not be macie without impeachment of wafte.

By i Eliz. c. 19. called the "difabling or refraining itatute," it is enacted, that all grants by archbifhops and bimops, other than for the term of twenty one years or three lives from the time of making, or without referving the ufual rent, fhall be void: but this ttatute did not extend to grants made by any bihop to the crown; however, thefe, as well as thofe made to any fukjeet, were comprehended in the prohibition of the flatute 1 Jac. I. c. 3 . The rellrictions of this fiatute were exterded by 13 Eliz. c. 10. explained and enforced by 14 Eliz. co 11. and 14 . 18 Eliz. c. 11. and 43 Eliz. c. 29. to certain other inferior corporations, buth fole and aggregate. Froms all thefe it is collected, that all colleges, cathedrals, and other ecclefiaftical or eleemolynary corporations, and all parfons and vicars, are reftrained from making any leafes of any kind, of their land, unlefs under the following regulations: I They mult not exceed twenty-one years or three lives from the making. 2. The accuftomed rent, or more, mult be yearly referved upon thein. 3. Houfes in corporations or market-towns may be let for forty years; provided they be not the man-fion-houfes of the leffors, nor have above ten acres of ground belonging to them, and provided the leffee be bound to keep them in repair; and they may alfo be aliened in feefimple for lands of equal value in recompence. 4. Where there is an old leafe in being, no concurrent leafe thall be made, unlefs where the old one will expire within three years. 5. No leafe by the equity of the ftatute fhall be made without impeachment of watte. (Co. Litt. 45) 6. All bonds and covenants tending to fraftrate the provifions of the ftatutes 13 and 18 Eliz. fhall be void. The 13 Eliz. c. 20, together with all explanations, \&c. of the fame by 14 th, 18 hand +3 d of Eliz. and much of 3 Car. I. which made them perpetual, are repealed by 43 Geo. III. c. 84. f. 10.

If a biflaop have two chapters, as there may be two or more to one bihopric, both chapters mult coufirm leafes made by the bifhop. (i Int. I 31.) A leafe made by a bifhop to begin prefently for twenty-one years, when there is an old leare in being, is grood, notwithtanding the ftar. of 1 Eliz. c. 19. (Mour. Cuf. 241.) But if fuch a leafe is to commence at a future day, it will be void. ( 1 Leon 44. .) Leafe for three lives by a bilhop of tithes is void again't the fucceffor, although the ufual rent be duly received. (Moor Caf. 1078 .) Leafes of 3 dean and chapter are geod, without contirmation of the bifhop. (Dyer, 273. 2 Nelf. Abr. rog6.) Where there is a chapter and no dean, they may make grants, \&c. and are within the ftatute. (I Mod. 204.) A prebendary's leafe confirmed by the archbihop, who is his patron, is good, without confirmation of dean and chapter. (3 Bulltr. 290.) But where a prebendary made a leafe for years of part of his prebend, and this was confirmed by dean and chapter; becanie it was not confirmed likewife by the bifhop, who was patron and orcinary of the prebend, the leafe was adjudged void. (Dyer 6:.) If a prebendary hath rectories in two feveral diocefes, belonging to his prebend, and his leafe of them is confirmed by the bihop, dean and chapter of the diocefe 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 againtt "the fucceffor, though not confirmed, \&c. (Litt. 15-S.) If a parfon or vicar makes a leafe for life or years, of lands ufually letten, referving the cultomary rent, Sc., it mult be confirmed by patron and ordinary, for they are out of the flatute $32 \mathrm{Hen}$. VIII. c. 28. And if the parton and ordinary make a leafe for years of the glebe to the patron; and afterwards the patron affigns the leafe to another, fuch affignment is good, and is a confirma-

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tion of that leafe to the affignec. ( 5 Rep.15.) A leafe for years of a fpiritual perfon will be void by his death, if it is not according to the tatute; and a leafe for life is voidable by entry, \&c. of his fucceffor. ( 2 Cro. 173.) If a bifhop be not bifhop de jure, leafes made by him to charge the bifhopric are void, though all judicial acts by him are good. ( 2 Cro. 353.) And where a bifhop makes a leafe, , which may tend to the diminution of the revenues of the biflopric, \& co which fhould maintain the fucceffor, there the deprivation or tranflation of the bifhop is the fame with his death. 1 Inft. $\hat{3}^{24}$.

There is another reftriction with regard to college leafes, by that 18 Eliz. c. 6 . which directs, that one-third of the old rent, then paid, fhould for the future be referved in wheat or malt, referving a quarter of wheat for each 6 s. $8 \%$. or a quarter of malt for every 5 s. ; or that the leffees fhould pay for the fame according to the price 1hat wheat and malt flould be foid for, in the market next adjoining to the refpective colleges, on the market-day before the rent becomes due. This money arifing from corn rents is, communibus annis, alinolt double to the rents referved ia money.

But when a quarter of wheat is worth 50 s. and the colleges receive one-third of their rent in corn, i.e. a quarter of wheat, or its value for every $\mathrm{I}_{3}$ s. 4 d . 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 thefe rents united are very far from the prefent 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 reftrained, in cafe of their non-refidence, by flatutes 13 Eliz. c. 20. 14 Eliz. c. 1 r. 18 Eliz. c. 11.43 Eliz. c. 9. which direct, that if any beneficed clergyman be abfent from his cure above fourfcoge days in any one year, he fhall not only forfeit one year's profit of his benefice to be diltributed among the poor of the parih ; but that aill leafes made by him of the profits of fuch benefice, and all covenants and agreements of like nature, fhall ceafe and be void; except in the cafe of licenfed pluralifts, who are allowed to denife the living, on which they are non-refident, to their curates only, provided fuch curates do not abfent themfelves above forty days in ary one year. Blackit. Com. b. ii.

An affignment differs from a leale only in this; that by a leafe one grants an interclt lefs than his own, referving to himfelf a reverfion; in affignments he parts with the whole property, and the affignee ftands to all intents and purpofes in the place of the affignor.

If a leffor accepts of rent from an affignee, knowing of the affignment, it bars him frorn action of debt againft the leffee; for the privity of contract is extinguifhed : but after fuch acceptance, the leffior or his affigns may maintain an action againdt the firit leffee upon his covenant for payment of the rent. (x Saund. 241. 3 Rep. 24.) But acceptance of rent from the affiguce has been adjudged a fufficient notice of the affigument, fo that the leflor could not refort to the firft leffee. 2 Bulttr. 15 I.

Leases of the King. Leafes 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 difpunihable of wafte, whereon the ancicut rent is to be referved; and eftates in reverfion, with thofe in poffeflion, are not to exceed three lives, \&cc. 13 Car, II. c. 4.

Leafes from the crown of lands in England and Wales, and under the feals of the duchy of Lancatter, \&c. for one, two, or three lives, or terms not exceeding fifty years, are Vol. XX.
allowed time for inrollment, \&e by fat. so Anno c. 18. Leafes made by the pririce of Wales of lands, \&c. in the duchy of Cornwall, for three lives, or thirty-one ycars, on which is referved the molt uftaal rent paid for the greateft part of twenty years before, fhall be good againf the king, the prince, and their heirs, \&cc. and the conditions of fuch leafes be as effectual as if the prince had been feifed of an abfolute cilate in fec-fimple in the lands. Stat. 10 Gco. II. c. 29 .

Lease of Land, in the Econcmy of Cigriculture, a kind of contract or agreement for the letting of lunds, tenements, \&ce. either for life, or a certain term of yeare, under a referved rent. It has been itated by Mr. Marfhall, that the different modes of holding land are firit that of "the tenant holding at will, or until the cultomary notice be given, by either party to the other,-without any legak contract or written agreement, -the conly tic between the owner and the occupier being the cuftom of the edtate, or of the county in which it lies,-and the common law of the land." This, he conceives, may be confidered as "the fimpie holding which fucceeded the feudal or copyhold tenure; but which is now going faft into difule." The fecond mode is that of "holding from year to year, under a written agreement, with fpecified covenants." This, which is a more modern ufage, 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, unkefs with the confent of the leffor." And the fourth, that of a "leafe for lives; as one, two, three, or more, without the power of affignment, which he belicves now are rarely granted in England, but in Wales they are ftill prevaleat ; the rent being there fettled according to the value of the land at the time of letting, as on granting a leafe for a term. And, in the wettern extremity of England, what are termed life leafes are ftill 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 entimated fale value of the land, during the life term, is paid down at the time of purchafe, the feller referving only a quit-rent or annual acknowledgment."

It is oonceived 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 leafe for life is gratifying, his. farm becoming a fort of life eftate, in which he is fixed for life; but that uillefs he is a prudent or a fortunate man, it may prove a fource of misfortune to his family, who in the moment of their diltrefs for his lofs, may be lial'e to be turned out, pennylefs, from a houfe and home: a circumftance which can rarely happen, under holdings for certaia terms of years." Thefe forts of leafes have a much better effect, it is fuppofed, on agriculture than annual holdings: and that it is more than probable that life tenancy heretofore has affilted in the advancement of the art. "It is, however, a well afcertained fact, that the manifold and great improvements which have taken place in Englifh agriculture, during the laft half century, have not been effected in Devonilhire 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 face between ordinary teants and yeomanry or fmall proprietors, and giving their holders better ftakes than lefs certain occupiers have, in the eftablifhed order of things." But that "here it is the light in whick life-holds appear to land proprietors that is entitled to the

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chief attention," which "on whatever ficte they have been viewed by the owners of extenfive edtates during the laft tiventy or thirty years, have doubtlefsily 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 lich as till 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 fcarcely be faid to have any authority either over his eflate or its poffeffors." They have in fact been the bane of very uffeful improvement of the foil, and the great caufe of its want of amelioration in every county where they have exitted to any extent.

It may be noticed, that thofe forts of holdings which are only for the year, "are, to a terant, mof difcouraging ; and to improvement in agriculture moft unfriendly. In a public view they are of courfe highly impolitical : while to a proprietor they are moft convemient, as he may be faid to be in conftant poffelfion of his ellate. He can lay out and execute general improvements, as embankments and drainage, extenfive works of irrigation, the alteration of watercourfes, roads and fences, and complete the arrangement of tenements without controul. It would be unwife, therefore, on an eftate 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 juitly remarked, that "whatever difcourages agriculture cannot be permanently profitable, either to a proprietor or the community." And in regard to prefent prolit they mult be highly difadvantagenus to the proprietor or owner.

With refpect to the third holding of land, as that of leafes for terms of years, as "for twenty-one years, though they may be profitable at their commencement, they have, it is Suppofed, been found much otherwife before their expiration: owing to the great rife in the value of farm produce, during the terns. And while proprietors who were letting their lands from year to year, were profiting by this circumftance; the income of thofe whofe lands were under long leafes (whether of lives or years) were ftationary; and this while the expences of living were advancing with the value of lands; which circumitances, added to their being controuled in the required arrangement, and perhaps annoyed during a length of years, by the improper conduct of ignorant, ill-difpofed, purfe-proud tenants (enriched by thefe very circumftances) have determined many perfons in different parts of the kingdom to difcontinue the practice of granting leates; giving written agreements from year to year only; which is much to be lanented for the interelt 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 increafe of the value of lands, that even this term has been found ferioully inconvenient to a landlord; and the term of feven years (without a covenant of remuneration) is, it is believed, of little ufe to a tenant." Thefe fixed leafes are liable, it is conceived, to another objection. As " although a man of fpirit and worth will not only give an advanced rent, in the firft inflance, but will, through the improvements he has made, be able and illing to give a ftill greater advance at the end of the term; yet, wh:n a leafe of this nature has been unfortunately or improvidently granted to a poor, an ignorant, an indolent, a refentful, or a difhoneft man, the farm thus
let may be left at the end of the term in a much worfe eondition than it was in at the commencement." This renders it highly neceflary for the manager of an eftate to be careful in the choice of tenants. Where great and expenfive im. provements are required, it will be conitantly neceffary, howeter, to have long leafes.
'Ihis may be remedied, in a great meafure, by the renewal of leafes before their tegms are expired.

The above writer confiders it ufeful, for owners or pro. prietors to come to clear underftandings with their tenants, three years previoufly to the terminations of their refpective leafes. "For it is conceived, that, until about that period, a fkilful tenant continues to keep his land in cultivation and condition, for his own intereft; 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 frefh 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, inttead of from year to year, would be an eligible fpecies of tenancy. Or, which is precifely the fame thing, granting leafes for fix years certain; with a condition, that of neither party give notice to quit before the expiration of the firft three years, then the term to be prolonged to nine years; and foon, 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 thefe means room is given for a tenant "to turn his hand in. He has, in reality, a frefh leafe of fix years granted him every third year. And this is fufficient to encourage him to keep his lands continually in the moft hufbandlike ftate. And if he execute any of the higher improvements, it is but reafonable that he fhould 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 fill manure and improve with much the fame confidence, as if the lands in his occupation were his own property." And "in return for fuch advantages, the tenant cannot befitate, it is fuppofed, to covenant, that, during the laft 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 flate of cultivation and repari, as will induce a good tenant to take it at a full rent ; or fuffer the proprietor to put it in fuch a liate, at his (the out-going tenant's) expence. An eftate which is under leafe on there principles, and under attentive management, car:not, it is conceived, be let down to an unprobitable ftate. It mult continually remain under a regular courfe of hufbandry, and in a flate 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 profperity," while "the incoming tenant (under aftive management) fteps into his farm, with the advantagcs 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 temant, would wifh to difcharge him? And no fuch tenant would readily leave the tarm he is fettled upon, if be find proper treatment. Even fhould notice be given in confequence of any mifunderftanding between the parties, three years allow time for reflection; and, before they expire, refentment may. die away, and cordiality be re!tored. If, however, either party be diflatisfied, he has an eafy way of diffolving the connection. Or if a proprictor is defirous to make frefh arrangements on his eftate, or to regulate his rent-rcll by the exith-
ing value of money, he need not wait many years to fulfil his detires; for if the temant in occupancy will not agree to pay a fair rent, the owner has three years before him to choofe one who will." It is thus evident, that "a leafe on this principle has a decided preference, by a proprietor, to long leafes. And its advantage over annual holdings is not lefs conliderable. The lands of an eftate are well worth from five to ten per cent. more to a tenant, under the former, than under the latter tenancy. So that befide the convcniencies mentioned, a proprietor may be immediately adding very confiderably to his income, by this principle of management." This has been proved in many cafes in different parts of the kingdom.

Covenants of Leafes.-It is fuggefted, that the neceflary covenants,-the relervations, reftrictions, obligations, penalties, and remunerations, that the leafe (or form of a leafe) of any landed eftate contains, are (or ought to be) a code of private relltraining laws, fuited to the circumftances of that particular eftate, in order to protect it from injury, and to promote its profperity : an honeft tenant confiders the covenants of his leafe merely as inftructions to direct his fteps, but which ought to reiltrain him no farther than to protect the farm or the eltate from injury. But a worthlefs tenant, as a thief, is ever ready to break the laws which bind him; and the proprietor of an eftate ought to have fome means of punifhing him for his fault. Penal covenants in leafes are of courie of the greatef 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 eftate, ftrictly fpeaking, requiring its own peculiar code to govern and defend it, (and of courfe the great difficulty which a court mult find to decide with any fort of accuracy in cafes of this kind, ) -one would naturally imagine, it is faid, that courts of law would rather be thankful to proprietors of eltates, for furnifhing them with ready and fafe means of doing jultice, than fet their faces againft any covenants, which have been formerly entered into, and legally confirmed by the parties before them. If penalties are exceffive or oppreffively fevere, or have been furreptitioully impofed, it undoubtedly belongs to a court of law to mitigate or remove them. But fevere reftrictions, and exceffive penalties, are hiphly impolitic, and altogether improper to be introduced into the leafe or law of an eftate, inafmuch as they tend to deprefs its character, and may prevent good tenants from fettling upon it ; or drive away thofe whom it may already poffers ;" and of "courfe militating againft one of the firft principles of good management." But " where, by judicious reftrictions and reafonable penalties, defigning men are kept aloof, a general good is gained to the eftate."

The particular covenants that are neceflary, mult be determined by the exiting circumftances of the eftate, 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 thofe which are proper for a farm under mixed cultivation. And an arable farm, fituated near a great town, fhould have covenants differing in fome refpects tom thoje of another, which lics in a reclufe diltrict : while every part of an ettate, and all eftates on which hedge timber can be profitably raifed, call for a feries of regulations, which an untimbered eftate, or one on which grown timber only is to be protected, does not require." And that, "much depend's on the time of changing tenants. A fpring and autumnal removal require very different Itipulations refpecting the fates in which the lands of a farm are to be left; how the crops in the ground, and the produce on hand ase to be difpofed of; and by
whom the crops of the fuceceding year are to be put $1 \pi$. Every diftrict las 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 diminifh his choice of tenants. Neverthelefs, it is in the power of proprictors conjointly, to effect, in time, the rea quired 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 thrafhed out." Mr. Marfhall fates, that " in the north of England (Cleveland, in Yorkflaire, being the moft fouthern diffrict in which he has obferved it,) a far more rational plan of removal is eftablifhed. There, the arable lands are quitted at Candlemas; the pafture grounds (Cleveland being much of a dairy diftrict) at Lady-day ; and the mowing ground and the home-ftall at old Mayday." While, in Scotland, fimilar regulations prevail ; but with a well judged difference, which naturally arifes 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 Atyle." And it is the opinion of this writer, that, "for the more fouthern provinces of England, the firt of May, new ityle, would be a proper time for removals in the fpring."

Forms of Leafes. - In refpect to the forms of leafes, thofe which are good do not, it is ftated, "merely require a judicious felection of covenants, but that the feveral claufes flould be properly digefted; and be arranged, worded, and lettered in fuch a manner, as to be intelligible to plain coun-trymen,--to men for whofe guidance and good government they are intended." And the plan, which experience entitles the above writer to recommend, is that " of printing leafes on large folio fheets of firm paper, or theets of parchment, folded in the folio manner; each page containing two columns, and each claufe compofing a diltinct paragraph; with a blauk page, or half page, to receive a fketch, or rough plan of the farm demifed; as well as a particular, or fchedude, of the different parcels of land of which it is compofed: with the number, name, and meafurement of each arranged in the column manner: in order that no doubt may at any time arife refpecting their identity." It is ufeful to have a book in which all thefe, and fome other circumltances, are regularly arranged and marked down.

Mr. Kent, in his " Hints to Gentlemen of Landed Property," ftates, that the ancient feudal tenures had undoubtedly a ftrong tendency to enflave mankind, by fubjecting them to the controul and power of an arbitrary lord; but, like moof other things, there were fome advantages to be found in the fyftem. Every man who held land had a certainty in it, as the tenant generally held his poffeffion for life. When thefe tenures were difcountenanced by the more liberal firit of modern law, fome new compact became neceffary, and terms of years were fubflituted in lieu of the former; for, as land properly managed requires great expence, and feldom anfwers that expence in one vear, it was but reafonable that the man who applied his judgment, devoted his labour, and ventured his capital, fhould have fome reafonable time allowed him to reimburfe himfelf, and derive fome proportionate reward for what he had doue. In the courfe of time, this term began to be reduced into a certain number of years; and as molt 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 molt general limitation, $3 \mathrm{M}_{2}$
and is the moft prevalent term for leafes at the prefent period..
'There ean be no doubt, it is fuppofed, but that leafes are the firt, the greatelt, and molt rational encouragement that can be given to agriculture ; yet of late years there are very flrong prejudices entertained againtt them.

Let any impartial man take a view of two dilltricts, where it is the cultom to grant leafes, and where it is not: in the former he will generally find a refpectable yeomanry, and a well cultivated country; in the other, an indigent fpiritlefs race; following a contracted fyflem of hubandry, calculated to anfwer no permanent purpofe of advantage to themfelves or landlords. Yet, there are many gentlemen who, to have fuch people at immediate command, prefer the continuance of a flovenly unproductive ttyle of hufbandry, to neatinefs and fertility. In fome parts of Eugland, the prejudice againit leafes is foltrong, that fome landlords will be tempted atmoft as foon to alienate the fee fimple of their citates, as to grant a tenant a reafonable term in thens. It is very unfortunate fur a county where this abhorrence of leafes prevails, as it keeps back an immenfe fcene of improvement, which othervife would take place, and robs the indultriuns occupier of a deal of comfort which might be beitowed upon him; and it can produce no other confolation to the owner than that of having the country more at command, and forcins a certain degree of refpect from it, which is abfurd to the lat degree; for a landlord may, it is conceived, enfure as much real refpect from a tenant on leafe, as from a tenant at his immediate will and plealure, and at the fame time fecure his property better, and Hipulate for improvements to the extent of his inclination or defire.

It is noticed farther, "that in the eaftern counties, where it is more the cultom to grant leafes than in the midland parts of England, agriculure is upon the moft refpectable footing; and that within half a century there are many eftates more than doubled in their value; which, without leafes, where the meanis of improvement were heavy, could not have carricd 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 beft part of his life upon an eltate which, on the death or mere caprice of the lanslord, he is liable to be turned out of at fix months, or peihaps a florter noticc.

It is not, however, meant to imply, that leafes ought not in any cafe to be withheld; there are certainly fome exceptions againg the practice he wifhes to fee eltablifhed: for inltance, if lands are fituated very near a gentleman's houfe, part of which it may, perhaps, be an object, on fome future occafion, to take into hand, or where a minor is very near coming of are, or where there is any immediate view of fale; in fuch cates, it would be imprudent to grant leafes. But where none of thefe contingencies ftand in the way, and where eitates are under an entail, or in a family that has no idea of parting with them, leafing is unqueltionably the molt effectual means of raifing the value of an eltate, as it enables the owner to Itipulate 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" sontends, that nothing gives Juch a fpring to indultry as the conviction, founded on the experience of ages, that in this ccuntry the fruits of the labours of the indultrious man are fecured to him. Hence, a farmer will be more or lefs active in proportion to the fecurity he holds of reaping the fruits of his induftry, fkill, and capital.

And it is ftill further ftated, that leafes are certainly necerfary and proper, as a compact between man and man ; and
though the mode of cropping and gencral tenor of the leafe mult vary according to times and circumiltances, yet no man who has thought feriouny on the fubject will deny that they are for the benefit of both parties, as they fecure 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 fuperict cultivation of fuch lands or farms.

But as it is neceflary to impofe fome degrese of reltraint upor tenants, the means of doing it in fuch a way that they may not be fo fettered as to be prevented fiom making ufeful improvements, or left fo much at liberty as to do mifo chief; are the poin: that forms the principal dificulty. Hence the circumitance to be chiefly guarded againft by reftrictive penal covenants, are thofe of preventing the breaking-up of old meadows, pattures, or other lands, the removing away hay, Atraw, or other materials convertible into manure; and the improving or deltroying of timber trees. To enforce the leaving of green winter food; the keeping up of all forts of fences; the cleanfing of water-courfes, ponds, pools, \&ic. and the preferving of huildings, gates, pens, and bridle roads in proper repair. To prevent the forming of rabbit-warrens, and the committing of wafte of any kind. And, finally, to regulate the circumilances of the out-going and in-coming tenants with propricty.

Bua althougla it is not poffible to form any pasticular leafe, fo as to inclurde claufes that can apply to every kind of foil, mode of cropping, and gencral management ; yet, as he has had opportunities of perufing a great variety of leafes in different parts of England; and as he is in poffeffion of one which is the moft perfect of the kind he has feen, it is fuggefted that it may convey more information on the fubject than any explanation that could be otherwife given of it.

## Form of Leafe.

" This Indenture, made the day of in the year of our Lord one thoufand eight hundred and between A. B. of in the county of
efquire of the firlt part, and C. D. of in the county of yeoman of the fecond part: Witneffeth, That for and in confideration of the rents and covenants, provifos and agreements, hereinafter referved, expreffed, and contained, and which, on the part and behals of the faid C. D., his executors and adminititrators, are to be paid, done, and performed, he the faid A. B. hath demifed, leafed, fetten, and to farm letter; and by thefe prefents doth demife, leafe, fet, and to farm let unto the faid C. D., his executors and adminitrators, all thofe mefluages, tencments, or farms, called
of and county of
the poffeffion of fituated in the parilh now or late in together with all and fligular houfes, out-houfes, edifices, buildings, barns, cowrhoufes, cattle-fheds, itables, yards, garths, ttack-garths, gardens, lands, feedings, ways, waters, eafements, privileges, and appurtenarces whatfoever, to the faid demifed premifes belonging, or in anywife appertaining, except and always referved out of this prefent demife, unto the faid A. B., his heirs and affirns, all mines, minerals, and quarrics, 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 ubtained, or gotten forth, or out of the fame, or any part therecf, 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 thererf: And alfo with fuil and free liberty, power, and atthority, to and for the faid A. B., his heirs or angris, and his and their agents, fervants, and work-

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then, at feafonable times in the ycar, in the day-time, to fearch for all and every fuch mines, minerals, quarries, and brickearth, and to link pits or thafts, and to make trenches, grocves, drifts, water-gates, canals, water-courfes, and to direct or turn any water-courfe, brook, or river, for the winning and working fuch mines, minerals, and quarries, within the fuid deraled premifes, with fuffecent groundroom aud heap-room for laying the ores, motals, mincrals, coals, flones, clay, earth, materials, and rubbih, to proceed, or be obtained or gotten forth out of the fame or any of them; together with full hiberty and power to build and erect engines, machines, houfes, hovels, lodgres, liables, cabins, and other edifices aud erections whafoever, for the effesual winning and working the fane: And alfo full and free liberty of way, leave, and paffage in, through, and over the faid premifes, or any part ithereof, to and from the faid mines, minerals, quarries, and brịck-kilns whatfocver, with carts, wains, waygons, and any other carriage or carriages neceffary for leading ores, metals, minerals, coals, thones, cinders, bricks, lime, timber, or any othermatter or thing whatfocver, and to make, lay, and place through, over, and upon the fird prenufe, any road or roads, waggonwdy or wargon-ways, rail-ways, or any way or ways, canal or canals, for the parpofe aforefuid, and from time to time to repair the fume, and to do all other acts and things need. ful or neceffary for the winning, working, managing, and carrying on the fuid mines, quarries, and brick-making, as he or they fhall think proper, with liberty to demife or grant to any perfons all fuch liberties as herein before-mentioned : And alfo, 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 ftanding, growing, or being, or which fhall hereafter at any time during the continuance of this demife, itand, 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 ayay the fame, by any means whatfoever: He, the faid proprietor, his heirs or affigns, or his or their grantec or leffee refpectively, making reafonable fatisfaction to the faid tenant, his executors or adminiltrators, for the rlamage or Spoil of herbage or ground, to be occafioned by the ufe or exercife 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 afigns, and the other by and on the part of the faid C. D., his executors or adminiltrators : And alfo, except and referved full power and authority for the faid A. B., his heirs cr aliigns, and his and'their ftewards and agents, with workmen in theercompany, of 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 ftate and condition of the fame: And alfo, except and referved unto the faid proprietor, his heirs and affigus, free liberty to huat, courfe, hawk, froot, and fifi, in, upon, through, and over all and every the faid hereby demifed premifes, or any part thereof; to have and to hold the faid meffuage, tenemeint, or farm-hold, lands, grounds, and all and fingular other the premifes hereby demifed, or mentioned, or intenced fo to be, with their and every of their appurtenances (except as before excepted), unto the faid C. D, his executors and adminiftrators, from the tiveifth day of May, in the year of our Lord one thouland eight hundred and
for and during and unto the full end and 'term of twenty-one years, from thenceforth next enfuing, and fuily to be complete and ended: yielding and paying yearly, and every year during the faid term
of twentyone jears hereby demifed unto the faid A. B., his heirs or afligns, the clear yearly rent or fum of of hawful moncy of Great Britain, by equal half-yearly payments, at two days or times in the year, that is to fay, the twenty-fecond day of Nowember, and the twelfeh day of May in every year, by even and eqqual purtions; the firlt half-ycarly payment of the faid fearly rent to begin and be: ade upon the twenty-fecond day of November next enfuing the commencement of the faid term hereby demifed: And allo yielding and paying yearly and every year unto the faid A. P., his heirs or affigns, on the feveral days and times aforefnid, over and above the faid yearly rent of the further rent or fitm of pounds an acre, for every acre of the faid demifed premifes, that he the faid C. D., his executors or adminittrators, fhall, at any time or times during the continuance of this demife, break up, tear out, or convert into tillage, or have, or ufe, or employ in any courfe of hufbandry, contrary to the covenants hereafter contained, without the licence and confent of the faid proprictor, his heirs or affigns, in writing for that purpofe first had and obtained, and to in proportion for a greater or lefs quantity than an acre; the firit payment of the faid additional rent to be made on the firit of the aforefaid half-yearly day's of payment, which fhall happen next after the ploughing, breaking up, tearing out, converting into tillage, or having or ufing, or employing in any courfe of hufbandry, contrary to the covenants hereinafter contained, any part of the faid hereby demifed premifes, which faid two feveral and refpective rents are to be paid as above expreffed and referved, free and clear of all taxes, affeffments, charges, and impofitions whatfoever, as well parliamentary as parochal, or otherwife, which the faid premifes now are, or may hereafter be liable to anfwer or pay: Provided always, and upon condition, and it is the true intent and meaning of thefe prefents, that if it fhall 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 fpace 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 cafe the faid C. D., his executors or adminiftrators, fhall neglect or refufe 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 adminitratcrs, fhall, or do, at any time or times during the term hereby demifed, alien, let, or affign over the faid premifes, or añy part thereof, unto any perfon or perfons, without the licence and confent of the faid A.B., his heirs or affigns, in writing for that purpofe firt had and obtained, that then, and in any of the faid cafes, it fhall and may be lawful to and for the faid A. B., his heirs or affigns, or fuch perfon or perfons as fhall be by him or them appointed for that purpofe, into and upon the faid demifed premifes, or into and upon any part thereof, in the name of the whole, wholly to re-enter, and the fame to have again, re-pofefs, and recojoy, as in his and their lirft and former eftate, and from and immediately afier fuch re-entry made, the faid term hereby demifed thall ceafe, determine, and becoree utterly void and of none effect, any thing in thefe prefents contained to the contrary thereof in anywife notwithflanding: And the faid A. B. for himfelf, his heirs and afligns, doth hereby covenant, promife, and agree to, and with the faid C.D., his executors and adminiffrators, that it fhall and may be lawful to and for the faid C.D., his executors and adminitrators, (he and they paying the rents and performing the covenants and agreements hercin referved and contained, on his and their

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parts, and to be paid, done, and performed, according to the true intent and meaning of thefe prefents), peaceably and quietly to have, hold, ufe, occupy, poffefs, 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, cviction, or interruption of him the faid A. B., his heirs or alfigns, or any other perfon or perfons, claiming by, from, or mader him, them, or any of them: And alfo, that it fhall and may be lawful to and for the faid C. D. his executors or adminitrators (he and they paying the rents and performing the covenaits 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-thited parts of the lands then in ploughing or tillage (according to the covenants hercinafter contained, and the true intent and meaning of thefe prefents), commonly called the way-going crop; and the fame corn or grain to fet in the ftack-yards, and thrafh 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 adminittrators, fhall, for the purpofes aforefaid, have the ufe of all the ftack-yards, barns, and granaries of and belonging to the faid demifed premifes, until the twelfth day of May next, after the determination of this demife; and the fame corn and grain fo thrafhed (after payment of rents and arrears of rents then unpaid), fhall and may carry away, fell, and difpole of, to and for his or their proper ufe and benefit, leaving and delivering all the ftraw of the faid waygoing crop, as foon as the fame is thrafhed (as hereinafter mentioned), in and upon the faid premifes, unto and for the ufe and benefit of the faid A. B., his heirs and afligns, or his or their nest fucceeding tenant or tenants: And the faid A. B., his heirs and affigns, or his or their next fucceeding tenant or tenants, fhall and will lead the faid way-going crop from the lands where it grew to the barns or itack-yards, and fork the fame from the loaded carts to the flacks: And alfo fhall 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 firft planted: And alfo, \&c. [Here follow any other covenants on the part of the leflor for new buildings, \&cc. \&c.]

And the faid tenant, for himfelf, his heirs, executors, adminittrators, and affigns, doth covenant, promife, 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 adminiitrators, fhall and will well and truly pay, or caufe to be paid, unto the faid A. B., his heirs or affigns, the faid yearly rent or fum of
and alfo the other cafual or eventual rents hererein above referved, and payable on the days and times, and in manner above mentioned for payment thereof, according to the true intent and meaning of thefe prefents: And alfo fhall and will from time to time, and at all times during the term hereby demifed, well and truly pay and difcharge all and all manner of taxes, affeffments, rates, charges, dues, tithes, and impofitions, parliamentary or parochial, whatfoever, which now are, or at any time hereafter during the term hereby demifed fhall be, taxed, affeffed, rated, charged, or impoied upon the faid premifes, or any part thereof: And alfo fhall and will, from time to time, and at all times during the faid term hereby demifed, at his and their own charge and expence, repair, uphold, maintain, and keep, with all manser of needfil and neceffary reparations, all and fingular the
houfes, buildings, barns, cow-houfes, eattle-fheds, Rablei, offices, gates, ttiles, rails, fences, hedges, ditches, drains, and water-courfes, of and belonging to the premifes 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 dctermination of the faid term, fhall and will deliver up all and lingular the faid houfes, buildings, erections, barns, cowhoufes, cattle-fheds, flables, offiees, gates, filies, rails, fences, hedges, ditches, drains, and water-courfes, with their ard 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 poffeffion therenf: And alfor Ghall not, nor will not, at any time or times during the continuance of this demife, fell, difpofe of, fend or carry away, or permit to be fold cr difpofed of, Tent or carried away from off the faid premifes hereby demifed, any of the hay, ttraw, clover, turnips, cabbages, or other fodder, that fhall grow or be produced from, or made thereon, but fhall and will eat and confume the fame (for the increafe of manure) upon the faid premifes: And alfo flall and will, from time to time, during the continuance of this demifc, at the proper feafons in every year, duly lay and fpread upon the fallow grounds of the faid premifes (where moft requifite and proper for the improvement thereof ), in an even, regular, and uniform manner, all the manure, durg, and compoft that flall be bred and made on the premifes; except the manure, dung, and compoft to be bred and made thereon in the year next before the determination of the faid term; and which manure, dung; and compoft, thall be left in the fold-yards, dung-hills, or midden-lteads of the faid premifes, for the ufe and benefit of the faid A. B., his heirs or affigns, or his or their next fucceeding tenant or tenants: And alfo flall not and will not plant or fow any hemp, flax, or muftard, or any rape for feed * upon the faid premifes, or anŷ part thereof: And alfo fhall not, and will not, at any time or times in the year next before the determination of this demife, depalture or graze, or fuffer to be depaftured or grazed upon the faid premifes, or any part thereof, any larger flock of cattle or greater number of ftints than were ufually depaftured or grazed thereon in the two years next preceding the faid latt year of the faid term, or other fooner determination thereof: And alfo fhall 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 alfo fhall and will thrath the way-going crop, at the determination of the faid term, in an uniform manner, fo as to deliver a conttant, regular, daily fupply of ftrav to and for the ufe of the faid A. B., his heirs or affigns, or his or their tenant or tenants: And alfo fhall and will, from and after the firit day of October preceding the ternination of the faid term, hain, free, and keep uneaten, all thofe fields or parcels of ground fown with grafs-feed in the laft fifteen months of the faid term; fave and except that it fhall and may be lawful for the faid C. D., his executors and adminiftrators, from and after the firft day of April next before the end of the faid term, to depafture, with not more than fheep an acre, onehalf of the faid hained clover or new grals, which half fhall be chofen and fet out by the agent of the faid A. B., his heirs or affigns, in the month of March preceding: And alfo fhall and will permit the faid A. B., his heirs or affigns, 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

* Rape for green foud is allowed.
by horfes, according to the cuftom of the country: And alfo fhall and will permit and fuffer the faid proprietor, his heirs or affigns, or his or their fervants, dranghts, and workmen, from time to time, and at all times, from and after the firlt day of December preceding the determination of this denife, 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 thefe prefents, ought to be in fallow, and the fame to plough, fow, harrow, drefs, manure, lime, and prepare for fuch courfe of agriculture as he or they thall think proper to convert the fame into, without the let or hindrance of him the faid C. D., his executors or adminittrators: And alfo fhall not, and will not, have, ufe, 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 ycar, during the term hereby demifed: And alfo ftall and will yearly, and every year during the term hereby demifed, fummer fallow $\dagger$ at lealt one-third part of the tillage, and plough the fame at leatt
feveral times, at proper feafons in each year, and keep the fame free and clear from quick-ins, wild oats, thitles, coltsfout, runch, dead nettles, and every other pernicious plant or weed, and lay and fread upon every acre of fuch fallow, in an even and regular manner, at lealt
fother of well-turned clod-lime, or in lieu thereof twenty fother of good well-rotteu dung, and fo in proportion for a lefs quantity than an acre : And alfo fhall 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 grafs again: And alfo fhall and will yearly, and every year, fow with grafs-feeds, and lay down to grafs, at leaft 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 leaft eight pounds of red clover feed, three pounds of white clover, three pounds of rib-wort plantain, and two pecks of rye-grafs $\ddagger$ of the beft quality; the quantity and quality to be aicertained by proper vouchers from the perfons of whom the faid feeds viere bought, and by whom the faid feeds were fown: And alfo fhall and will, whenever any part of the ploughing or tillage lands are laid to grafs, keep and continue the fame in grafs at leaft
il years before the fame, or any part thereof, be again ploughed out, or converted into tillage: And alfo Shall and will, in the lalt three ycars of the faid term, lay down to grals as aforefaid, or have in grafs, and at the end thereof leave in grafs, all thofe fields or parcels of land, called And alfo fhall and will, during the whole of the faid term, keep in grafs, and at the expiration thereof lcave in grafs, all thofe fields or parcels of land § And alio all fuch lands as fhall be converted into watered meadows: A nd alfo fhall and will during the term hereby demifed, bear and pay one-half the expence of making and erecting new quick fences upon
$\dagger$ On the fallow turnips thould be fown, if a proper foil, or cabbages, or drilled beans, at thirty inches ditave.
$\ddagger$ To thefe, upon light foils, are generally added three or four pounds of yellow hop-clover.

If This blank is fometimes filled up with two or one, according to foil, fituation, and circumitances, and weak foils, improper for corn, generally continue in grafs five, tix, or feven ycars, until it is thought they want refeefhing by tillage, which is only ufed in fuch fituations, as being fubfervient to rearing tock.
§ This covenant is ufed only in fuch fituations where there are any rich old grazing lands.
the faid premiles, and of cleaning, rearing; and preferving the fame for feven ycars after being firlt planted. [Hcre follow any other particular covenants that circumftances may: require. J

In addition to this general form of leafe, others with particular covenants become neceflary for each particelar fort of farm.

Leasb, Valuation of, the mode of finding out and afcertaining the value of leafchold property, in which the cirftances that are to be more particularly attended to are thofe of the peculiar nature or conditions of the leafe, and the difference between the leafe rent, and the fuil or actual rental value; as all furts of leafes, where the rent payable is not equal to the jult of true rental value at the period of their being fold, leffen the value of the land, and are obv1oufly an incumbrance in different points of view. The mode of managing this bufinefs with propriety, according to a lase writer, is, after afcertaining the difference between the leafe rent 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 forther deduct half the intereft thereof during the faid number of years, together with that of onchalf year over, where the rent is payable half yearly, and one year where it is payable ann:rally; as all that a purchafer of this fort of property has a right to expect, is that of receiving the full rent for his. land 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 ufe of cattle.
Lease and Rcleafe, in Law, is a conveyance of the feefimple, right, or intereft in lands or tenernents, under the ftatute of Ufes, 27 H . VIII. cap. 10 . giving firlt the pofferfion, and afterwards the interef, in the eftate convesed. This fpecies of conveyance was firft invented by ferjeant Moore, foon after the itatute of USes, and it is now the molt common of any, and not to be flaken. Though the deed of feoffment was the ufual conveyance at common law; yet fince the flat. of 27 Hen . VIII. of ufes, the convcyance by leafe and releafe has taken place of ir , and is become a very common aflurance to pafs lands and tenements; for it amounts to a feoffment, the ufe drawing after it the pofficifion without actual entry, ôcc. and fupplying the place of livery and feifn, required in that deed : in the making of it, a leafe, or bargain and fale for a year, or fuch like term, upon fome pecunary confideration, is firft prepared and executed, to the intent that by virtue thereof the leffee may be in actual poffeffion. of the lands intended to be conveyed by the releafe, and thereby and by forse of the flatute 27 Hen. VIII. c. 10. for transferring of ufes into poffefion, be enabled to take and accept a grant of the reverfion and inheritance of the faid lands, \&c. to the ufe of himfelf and his heirs for ever. Upon which the releafe is accordingly made, reciting the leafe and declaring the ufes; and in thefe cafes a pepper-corn rent in the leafe for a year is a fufficient refervation to raife an ufe, to make the leffee capable of a releafe. (2 Vent. 35. 2 Mod. 262.) This is held to fupply the place of livery of feilin; and fo a conveyance by leafe and releafe is faid to amount to a tcoffment. (Co. Lit. 270. Cro. Jac. 204.) Black. Com. b. ii. Tomlin's Jacob Dict. vol. ii. tit. Lrase and Release. Spe Barcais and Sale, and Converance.

The form of this conveyance is originally derived to us from the common law ; and it is neceflary to diltinguifh in

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what refpect it operates as a common-law conseyance, and in what it operates under the tatue of Ufes. At the common law, where the ufual mode of conveyance was by fcoffment with livery of feifin, if there was a tenaut in poffeffion, fo that livery could not be made, the reverfion was granted, and the tenant attorned to the reverfioner. As by this mode the reverfion or remainder of an eltate might be conveyed without livery, when it depended on an eftate previoufly exilting, it was natural to proceed one ftep further, and to create a particular eltate for the exprefs and fole purpofe of conveying the reverfion; and then by a furrender or releafe, cither of the particular ellate to the reverlioner, or of the reverfion to the particular tenant, the whole fee vefted in the furrenderee or releafee. It was afterwards obferved, that there was no neceffity to grant the reverlion to a flranger ; and that if a particular eftate was made to the perfon to whom it was propafed to convey the fce, the reverlion might be immediately releafed to him, which releafe operating by way of erlargement, would give the relcafee (or releflee as he is fometimes termed) a fee. In all thefe cafes the particular eftate was only an eltate for years; for at the common law the ceremony of livery of feifin is as neceffary to create even an eftate of freehold, as it is to create an eltate of inheritance. Still an actulal entry would be neceffary on the part of the particular tenant ; for without actual poffeffion the lefiee is not capable of a releafe, operating by way of enlargement. But this neceflity of entry for the purpofe of obtaining the poffeffion, was fuperfeded or made unneceffary by the ftatute of Ufes ( 27 Hen, VIII.c. Io. above alluded to) ; for by that flatute the poffeffion was immediately transferred to the cyfui que ufo; fo that a bargaince under that ftatute is as much in poffeffion, and as capable of a releafe 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 neceffity of livery of feifin from the grantor, and to avoid on the other the neceffity of an actual entry on the part of the grantee, was, that the particular eltate (which, for the reafons above-mentioned, fhould be an eftate for years) fhould be fo framed as to be a bargain anc̀ fale 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 flatute: but as it is held, that where conveyances may operate both by the common law and ftatute, they fhall be confidered to operate by the common law, unlefs 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 exprefs that the bargain and fale, or leafe, is made to the intent and purpofe that thereby, and by the flatute for transferring ufes into poffefions, the leffee may be capable of a releafe. The bargain and fale therefore, or leafe for a year, as it is generally called, operates, and the bargainte is in the poffeffion, by the thatute. The releafe operates by enlarging the eftate or poffeffion of the bargaince to a fee. This is at the common law; and if the ufe be declared to the releafee in feefimple, it continues an eftate at the common law; but if the ufe is dechared to a third perfen, the flatute again intervenes, and annexes or transfers the poffeffion of thie releafee to the ufe of the perfon to whom the ufe is declared. It has been faid, that the poffeffion of the bargainee under the leafe is not fo properiy merged in, as enlarged by, the releafe; but at all events it does not, after the releafe, exift diftinct from the ettate pafied by the releafe. I Init. 27 I , b . in n.

As the operation of a ieafe and releafe depends upon the leafe, or bargain and fate; if the grantor is a body corporate, the leafe will not operate under the flatute of Ufes;
for a body corporate cannot be feifed to an ufe, and therefore the leafe of poffeffion, confidered as a bargain and fate under the itatute, is void; and the releafe then mult be of no effect for want of a previous pofleffion in the releafee. In cafes of this mature, therefore, it is proper to make the conveyance by feoffment, or by.a leafe and releafe with an actual entry by the leffee previous to the releafe; after which the releafe will pals the reverfion. It may alfo be obferved, that in exchanges, if one of the parties dic before the exchange is executed by entry, the exchange is void. But if the exchange be made by leafe and releafe, this inconvenience is prevented, as the tatute executes the poffefion without entry ; and all incidents annexed to an exchange at common law will be prelerved. IInd. 271. b, in n.
When an ellate is conveyed by leafe and relcafe, in the leafe for a year there inult be the words, bargain aud foll for money, and five fhillings or any other fum, though never paid, is a good confideration, whereupon the bargainee for a year is immediately in poffeffion on the executing of the deed, without actual entry: if only the words demife, grans and to farm let are ufed, in that cafe the leflee cannot accept of a releafe of the inheritance, until he hath actually entered, and is in poffeffion. ( $2 \mathrm{Lall} . A b r .435$.) But where Littleton fays, that if a leafe is made for years, and the leffor releafes to the lefiec before entry, fuch releafe is void; becaufe the lefiee had only a right, and not the poffeffion; and fuch releafe fhall not enure to enlarge the eftate, without the poffefion: though this is true at common law, it is not fo now upon the flatute of Ufes. (2 Mod. 250, 251.) And if a man make a leafe for life, remainder for life, and the firt leffee dieth; on which the leffor releafes to him in remainder, before entry ; this' is a good releafe to enlarge the eftate, he having an eftatc in law capable of enlargement by releafe, before entry had. I luft. $2 \%$ o.
No perfon can make a bargain and fale, who hath not poffeffion of the lands: but it is not neceflary to reierve a rent therein; becaule the confideration of money raifes the ufe. If a leafe be without any fuch confideration, the leffee hath not any eftate till entry, nor hath the leffor any reverfion ; and therefore a releafe will not operate, \&c. (I Iuft. 270. 27 S. Cro. Jac. 169 . i Mod. 263.) On leafe at will, a releafe fhall be good by reafon of the privity between the parties; but if a man be only tenant at fufferance, the releafe will not inure to him ; and as to the perfon who hath the reverfion it is void, for fuch tenant hath not any poffeffion, there being no ellate in him. Lit. f $46 \mathrm{I}, 462$. Cro. Eliz. 21. Dyer 25 I.
In a leafe and releafe, to make a tenant to the pracipe to fuffer a recovery, where the releafe is made to A. B., and his heirs (viz. the tenant to the pracipe), it mult be alfo faid to the ufe of him the faid A. B., and his heirs and afligns for ever; for the releffee muft be abfolute tenant of the freehold. (2 Vent. 312. Lil. Conveyance, 251 .) And a releafe made on truit, muit be to A. B., his heirs and affigns, to the only ufe and behoof of the releflee, his heirs and afligns for ever; in truit for C. D., who is to be a party to the decd, and the purchafe-moncy to be paid by the ceflui que trafl. If the words to the we, \&c. are not inferted in the releale, the eftate doth not execute by the tlatute of Ufes, and the trutt 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 Mind. 252. See Release.
LEASEHOLD Tinure of Lends, in Agriculuure, is that fort of tenancy which is held under leafe or fpecial agreement for any definite term, whether of lives or years; which alfo admits of feveral diftinctions, as, where the term is

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for a great length of time, as a thoufand 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 fupcrior, who has merely referved a conventional rent, the tenant having given a fum of moncy to obtain the leafe and the right of alienation; this is a practice common in the weftern 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 lefs than 100 years,) with the power of alienation. They are all tenures, which Sive a fort of temporary property or interelt in the lands, by which they are rendered liable to bargain or fale as other forts of property by the holders of them. See Tevant and Tenure.

LEASH, or Leasue, among Sporifmen, denotes three creatures of any kind; but chiefly greyhounds, foxes, bucks, and hares.

We fay a leafh of greyhounds, a couple and a half of hounds.

LeASing, or Lesince See Gleaning.
LEAT, is ufed for a trench to convey water to or from a mill. It is mentioned in the fatute 7 Jac. I. cap. 19.
LEATHER, in Commerce, the fkins of feveral forts of beafts dreffed and prepared for the ufe of various manufacturers, whofe bufinefs is to make them up, according to their different employments. The butcher and others, who flay them off the carcafes, difpofe of them raw or falted to the tanner and tawer; they to the fhamoy, morocco, and other kind of teather-dreffers, who prepare them according to their refpective arts, in order to vent them among the curriers and leather-cutters, glovers, harnefs-makers, coachmakers, fadlers, breeches-makers, gilt-leather-makers, chairmakers, fhoe-makers, book-binders, and all in any way concerned in the article of leather.

Leather has divers names according to the ftate wherein it is, and according to the different kinds of flins of which it is prepared, and its peculiar qualities when fo prepared. r. The lkin is raw as it comes off the animal. 2. Some are falted with fea-falt and alum, or with natron, which is a ipecies of falt-petre, or white falt-wort, to prevent corruption in keeping, or fending to diftant tangeries during hot feafons.

Skins dried with the hair on, are commonly thofe of oxen and cows, or buffaloes, cither tame or wild. Molt of thofe in France come from foreign countries. The places which furnifh the largeit quantity, are Peru, the ifle of St. Domingo, Barbary, Cape Verde Illes, the river Senegal in Africa, Mufcovy, Ireland, the illand of Cuba. Thofe of this latter place are the molt efteemed; they are called Harannah fkins, from the name of the capital city of that inahd, whither they are carried in order to be fent to Spain, and from thence into other parts of Europe. After thefe Ikins are ftript of their hair, they are fold to the tanners. Sce Curhying, Taning, 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 confirts in firt foaking the fkins ; then throwing them into the lime-pit; and when they are taken hence, pulling them and delivering them to the friezer; they are then \&truck with the oil, and fent to the mill; when they are milled fufficiently; they are thrown into the ditch to be fcoured, and by fome fcudded, and afterwards hung upon the houks to dry. When they lave been lol. XX.

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weighed and marked by the proper officers, in order to fix the excife duty, they are fit for fale. The forts of \& cins dreffed in oil are thofe of deer, theep, and lambs, and fome few of goat, and the oil ufed for this purpofe is Newfoundland, or cod's liver oil. The alum leather-dreffers' art confifts in properly foaking, liming, wringing, (an operation fometimes omitted,) and friking them in a liquor compofed of water, falt, and alum, and then drying them properly; The forts of Rkins dreffed in alum are thofe of theep and lambs, and a large quantity of kid. Poflleth. Dict. Com. art. Leather.

There are feveral ftatutes relating to leather; the 27 Hen. VIII. c. I4 directs packers to be appointed for leather to be tranfported: but the 18 Eliz. c. 9- prohibits the Thipping of leather on penalty of forfeiture, \&c. 'though by 20 Car. c. 5 . tranfportation of leather was allowed to Scotland, Ireland, or any foreign countrics paying a cuftom or duty; which ftatute was continued by divers fubfequent acts.
No perfon fhall ingrofs leather to fell again, under the penalty of forfeiture. None but taniers are to buy any rough hides of leather, or calves' nkins in the hair, on pain of forfeiture ; and no perfon fhall foreftall hides, under the penalty of $6 s$. Sd. a hide. Leather not fufficiently tanned is to be forfeited. In London, the lord mayor and aldermen are to appoint and fiwear fearchers and fealers of leather out of the company of cordwainers, \&c. and alfo triers of the fufficiency of leather; and the fame is to be done by mayors, \&c. in other towns and corporations; and fearchers allowing infufficient leather, incur a forfeiture of 40 s . Shoemakers making fhoes or boots of infufficient leather are liable to forfeit for every pair $3 s .4 d$. 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 expofed to fale, and on fale is to be regiftered, or fhall be forfeited; and contracts for fale otherwife to be void. ( 13 \& 14 Car. II. c. 7.) 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 ia open market, and any perfon may buy or fell leather, hides, or Kkins, by weight. I W. \& M.c. 33 .

The firft ftatute concerning leather, which it is neceffary for us to refer to in this article, is the I Jac. c. 22; which teduces all preceding acts relating to that commodity into one; and therefore to this we fhall have a retrofpect in the progrefs of this article; premifing that all forfeitures by this act, not otherwife fpecially directed, fhall be divided, one-third to the king, one-third to him that fhall fue, and one-third to the city, town, or lord of the liberty. By 9 Ann. c. II. any two juftices near the place where the forfeitures are incurred, or offence committed, may hear and determine the fame. All forfeitures, by the att of 13 \& 14 Car. II. c. 7. fhall be recovered in any court at Weftminfter, or in any court of record in the city, \&c. where the offence fhall be committed; to be diftributed 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 fkins of cattle, fheep, horfes, and hogs, fhall be fixed by the mayor, bailiff, or head-officer of any city, town corporate, borough, or market-town, or any two magiftrates acting for the fame, or any two juftices acting for the divifion within or neareft to fuch city, \&c. The manner of appointing infpectors is alfo prefcribed by the faid acts. And by the fame, butchers, \&c. who are chargeable with wilfully or carelefsly injuring hides, fo as to make them lefs valuable, are liable to penalties, not exceeding 550 (4rGeo. III.) nor lefs than Is. for the raw hide of every ox,

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bull, cow, or heifer, \&cc. ; and nce exceeding as. 6d. ( 41 Geo. III.) nor lefs than $6 d$. for the fkin of ecery calf; and not excecding $2 s .6 \mathrm{~d}$. ( 41 Gco . III.) nor lefsthan 1 s . for the hide of every horfe, mare, or yclding; and not exceeding Gd. nor lefs than 3 d. For the hide of every hog, pig, fheep, or lamb. Infpectors are required to take a prefcribed oath, and are allowed certain fees for examining and infpecting hides. \&c. (Sce alfo 43 Geo. III. c. 106.) Thefe infpectors may impofe penalties for damaging hides, \&cc.; which penalties fhall be recovered before a juftice, one half of which, by 41 Geo . III. c. 53. fhall be given to the in. fpector, and the other half applied to the purpofe of better carrying on the objects of thefe acts. By the above-cited acts, 39 \& 40 Geo. III. c. 66, the infpectors of raw hides hhall provide proper ftamps, and itamp the hides, not damaged or otherwife; and feize fuch hides or fkins as have teen damazed, and fell the fame, provided the penalties be not paid in lefs than 4 S hours after fuch feizure. Butchers or others neglecting to bring hides to be marked, fhall forfeit not exceeding 5 ?. nor lefs than 4os. for every fuch hide. The regulations of this aet fhall extend to all hides found in Great Britain. (41 Gco. III. c. 53.) All difputes flatl be fettled by any five impartial and refpectable perfons concerned in the manufacture of leather, fummoned by a magittrate, before whom fuch difpute fhall be brought. All penalties and forfeitures fhall be recovered before one jeftice or magitrate of any city, town, or place, where the offencé fhall be committed, upon conviction, confeffion, or the oath of one witnefs, and levied by diftrefs; and for want of fufficient diftrefs, the offending party fhall be committed by fuch juftice or magiltrate to the common gaol or houfe of correction, for a time not exceeding one month. All penalties and forfeitures, not otherwife difpofed of, fhall go, half to the informer, and half to the execution of the purpofes of the act. Perfons aggrieved may 'appeal to the next feffions. ( 39 \& 40 Geo. III. c. 66.) By the fame and 41 Geo. III. c. 53. informations for offences arainft this act for wilfully or carelefsly gafhing raw hides, fhall be laid within three days after the commiffion of the offence; and for any other offence within It days after the offence committed. By 43 Geo . III. c. ro6. the provifions of 39 \& 40 Geo . III. c. 66. and 41 Geo. III. c. 53 , are extended to London, Weltminfter, and Southwark, and to all places within fifteen miles of the Royal Exchange. All raw hides within five miles of the Royal Exchange chall be brought to Leadenhall market, and the fkins of fheep and lambs to one of the three fheep-lkin markets in Southwark, the Whitechapel market, or the market at Wood's Clofe. Proper places and hours for infpection are to be appointed within three months after the paffing of this a\&. For the market at Leadenhall, eight infpectors 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 fhall be appointed four infpectors for the fheep market at Wood's Clofe, two for Southwark, and two for the market of Whitechapel. One half of the infpectors at each of the three laft-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. Provifion is made for increafing their number and regulating their attendance. Infpectors for Leadenhall market are required to attend on the ufual market days, from lix in the morning till five in the afternoon, from the 25 th of March to the 2 ath of September; and from feven in the morning until four in the afternoon, from the 30 th of September till the 2,th of March.

The distribution of fines and fees is prefcribed, fo that onc-
hatif thall be equally divided between the infpectors, atting at the refpective markets, and the remaining half-part fhall be paid weekly to the arbitrator of the market, in refpect to which they are received, and paid monthly by the faid arbitrators to the refpective perfons appointed by the courts of affiftants to receive the fame. 'There is a penalty for impeding infpectors, not excedirg $5 l$ nor lefs than 10 s. for each offence, and alifo a penalty not exceeding 20\%. on infpettors receiving, and perfons offering bribes. Salefmen are required to deliver an account of hides or flins fold, under a penalty for every offence of 101 . The lord-mayor of London is empowered to incrafe the fees of the infpectors, under the reprefentation of the courts of affiftants of the companies concerned, to any fum not exceeding $1 d$. for every hide, $\frac{1}{2} d$. for every calf-fkin, hog flkin, or pig-flin, and $\frac{1}{4} d$. for every theep or lambenkin. The refpective courts of affittants are required to appoint annually four arbitrators, to fettle difputes arifing in any of the markets above-mentioned; and thefe arbitrators are empowered to fine infpectors, and alfo butchers and falefmen, for frivolnus decifions and exorbitant impofitions. Infpectors and arbitrators are liable to be difmiffed for mifconduet in their refpective offices, or to a fine not exceeding 5!. nor lefs than ios. Buyers and fellers of unitamped hides or fkins are liable to a forfeiture not exceeding 20s. nor lefs than 5 s. for every hide; and not exceeding 5s. nor lefs than is. for every thin of hogs, pigs, or calves; and not exceeding is. nor lefs than $6 d$. for every fheep or lanb-finin. The treaiurers are appointed by the refpective courts of affilants to receive the fums collected by the arbitrators ; one-lialf of which fhall be paid to the trea* furer 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 fhall firt of all be applied for the execution of the acts, andto the ufe of the poor of the faid companies.

For particular regulations concerning tanners and curriers of hides, fee thefe articles refpectively. The mayor and aldermen of London (on pain of 40 l. for every year they make default, half to the king and half to him that fhall fue) fhall yearly appoint eight freemen of fome of the companies of cordwainers, currieri, fadlers or girdlers, of wkom one fhall be a fealer, and keep a feal for the fealing of leather; they flall be fworn to do their office truly; and they fhall fearch and view all tamed leather brought to market, whether it is thoroughly tanned and dried : and if it is, flall feal the fame. Four of thefe officers fhall be changed every year; no officer thall be continued above two years together, nor be re-elected till after the end of three jears, on pain of Iol. a month. A fimilar regulation extends to other places. The wardens of the curriers fhall fearch and feal 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 fhall neglect his office or milbehave, he fhall forfeit $405 .:$ if he fhall take a bribe, or exact a fee not appointed, he fhall forfeit $20 \%$; and if he thall refufe to execute his office, he thall forfeit 10l. If any perfon fhall hinder the fearcher in the execution of his office, he fhall forfeit 5\%. (1 Jac. c. 22.) The mayor of London (on pain of 5 l. half to the king, and half to him that fhall fue) fhall, within fix days after notice given of any feizure 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 befure him, fhall, on the fecond 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 thall forfest 5 l. The offering for fale of unfearched

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and unfealed leather incurs a forfeiture of the fame, or its value, and for every hide or picce 6s. 8 d . ; and for every dozen of calves' fkins. 3 s. qd.; but no perfon Thall incur any penalty for felling or buying any fleep.flins, unfearched or ,unfealed. (1 Jac. c. 22. 4 Jac. c. 6.) All red tanned leather mall be bought only in the open fair or market, and not in any houfe, yard, fhop, or other place, on pain of forfeiting - the fame, or its value, and rendering the contract void : and fuch leather thall be fearched and fealed before fale, and on fale fhall be regitered, on pain of forfeiting the fame, or its value. ( $x_{3} 814$ Car. II. c. 7.) Searchers and fealers fhall keep a regiiter of all bargains made for leather, during the fair or market, with the prices; taking for fearching, fealing, and regiftering of every ten hides, or butts, of the feller 2 d ., and fo in proportion; and for every fix dozen of calves'-.jkins, or fhecp-fkins, 2d. : and of the buyer after the fame rate. Red tanned leather, brought into London, or within three miles of it, fhall be brought to Leadenhall, to be viewed and regittered by the fearchers, with half fuch fees to be paid for tanned leather bought out of Londou, or within three miles, and fearched and fealed before it be brought within the city ; on pain that every perfon houfing, or not bringing his leather to Leadenhall, fhall forfeit for every hide or fkin $6 s$. $8 d$. No perfon fhall buy any tanned leather, unwrought, but who fhall work the fame into wares, on pain of forfeiting the fame, or value. (I 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 firft fearched and fealed, and may cut and fell the fame in any fmall pieces in their open fhops. (See alfo I W. feff. I. c. 33.) Within London, or within three miles, no perfon fhall fell any wares appertaining to the myttery of any artiGicer cutting leather, but only in open fhop, common fair, or market, whereby the wardens may have fearch thereof : on pain of forfeiting the fame, and alfo los. I Jac. C. 22 .

No fhoemaker fhall make any boots or fhoes, 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 fhoes or boots, any leather made of a fheep-fint, bull-hide, or horfe-hide, \&c. \&c., on pain of forfeiting for every pair of fhoes or boots 3 s. 4 d ., and the value. And if any artificer ufing leather do make any wares of any tanned leather infufficiently tanned, or of tanned and curried leather, not fufficiently tanned and curried, he fhall forfeit the fame, and value. If any floemaker or cobler within London, or three miles of it, fhall put any tanned leather into any boots or fhoes, or other things made of tanned leather, which fhall not be well and perfectly tanned, or do put any curried leather into boots or fhoes, or any things made of leather, which fhall not be fufficiently tanned and curried, and alfo fealed; he fhall forfeit the fame and value. 1 Jac..c. 22.

All forts of leather and fkin, tanned or dreffed, may be exported. 20 Car. II. c. 5. 9 Ann. c. 6.

By 43 Gro. III. c. 69, a duty is laid upon all hides and Rkins, vellum and parchment, imported; and drawbacks allowed on the exportation of them. Other duties are alfo impofed by 49 Geo. III. c. 98. For which we refer to the act, fched. A. After the duty on importation flall be paid, the officers of the cuftoms fhall caufe every hide or fkin to be marked, to denote the payment of the duty. (9) Anue. c. I r.) But by 15 Geo. 111. c. 35, raw or undreffed goatfkins may be imported for tive years, duty free; and this act was made perpetual by $3^{1} \mathrm{Gco} .1[1 . \mathrm{c} .43$. The feveral duties for and upon all hides and ficins, and parts and
pieces of hides and fkins, tanned, tawed, or drefed, to be paid by the tanners, tawers, and dreffirs of hides and flkins refpectively, and the dutics upon vellum and parchment, to be paid by the refpective makers thereof; and certain drawbacks are allowed on the exportation thereof. By tanued hides or fikins, or pieces thereof, are meant only fuch as are tanned in wooze, made of, the bark of trees, or flumack; and by hides and flins, drefed in sil, are meant fuch as are made into leather in oil, or with any materials, of which the chief ingredient fhall be oil; and by taveed hides or thine, are meant fuch as are dreffed or made into leather, in alum and falt, or meal, or other ingredients properly ufed by tawers of white leather. 9 Ann, c. 11. Ћ. 3 .
By 43 Geo. III. c. 69, every tamer flall take out a licence annually, for which he thall pay, if within the bills of mortality, 5 l., elfewhere 2 l. xos., on pain of 301 . $2+\mathrm{Geo}$. 111 . c. 4 . Sefl. 2. § 1.) And every tawer thall tale out a licence annually, for which he fhall pay 1\% on the penalty of 10\%. And every drefer of hides in oil flall take out a hicence annually, for which he fhall pay 21 . on the peralty of $20 \%$ And every currier fhall take out a licence-annually, for which he fhall pay 2l. on the penalty of $20 l$. And evcry maker of vellum or parchment flall take out a licence an. nually, for which he fhall pay $1 \%$ on the penalty of $10 \%$ And every perfon who fhall take out fuch licences fhall renew them annually, ten days before their expiration, on the penaltics above itated. Collar-makers, glovers, bridlecutters and others, who drefs fkins or hides, or pieces thereof, in oil, alum, and falt, or meal, or other ingredients, and who cut and make the fame into wares, fhall be accounted tawers, or drefiers. ( 2 Ann. c. ir. § 2S.) Any hide or fkin, which hath once paid the duty, fhall not be charged under any other denomination ( 9 Amn. c. 11. § 3.) The commiffioners of thefe duties, appointed by the commifioners of the treafury, flall have the fame power as the commiffioners of excife. Tanners, tawers, curriers, or dxeffers of hides or ikins, and makers of vellum or parchment, are required to give notice in writing to the officer, of their names and places of abode, and of their tan-houfes, yards, work-houfes, milis, or other places where they intend to tan, taw, or drefs hides or flkins, or make vellum or parchment, before they ufe the fame; on pain of 5ol. Thofe who ufe fuch places without entry of them, fhall forfeit $20 \%$, and the goods found in them, or their value, fhall alfo be forfeited. The officers, at all feafonable hours, fhall enter and furvey thefe places, and if the owner or occupier refufe them entrance, he fhall forfeit 1o\%. And if any hide or fkin, tanned, tawed, or drefled in oil, be found in any place not entered, without a ftamp denoting that the duty has been charged, the fame Thall be forfeited and feized ; and the perfons in whofe pof. feflion it thall have been found, fhall for each offence forfeit Iool. (4I Geo. III. c. 9r. §10.) Tanners and others fhall 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 fhall be given; and they fhall be entered with the officer with refpect to their number and quality, and verified on oath before a juftice of peace, collector or fupervifor ; nor fhall they be removed, till the duty be firft charged, entered and marked. The penalty for neg. lect is $20 \%$. and forfeiture of the goods, or their value. Concealment of any hide or fkin, vellum or parchment, in order to avoid the duty, incurs a forfeiture of $20 \%$ and the goods or their value. If any tanker or other perfon fhall fhave any hide or calf-1kin, before the fame be thoroughly tanned, fo as to impair it and diminifl the duty, the fame or its value thall be forfeited. Tanners or other fuch perfon fhall keep

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juit feales and weights; and the penaley for neglect or not allowing the ufe of them, fhall be a forfeiture of 50 . The ufe of falle fcales incurs a forfeiture of $100 \%$. ( 10 Geo. III. c. 4t. 28 Geo. III. c. 37.) Cheating or obftructing oflicers fubjects to a forfeiture of 100 . ( 26 Geo . MII. c. 77.) When the dutics are afcertained, the officer fhall enter them in a book, and return them to the commiffioners, or a perfon appointed by them; and when the duty is fettled, the officer fhall caufe every hide or Akin, 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 50 l . and the faid goods; and any perfon counterfeiting the ftamps, or knowingly felling any of the faid goods with a counterfeit famp, is chargeable with felony without benefit of clergy. (9 Ann. c) 1 11. 5 Geo. II. c. 3. 33 Geo. III. c. 54.) Stamped and unitamped goods shall be kept feparate, on pain of $10 \%$ ( $5 \mathrm{Geo} . \mathrm{c} .2$.) And thofe that have been ftamped fliall not be removed for 24 hours after ftamping, \&c. under a forfeiture of $20 \%$. ( 5 Geo. III. c. 43.) Scales and weights flall be kept for reweighing them, and affiftance given to the officer, on pain of $50 \%$. Perfons within the bills of mortality fhall pay off the duties within 14 days to the commiffioners, and in other places in fix weeks, after the goods have been marked. ( 9 Ann.c. 11.) Thofe who do not pay in this manner fhall forfeit double duty; and they fhall not be delivered out till the duty be paid, on pain of double value. Every tanner, and other fuch perfon, fhall balance their accounts with the officers once in three months, on pain of 50 . Any two juftices refiding near the premifes may hear and determine offences, and order the penalties to be levied by ditrefs and fale, if not redeemed in fix days.

Foreign manufactured gloves imported thall be forfeited, and may be fearched for and feized by any officer of the cuftoms or excife; and every perfon importing or vending the fame, fhall alfo forfeit $200 \%$ with double colts. 6 Geo. III. c. 19.

## Leather, blacking for. See Bìacking. <br> Leather, buff. See Buff.

Leather, fofil, alluta montana, is a foliated amianthus, confifting of foit fibres interwoven together and frequently containing fparry cryitals inclofed in it.

Leather, gilt. See Japanner's Gilding, and Lac. quer.

Leather mills. See Mill.
Leather money. See Money.
Leather-moutbed, in Ichthyography, a term ufed as the Englifh for malacoftomous, the ditinctive epithet of fuch fifhes as have thick lips and no teeth in their jaws; as the carp, tench, bream, roach, \&cc.
Leather-fellers, company of. See Company.
Leather, Bamoy, or fbammy. See Shammy.
Leather, Turkey, method of preparing, \&c. See Turkey leather.

LEATHERHEAD, in Geography, a large parifh, 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 $\mathbf{1 8 0 0}$, the town confifted of 200 houfes, and contained 1078 ioh bitants. This place is chiefly remarkable for a large fair, held here on the 1oth of October, for cattle, horfes, pigs, toys, \&c. The river Mole paffes through this parihh, and emerges to day here, after having been hidden in a fubterraneous channel from the foot of Boxhill. This is a fin. gular 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
fcenery, and fine profpects. The principal of thefe is Norbury-park, the feat of William Lock, elq. ; a very irrterefting defeription of which, and its painted room, by Barret, will be found in Gilpin's "Obfervations on the weftern Parts of England," 8vo. 1798. See alfo Mannisg and Bray's "Hifory 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 cominunes.

LEAVE and Takc. See Take.
LEAVEN, any thing that will mako a body fwell and ferment.

The word is formed of the French levain, which fignific3 the fame, of the verb lever; or Latin levare, to raife.

Beer, ale, wine, and cyder, only work by means of the leaven in them. Sour pafte, barm, rennets, \&c. are leavens ufed in baking bread, brewing beer, making cheefe, \&e.

Leaver. See Lever.
LEBA, in Geography, a town of Pomerania; 16 milds N. of Lauenburg.

LEBACH, a town of France, in the department of the Sarre, and chief place of a canton, in the diftrict of Sarrebruck. The place contains 506, and the canton 8392 inhabitants, in 66 communes.

Lebadere, Livadia, in Ancient Geograpby, a towni of Greece, in Boootia, 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 Midza; but an Athenian, named Lebadus, perfuaded them to build another on the plain, which was called after his nameOn the banks of the Hercyna was a temple dedicated to He cyna. The facred grove of Trophonius was near this town, in which was a temple of this name, with a fatue made by Praxiteles. Ceres, furnamed Europa, had a temple here, and Jupiter Pluvius had a ftatue. Near this place was a temple of Proferpina confervatrix, and another of Jupiter rex. The flatue of Trophonius at Lebadex. is faid to have been the work of Dxdalus. Paufanias, 1. ix. Bootic. c. 40 .

LEBAA, a town of Macedonia, anciently the capital of this kingdom, the precife fituation of which cannot be afcertained.

LEBANON, or Libanus, a celebrated mountain of Alia, fituated on the borders of Paleftine and Syria. It takes its name, as fome fay, from the Hebrew laban, on account of the whitenefs of its fummits, which appearcovered with fnow a great part of the year. Others derive: it from the Greek libanos, frankincenfe, alleging, without fufficient reafon as Reland obferves, that it furnifhed this or any other aromatic gum. The antilebanan, or antilibanus, is fo called from its parallel courfe in oppofition to, the other. Some ancient fathers, as St. Jerom and Eufebius, have defcribed the libanus and antilibanus as one continued ridge, winding about in the form of an horfe-floe, which begins about three or four leagues from the Mediterranean, a little above Smyrna, and running fouthward towards Sidon, takes an eaftern courfe towards Damafcus ; winding thence northward towards Laodicea Cabiofa. The wettern ridge is that which is properly called Libanus ; the eaftern is Antilibanus, and the hollow between is Coclefyria. (See Antilibanus and Caflesyria.). St. Jerom reprefents Libanus as by far the luftieft hill in the whole land of promife, as well as the molt woody and thick-fet,

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and 'Theodoret alfo ftates it to be the highert of all Paler tine. Modern travellers concur in this account of its great height. "Scarcely," fays Volney, "do we depart from Larnaca in Cyprus, which is 36 leagues diftant, before we difcover its fummit capped with clouds. This is alfo diftinctly perccivable on the map, from the courfe of the rivers. The Orontes, which flows from the mountains of Damafcus, and lofes itfelf below Antioch; the Kefmia, which, from the north of Balbee, takes its courfe towards Tyre; the Jordan, forced by the declivities towards the fouth, prove that this is the highelt 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 Jerufalem; but after the month of March it melts, except on mount Lebanon, where, however, it dues not remain the whole year, except in the highelt 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 confequentiy much lower than the Alps, or even the Pyreneés. Mount Blanc, the loftielt of the Alps, is eftimated at 2488 fathoms above the level of the fea; and the peak of Olfian, in the Pyreneés, at 1900. Lebanon, which gives its name to the whole extenfive chain of the Kefraouan, and the country of the Druzes, prefents us every where with majeltic mountains. At every ftep we meet with fcenes, in which nature difplays either talter grandeur, fometimes fingularity, but always variety. When we land on the coalt, the loftinefs and iteep afcent of this mountainous ridge, which feems to inclofe the country, thefe gigantic mafles, which fhoot into the clouds, infpire aftonifhment and awe. Should the curious traveller then climb thefe fummits which bounded his vierr, the wide extended fpace which he difcovers becomes a frefh fubject of admiration; but completely to enjoy this majeftic fcene, he mult afcend 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 loit over the defert, which extends to the Perlian gulf, and over the fea, which bathes the coalts of Europe. He contemplates, befides rocks, woods, torrents, hill-fides, villages, and towns, which are nearer and more diflinct objects, the valley obfcured by formy clouds, and fmiles at hearing the thunder, which liad fo often burlt over his head, growling under his feet; while the threatening fummits of the mountains are diminifhed till they appear only like the furrows of a ploughed field, or the iteps of an amphitheatre, and he feels himfelf flattered by an elevation above fo many great objects, on which pride makes him look down with a fecret fatisfaction. Such is the picturefque defcription of Volney, which he purfues more in detail. Mount Lebanon is computed at about 100 leagues in compais, and is bounded by Mefopotamia on the E., Armenia on the N, Paleftine on the S., and the Mediterranean on the W. It confifts of four ridges of mountains, which rife one above the other; the firit of thefe is very fertile in grain and fruit; the fecond is barren and rocky, producing nothing but briars and thorns; the third, though ttill higher, is faid to enjoy a conllant verdure and fpring, its gardens and orchards producing fuch a variety of herbs, fruits, \&c. that it hath been ftyled an earthly paradife; the latt and loftieft is uninhabitable, by reafon of its exceffive coldnefs, being covered with deep fnows almoft all the year. It is monly inhabited by the Maronites below,
and by the wild Arabs, called Amadea, of the fect of Hali, every where elfe but on the top. Here are feveral churches; convents, and chapels, and caverns cut into the rock. Tho Monks that inhabit it are very poor, but courteous to tra. vellers, from whom they expect fome token of beneficence. The convent, or crnobium, where the Maronite patriarch refides, lies almolt in a bottom: the defcent 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 largeft. A river which empties itfelf 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 fome vines, which afford excellent wine; and fine young mulberry trees, as well as cedars, and other curiofities. Of the boalted 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 difpofed on piles of fix or eight feet in height. They are not pruned as in France, which muft certainly, fays Volney, greatly injure both the quantity and quality of the crop. The vintage begins about the end of SeptemberThe convent of Mar-hanna makes abont 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 "golden: wine" of mount Lebanon. This is not boiled, as is the cafe in the preparation of other wines, but left to purify itfelf by keeping: the quantity produced is fmall. It is, as its name implies, of a bright golden colour, and is highly prized even on the fpot. Several confiderable rivers have their fource in this mountain, viz. the Jordan, Rucham, Nahar-Roffian, and Nahar-Cadicha; befides many leffer itreams, that run between the valies; particularly that of Ahouali, which flows down into the "Ronantic valley," focalled, becaufe it is furrounded on all fides with high rocks. Thefe rivers, rufhing down from fuch heights, form feveral beautiful cafcades, like thofe of the Nile. This mountain has been, and is itill to this day, a place of retreat and refuge for a great number of robbers, and other defperate people. The ftose which compofes the mountains of Lebanon and Antilebanon, and thofe of Syria in general, is a hard calcareous ftone of a whitifh colour, fonorous like free-itone, and difpofed in ftrata varioully inclined. Of this itone the inhabitants build their houfes, and make lime.

Lebanoz, a poft-town of America, in York county, Maine, on the eaft fide of Salmon-Fall river; roo miles N. of Bofton. It was incorporated in 17\% 67 , and in 1790 contained 1275 inhabitants.-Aifo, a poftetown in Windham county, Connecticut, fettled in 1697. The foil is equal to almoft any in the ftate, and the inbabitants are generally farmers, of whom many are rich. The number of inha. bitants is $3652 ; 9$ miles N. of Norsich.-Alfo, a poit-town in Gration county, New Hamphire, on Mufcoury river, and on the eaft fide of Connecticut, 2 miles below Dartmouth college; incorporated in 1761, and in the year 1800 containing 1574 inhabitants. - Alfo, a polt-town of Pennfylvania, fituated on the fouth fide of Quitapehilla creek, in Daupbin county; containing about 300 houfes regularly: built.

## L E B

bult, many of them of brick and ftone, a German Lutheran and a Calvinitt church; $\mathrm{S}_{2}$ miles $\mathrm{N} . \mathrm{W}$. by W. from Pliladelphia.

Impanos, New, a village in Canaan, New York, 'pleafantly fituated, partly on the declivity of a hill, and partly in a valc, and containing medicinal fprings next in celcbrity to thole of Ball-town, Saratoga.

LEBE, a town of Germany, in the lordfhip of Lauenburg, in a lake near the Baltic; 15 miles N. WV. of Lamenburg. N. lat. $54^{\circ} 4^{\circ}$. E. long. $17^{\circ} 29^{\circ}$.

LEBEDIAU, a town of Kufia, in the government of Tambov ; Ico miles W.N.W. of 'Tambov. N. lat. $53^{\circ} 2 \mathrm{~S}^{\prime}$. E. long. $38^{\circ} 50^{\prime}$.

LEBEDIN, a town of Ruffia, in the government of Charkor; 60 milea N.W. of Charkor.

LEBEDOS, in Aucim Grogruphy, a town of the Ionians, fituated in Lydia, upon an ilthmes, north of Colophon, dittant 120 Itadia from this city. Lyfimachus demolithed it, and tranfported the inhabitants to Ephefus.

LEBERIS, in fome Medical $/ W^{\prime}$ riters, a word ufed to exprefs the exuvix of ferpents, or the fkins which fnakes calt off every year. Thefe are by fome greatly recommended for taking off freckles and fun-burns from the face.

LEBIALNA, in Geograply, an ifland of Ruflia, in the Cafpian fea. N. lat. $45^{\circ} 55^{\prime}$. E. long. $53^{\circ} 30^{\prime}$.

LEBIAR, a foreft of Africa, in the country of Zenhaga, affording great quantities of gum ; 100 miles E.N.E. of Portendic.

LEBIDA, or Lerds, a fea-port town of Africa, in the country of Tripoli, on the coalt of the Mediterrancan; 30 miles E.S.E. of Tripoli. N. lat. $32^{2}$ fo'. E. long. $335^{\circ}$.

LEBIEDA, 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.
I.EBLANC, MiChiel, in Biography, born at Dijon in the year 1653 , entered into the order of the Jefuits, and was one of the fourteen mathematicians whom Lewis XIV. fent to the king of Siam in 1687. Leblanc went and refided with the priefts 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 miflionaries, and he was obliged to return to l'aris. He had the misfortune of being taken prifoner by the Dutch, and thrown into prifon at Middleburg, in Zealand. In the year I 'igo he was fet at liberty, and returned to Dijon, where he was em. ployed as profeffor of mathematics in the Jefinits' college. In 1695 he joined a new miffion 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. 12 mo . Moreri.

LEBNA, in Scriphure Geograply, a itrong 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. Jofhua 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 Georraplyy, a town of Tranfylvania; 15 miles S.E. of Schefburg.

LEBNI, in the Materia Mrdica of the Ancients, a name given by fome to ftorax. A vicenna las treated of this drug is three feparate chapters. The Greeks were very nice in
diftinguifing the feveral kinds of forax, and the Arabians feem to have followed their example: nay, they have even borrowed fome 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 lefni, the honey of forax. I'his was a common word with them to exprefs any thing foft.

LEBO, in Gcography, a river of Chili, whech runs into the Pacilic ocean, S. lat. $37^{\circ} 30^{\prime}$.

LEBRIL.LA, a town or village of Spain, in the province of Murcia, containing about 1000 inhabitants ; almolt divided into two by a fort of long, broad, and deep bog, formed by rains, over which is a bridge; in miles from Murcia.

LEBRIXA, or Lemmis, 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 callle; and the environs produce olives, which afford fome of the bett oil in Spain; 20 miles $S$. of Seville.

LEBSKO1, a town of Ruffia, 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 fcite is low, and among hills, which intercept the view of it; $;$ miles N.W. of Franckfort on the Oder. N. lat. $52^{-2} 23^{\prime}$ E. long. $14^{\circ} 44^{\prime}$.

LECA, a town of the illand of Samos.
LECANOMANTLA, $\Lambda_{\text {exavoparisis, }}$ in Antiquity, a kind of divination performed in a bafon with wedges of gold or filver. See Hydromancy.

LECASELLO, in Gcography, 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 bihhop, 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 parifh churches and feveral convents. It is the refidence of the governor, and the number of inhabitants is eltimated by fome at 3,000 , by others at I8,000; 24 miles from Brindifi, and as far from Otranto, and 8 miles from the eaftern fhore. N. lat. $40^{\circ} 40^{\prime}$. E. long. is: 8'.

LECCI, a town of the illand of Corfica; 5 miles N , 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; $1+$ miles E.N.E. of Como. N. lat. $45^{\circ} 5^{\prime}$. E. long. $9^{\circ} .3^{\prime}$.

LECETA, a town of Spain, in Navarre; 17 miles N.N.W. of Pamplona.

LECH, in Metallurgy, a term ufed by the miners to exprefs the gold ore which has been powdered and wafhed, and afterwards run with the affiftance of limeiftone. 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 forifying the extraneous matter, renders the gold pure.

LECHIEUM, in Ancient Geograply, 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 ltatue of this deity. Venus had alfo a temple here.

## LECIEA.

LECHEA, in Bolany, was fo named by Linneus, at the fuggeftion of Kalm, in honour of Profeffor John Leche, of Abo in Finland, Member of the Stockholm Academy, feveral of whofe memoirs, relating to zoology, botany, and rural economy, are found in the Tranfactions of that learned body. He has alto left us three differtations, publihed under his prefidency: 1, Primitix Flore Scanicis; 2, Nove Infecsorum Species, written by his pupil Uddman, a piece highly valued for its merit and rarity; 3, De Conmoratione bybernali et peregrinationilus birundinum. He died in 1764, aged 60. The name is pronounced Lekéa. Limn. Gen. 43 . Schreb. 59. Willd. Sp. PI. v. 1. 495. Nart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 88. Juff. 303. Lamarck. Illuftr. t. 52. Gxertn. t. 129. Michaux BorealiAmer. v. 1. 76.-.Clafs and order, Triandria Trigynia. Nat. Ord. Caryopbyllei, Linn. Juff.
Gen. Ch. Cal. Perianth inferior, of three ovate, concave, fprcading, 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 pittil, equal ; anthers roundin. $P_{i j}$. Germen fuperior, ovate; ityles none; Atigmas three, feathery, fpreading. Pcric. Capfule ovate, nightly triangular, of three cells, and three valves, cohering at their bafe, with three central linear receptacles. Sechs folitary, ovate, angular at the inner fide, where they are attached to each receptacle.

EIT. Ch. Calyx of three leaves. Petals three, oblong. Capfule fuperior, of three cells, and three half-diftinct valves, with three central linear receptacles. Sceds folitary.

1. L. minor. Leffer Lechea. Linn. Sp. Pl. 133. Am. Acad. v. 3. 10. Lamarck. t. 52. F. I ? (L. major ; Michaux ת. I, by the defcription. - Hairs of the flem and branches fpreading. Lower leaves whorled, elliptical, with a fmall point; upper alternate, lanceolate, acute. Flowers panicled, fomewhat corymbofe.-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, flort, leafy branches, all clothed with long, white, fpreading hairs; \&lowering flems much taller and flouter, from one to two or three feet high, panicled, leafy, round, clothed with rather lefs spreading hairs. Leates of the barren items three or four in a whorl, on fhort ftalks, fpreading, a quarter of an inch long, broadly elliptical, entire, with a fhort point, the margin and rib fringed with long white fpreading hairs: thofe of the flowering ones fcattered, longer, and narrower. Flowers numerous, frall, terminating the lateral branches, i: fmall corymhofe clufters, whofe ftalks are hairy, and more or lefs furnihed with lanceolate bracteas. Calyx-licaves broad, keeled, very concave, fmooth. Capfule polifhed.
This is certainly what Linnxus originally intended for Lechea minor, though the afterwards confounded other ftill finaller fpecies with it, and the name being oppofed to his major, which is a nonentity, is unmeaning, if not falfe. Lefs inconvenience, however, mult arife from retaining than from changing it, unlefs we were furnithed with more ample and certain materials for new modelling the whole genus. Our aim here is to correct fuch errors as we can, for the ufe of thofe who may take up the fubject hereafter.
2. L. major. Greater Lechea. Linn. Sp. Pl. 133. Am. Acad. v. 3. 11.t. I. f. 4; copied in Lamarck, fo 2."Leaves ovato-lanceolate. Flowers lateral, fcattered."Native of dry lituations in Canada. Linnæus, in his manufcripts and Sylt. Veg. quotes for this, Menandra ramis altermis, Gron. Virg. ed. 2. 20, that is, An Cumeraria Jpecies, foliis latioribus oblongit: fubtus argeintis, cain! rubro, calfulu
ample triloculari of Clayton, who found his plant, flowerip! in Augult, on fandy hills at point Comfort, in the count'y of Gloucelter, Virginia. It is deferibed as Mrubby, with the afpect of Ci, /,us Jfcliantbocmury or of Faccinium O.ycoccir, two plants between which it is difficult to find any perint of refemblance; the lerves alterrate, oblong, and entire. Corolla none. Samens four, as long as the calyx, the two uppermolt fpringing from the fame point of the receptacle, the two lateral ones oppofite. Style none. Stigma hifpid. The relt of the account accords with the gericrec character. It mult be obferved that when Clayton gueflis his plant to belong to Cameraria, he means that of Dillenius, which is the Limman Montia. Linnxus, in the Amonitates, defcribes his L. major thus. "Stoms purplifh, round, with fimple, alternate, diltant branches. Seaves alternate, ovallanceolate, rough above, downy beneath, reffexed at the margin, fearce perceptibly ftalked. Flosvers two, threc or four from the fmall uppermolt branches." Now it happens that the fpecimen in the Linnecan herbarium is no other than Cijhus canadenfis, with the numerous flamens proper to that genus, and totally foreign to Lechea. The capfule alfo has imperfect partitions from the middle of the valve.. The feeds indeed appear to be but one in each cell, and large, the only circumitance which cculd induce a reference of this Cifus to Lechea. Yet there can be no doubt of the defcription in the Amocnitates 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 Linnrens in $\mathrm{Sp} . \mathrm{Pl}$, and being in itfelf too imperfect to convey a precife idea of any thing, it can determine nothing in the prefent cafe. What is L. major of Kalm we know not, nor that of Hort. Kew. That of Michaus appears clearly to be our minor, whote lower leaves are indeed fo much like Oxycoctus, while its upper are not sery unlike Heliantbenum, that Clayton might poffibly have that fpecies in view when he made the above defcription, but the "large capfule with threc cells", agrees beft with the above Ciffus. Amid all this uncertainty we would rather ftrike out $L$ : manjor, and give a new name, perhaps beteropbylla, to our minor:
3. L. racemulysu. Many-cluitered Lechea. Michaux Boreali-Amer. v. 1. 77. (Menandra ramis ternis; Gron. Virg. ed. 2. 21.)-Hatrs clofe-preffed. Leeaves linearlanceolate, acute, hairy beneath. Flowers in numerous flender clufters. Calyx hairy-Gathered by Clayton in the fame place, at point Comfort, with the latt. Specimens from him are in the Linnæan herbarium, anfivering to the account of. Michaux, who alfo gathered his plant in Virginia. We have others, probably of the fame fpecies, from Kalm, and from the Rev. Dr. Muhlenberg of Lancafter in Pennfylvania. Thofe of Clayton have a panicled feen, a foot or two high, clothed with clofe-preffed, fomewhat filky, hairs; the branches either ternate, oppolite, or fcattered. Leaves of the ftem lanceolate; thofe of the branches linear, gradually fmaller upwards, and often accompanying the flowers, but fometimes the cluffers are leafefs; they are elongated, flender, hairy or filky. The caly:w alfo is hairy, and greatly refembles that of a little annual Cijfus.
4. L. thymifolia. Thyme-leaved Lechea. Michaux Bo-reali-Amer. v. 1. 77, excluding the fynonym. (Capraria foliis integerrimis; Gron. Virg. ed. 1. 55. Herb. Linn. from the author.) -Hairs clofe-preffed. Leaves lanceolate. Stem panicled. Clufters leafy. Bracteas linear, much longer than the flowers.-Gathered by Clayton in Virginia; by Michaux in dry expofed fituations in North a:d South Carolina. Stem a foot high, round, reddifh, rough with clofe-preffed hairs; fimple and naked below; panicled and leafy above. Leaves oppofite or fcattered, various in fize, fightly,

## L E C

nightity Atalked, lanccolate, acute, the margin and rib fringed. Flozvers in numerous, flender, hifpid clufters, furnifled with copious linear braleas, two of which, extremely narrow and obtufe, accompany every flower at the bafe, and are twice as long as the calyx; which is likewife hairy or hifpid.
${ }_{5}$. L. tenuifolia. Slender-leaved Lechea! Michaux Bo-reali-Amer. v. 1. 77.-Stems bufhy, decumbent, afcending, with fpreading branches. Leaves linear-awl-fhaped. Flowers ranged alteraately, and rather remotely, 'along the branches. On fandy hilis near the Santee river, flowering in A pril and May. We know nothing of this fpecies but from Michaux, who defcribes it as of humble and bufhy growth, with capfules rather larger, in proportion to the plant, than is ufual 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, fipreading or decumbent, fimple or branched, a fpan long, round, leafy, clothed with foft fpreading hairs. Leaves oppofite, ftalked, half an inch long, elliptical, acute, finely and fharply derrated, hairy, tapering at the bafe. Flozvers numerous, in denfe axillary whorls, fufficiently agreeing with the character of the genus, to which Willdenow has judicioufly referred it. The ferrated lizves, however, are very peculiar.

Another fpecies, L. chinenfis, is mentioned in Loureiro, Cochinch. 60; but this, though adopted by profeffor Martyn, caunot, in our opinion, have any right to a place here, the author's defcription fhewing it evidently to be nearly allied to Commelina, confequenly more remote, if poffible, than even the above Ciflus canadenfis from Lechea. S.

Lechenaul.TIA, named by Mr. R. Brown, in compliment to his friend Lechenault, an eminent French botanift and traveller, who has undertaken to illuftrate the plants of the weftern coaft of New Holland more efpecially, as wcll as thofe of Java and Timor. Brown Prodr. Nov. Holl. v. 1. 581. Clafs and order, Pentandria Monosynia. Nat. Ord. Campanacea, Linn. Campanulacea, Juft. Goodenevia, Brown.

Eff. Ch. Calyx fuperior. Tube of the corolla flit longitudinally on one fide. Anthers cohering. Pollen of compound grains. Stigma obfolete, in the bottom of a twolipped cover. Capfule prifmatic, of two cells, and four oppofite valves with central partitions. Seeds cubical or cylindrical, fhelly. Brown.

Obf. The grains of pollen, in all the fpecies, are compofed of four combined globules, which mark, though minute, is efteemed by Mr. Brown very effential to diftinguif this genus from all the reft of its natural order, and efpecially from its near ally Anthotium.

The fpecies are generally fhrubs of humble growth, rarely herbaceous, and are fmooth, with narrow entire leaves. Flowers axillary or terminal, moftly folitary.

Sec. I. Small fhrubs, with heath-like leaves. Flowers axillary or terminal. Capfule valvular. Seeds cubical.
I. L. formofa. Flowers axillary, folitary, drooping, without bracteas. Corolla fmooth, two-lipped.-Gathered by Mr. Brown on the fouth coalt of New Holland.
2. L. tubiflora. Flowers nearly terminal, folitary, Пightly ftalked. Corolla tubular, curved, with a clofed limb. Leaves awl-fhaped, with a fmall pellucid point.-Native of the fame , country.
3. L. expanfa. Corymbs axillary, of few flowers. Stalks with a pair of bracteas each. Corolla with one lip, in fringed Segments.-Native of the fame country.

Seld. 2. Herbaceous. Elower oppofite to a leaf. Cap.
fufe opening only when far advanced, its valves cohering by a narrow neck. Seeds cylindrical.
4. L. filiformis. Leaves alternate, thread-fhaped, fomewhat compreffed.-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 Chambery.

LECHIA, in Ichthyology, a name given by Paulus Jovius, and others, to the fifl called by others amia and glaucus, and by the ancient Grecks amia and trotus. See Scossber.

Lechlade, or Leachlade, in Geography, a fmall market-town and parifh in the hundred of Brightwells-barrow, Glouceflerfhire, England, is fituated, 76 miles, diftant from London, on the north fide of the xiver lfis, or Thames, near the point where the counties of Berks, Oxford, and Gloucefter unite; and not far from the place where the Leche rivulet empties itfelf into the Thames. From the latter circumflance Lechlade is faid to have derived its name: lade being a contraction from the Saxon ladean, to unload or empty. In Domefday bcok is the mention of a finhery here of 17 ; eels. The manor, at the period of that furvey, was the property of Henry de Fereres, anceltor of the Ferrers, earls of Derby, from whom, by the marriage of Ifabel, an hieirefs, it was conveyed to Roger Mortimer. A priory, or hofpital for Black Canons, and condifting of a mafter and certain poor and infirm brethren, was founded here upon a piece of ground coflled Lade, near the ancient bridge over the Thames, given for that purpofe by lady Ifabel Ferrers. The hofpital was fupprefled in the year 1473, and its revenues applied to the foundation of a chantry of three prielts in the parifh church. Some foundations of buildings, fuppofed to have belonged to the priory, have been dug up near the bridge. The church is a handfome ftructure in the pointed ftyle, 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 parinh. The nave is fpacious, and divided from the ailles by light pillars; at the weft end is a fquare embattled tower, terminated by a well-proportioned fpire : the pulpit is of fculptured fone. At this town the Thames becomes navigable; and here the junction of the Thames and Severn is completed by the canaL. Moft of the Wiltfhire and Gloucelterfhire cheefe, confumed 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 fais, held on the ninth of September, is much frequented. According to the returns made in 1800 , under the population act, the inhabitants of this parilla amounted to 917 ; the number of houfes to 193 .

In a meadow near Lechlade, was lately difcovered a large fubterraneous building, fuppofed to have been a Roman bath: it was nearly fifty feet in length, forty in breadth, and four in height; the floor was fupported by pillars of brick, and curioully inlaid with ftones of variegated colours. Ridge's Hittory, \&c. of GloucefterMire, 2 vols. Svo. Beauties of England and Wales.

LECHNICH, a town of France, in the department of the Roer, and chief place of a canton, in the dillrict of Cologne. The plase contains 1053, and the canton 11,462 inhabitants, in $3^{I}$ communes.

LECHONES, Os, a clufter of fmall illands in the Atlantic, near the 'W. coalt of Portugal ; three miles N. frona
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the mouth of the Duero. N. lat. $41^{\circ} 43^{\prime}$. E. long. $8^{\circ} 25^{\prime \prime}$.

LECHWAR, a town of Hindooltan, in Bahar; 30 miles S. of Bahar.

LECK, a town of Denmark, in the duchy of Slefwick; 14 miles N. of Breditede.

LECKNESS, a town of Norway; 22 miles W. of Chriftianfand.

Le Clerc, Daniel, in Bigraphy. See Clerk, Daniel le.

L'ECLUSE, in Geography. See Eczuse.
LE COQ, Anthony, in Biography, a Parifian phyfician, 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 confultation with Fernel, to vifit the French king, Francis I. who had contracted the venereal difeafe. He fhewed his knowledge of the nature of the difeafe, by infiting, in oppofition to Fernel, who was not difpofed to employ any other remedy than his antivenereal opiate, that mercurial frictions were neceffary ; but his mode of propofing it evinced that he was a novice in the manners of a court. He obferved to Fernel, fpeaking of the king, "C'eft un vilain qui a gagné la vérole ; frottetur comme un autre, et comme le dernier de fon royaume, puifque il s'eft gaté de la même manière." This was reported to the king, who laughed, and was pleafed with his franknels. Le Coq left two works: 1. "De Ligno farcto non permifcendo in imperitos fucatofque medicos," Paris, 1548. 2. "Confilia de Arthritide," Francfort, 1540. The latter comprehended alfo fome other treatifes on the gout, efpecially thofe of Sylvius and Fernel ; in conjunction with whom, Le Coq had been confulted on the fubject by Louis of Flanders, and by Eleo. nora, queen of France. Eloy. Dict. Hif.

LECTICA, among the Romans, a litter, or vehicle, in which people were carried. The fella differed from the ledica, as being higher, and becaufe people always fat in it; on which account the fella, from the time it was firlt brought into ufe, was efteemed the more honourable carriage of the two. See Litter.

The lectica was alfo ufed as a bier for carrying out the dead, who were dreffed in habits fuitable to their quality and fex. Pitifc. in voc. See Buryisg.

LECTICARII, among the Romans, fervants who carried the lectica.

LECTICARIUS, was alfo an officer in the Greek church, whofe bufinefs it was to bear off the bodies of thofe who died, and to bury them. Thefe were otherwife denominated decani and copiate.

Lectio, Reading. Confidered in a medicinal view, it is faid by Celfus, lib. i. cap. 4 . to be bad, efpecially after fupper, for thofe whofe heads are weak: and in lib. I. cap. 8. he recommends reading with an audible voice, for fuch as have weak ftomachs. It is alfo directed by Paulus Æginetus as an exercife, lib. i. cap. I9.
L.ECTISTERNIUM, a religious ceremony among the ancient Romans; being a feftival prepared, and folemnly ferved up, in a temple, at a time of public calamity aud danger.

And becaufe, according to the cuftoms of thofe times, they placed beds around the tables, and fet the fatues of the gods on thofe beds, in the fame manner as men fat at meals, they called the folemnity lectifternium, from leaus, bed, and ferners, of ferno, to fpread, prepare.

It this ceremony the Sibylline decemvirs prefided, till Vol. XX.
the year of Rome 558, and afterwards the Epulones. See Epulo.

Cafaubon has obferved, from a paffage in the fcholiaft of Pindar, that the Greeks had alfo a fort of lectifternium in ufe.

Livy obferves, that the firft lectifternium feen in Rome, was that which held for eight days fucceftively, in honour of Apollo, Latona, Diana, Hercules, Mercury, and Nep. tune; on occafion of a contagious difeafe which killed almoft all their cattle, in the year of Rome 354 ; though Valerius Maximus mentions one before that.

LECTORES, among the Romans, fervants in great nien's houfes, who were employed in reading while their malters were at fupper. They were called by the Greeks anagno/ze.

LECTOURE, in Georraphy, a town of France, and principal place of a diftrict, in the department of the Gers, feated on a mountain, having accefs only on one fide, near the Gers, and well defended. Before the revolution it was the refidence of a governor, and fee of a bilhop. The place contains 5433n and the canton 13,655 inhabitants, on a territory of 265 kiliometres, in 17 communes; 16 miles S. of Agen. N. lat. $45^{\circ} 5^{\prime}$. E. long. $0^{\circ} 22^{\prime}$.

LECTUM, in Ancient Geograpby, Cape Bala, a promontory of Afia Minor, belonging to the Troades, fituated between the ifle of Lefbos to the fouth, and that of Te nedos 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 parifh churches, diftinct from the rector, vicar, and curate. They are chofen by the veltry, or chief inhabitants of the parifh, fupported by voluntary fubicriptions and legacies, and are ufually the afternoon preachers in the Sunday fervice. The term is alfo more generally applied to thofe who preach on Sunday, or on any ftated day of the week, in churches, or other places of public worhip. By 13 \& 14 Car. II. cap. 4 lecturers in churches, unlicenfed, and not conforming to the liturgy, fhall be difabled to preach, and thall alfo fuffer three months' imprifonment in the common gaol : and two juftices, or the mayor, or other chief magiltrate, in a town corporate, fhall, upon certificate of the offence from the ordinary, commit them accordingly. Where there are lectures founded by the donations of pious perfons, the lecturers are appointed by the founders, without any interpofition or confent of rectors of churches, \&c. though with the lease and approbation of the bifhop: 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 poffefled of the freehold of the church.

## LECTURES. See Boyle's Leafures.

Lectures of Divinity, \&cc. in the univerfities. See Re. arus Profeffors.

LECTUS Igneus, among the Romans, a kind of inftrument of torture firf invented by Decius. The bottom of it was fet with ferrated teeth or fpikes, and ftrewed with falt; while melted tallow was poured from above on the unhappy tortured perfon.

LECYTHIS, in Botany, fo denominated by Lœfling, from the Greek word $\lambda r \times v i o ;$, an oil jar, or large pot. He confounds it with $\lambda_{\text {sxs }}$ os, the yolk of an egg. The latter has been ufed for the pea, alluding to the yellow colour of its internal fubftance : $\lambda_{r} \times \cup \mathcal{S}_{0} 5$ applies to the form of the feedveffel, which is that of a great pot with a cover. Loefl It. 189. Linn. Gen. 268. Schreb. 359. Willd. Sp. Pl. v. 2. 1172. Mart. Mill. Dict. v. 3-Jacq. Amer. 168. 30

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Juff. $32 \%$ Lamarck Illuftr. e. 476 - Clafs and order, $P a$ lyandria Monogynia. Nat. Ord. Hefperidee, Linn. Myrti, Julf.

Gen. Ch. Cal. Perianth fuperior, of fix roundifh, concave, permanent leaves. Cor. Petals fix, very large, oblong, obtufe, flat, the two uppermoft widely fpreading. Nectary petal-like, of a fingle tougue-fhaped leaf, flat and perforated at the bafe to admit the germen, bordered; its oblong part bent inwards and upwards from the bottom of the flower, linear, externally convex, thicker and ovate at the extremity, covering the pittil with the flamens. Stam. Filaments very nemerous, inferted upon the difi of the bafe of the nectary at the inner lide, very fhort, fivelling upwards; anthers oblong, fmall. Pif. Germen inferior, depreffed, pointed, encompaffed with the receptacle of the flower, Atyle very fhort; ttigma bluntifh, conical. Peric. Capfule woody, roundifh at the bafe, abrupt at the top, encompaffed with the remains of the calyx, cut round, and opening by a circular lid, imperfectly divided into four, fometimes two or fix cells. Sceds few, polifhed, with rough edges.

Eff. Ch. Petals lix. Calyx of fix leaves. Nectary tongucfhaped, bearing the ftamens. Capfule with a lid, and many feeds.

1. L. ollaria. Linn. Sp. Pl. 734. Loef. It. 189 . (Jacapucaya; Marcgr. Braf. 128. Pif. Braf. 135.)-Leaves feffle, ovate, fomewhat heart-fhaped, nearly entirc.-Native of Brafil and the Caracaos. This, according to Licofling, is a vall tree, with large unequal branches, bent in various directions, and a rough bark. Leaves about the ends of the branches, alternate, feffile, ovate inclining to heartfhaped, firm, fmooth, nearly entire, flightly waved, of a brownilh green. Flowers in terminal cluiters, flightly drooping, on alternate, horizontal, fomewhat angular italks, with ovate, concave, foon deciduous braileas. Corolla white, with a yellow nectary.-Marcgraave fays the leaves are ferrated, the fruit like a pot with its cover, as big as a child's head, containing feeds like chefnuts, eatable either rav or roafted, and that the bark of the tree ferves to make ink.
2. L. minar. Linn. Sylt. Veg. ed. 14. 494. Jacq. Amer. 168. t. 109. - Leaves Italked, lanceolate, ferrated.Obferved by Jacquin in woods near Carthagena, Sonth America, flowering in June and July, ripening fruit in December. An elegant branching tree, 60 feet high. Leaves numerous, fix inches long, alternate, fpreading in two directions, lanceolate-oblong, pointed, ferrated, fmooth. Spikes terminal, each often accompanied by a fmaller axillary one below, fhorter than the leaves; the flowers nearly feffile, Slightly fcented. Petals and neEary white. Stamens yellow. Fruit very hard, brown, two inches wide. Seeds about eight. Jacquin thought he experienced a giddinefs and ficknefs after eating one of them, though its tafte proved very agreeable. Some perfons told him thefe feeds were eatable, others reported them to be poifonous. Monkies are faid to be fond of them. The flowers are infefted with a kind of black wafps, very troublefome to thofe who attempt to gather any.
3. L. grandiflora. Aubl. Guian. v. 2. 712. t. 283-285. (L. Ollaria; Linn. Aın. Acad. v. S. 258; Herb. Linn.) Leaves italked, obovate, entire. Clufters many times longer than the foottalks. Petals obtufe, - 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, fightly wavy, fmooth, with one rib and many parallel tranfverfe veins. Fooffalks an inch long. Cluffers about the ends of the branches, axillary, pendulous,
of numerous large rofe-coloured flowers, whofe partial ftalks are an inch long, bearing a pair of blunt brateas, and whofe blunt concave petals are nearly an inch and laalf in length. Calyx-leaves rounded, obtufe, flat. Fruit about feven inches long, and four wide; the opening about $2 \frac{3}{2}$. Seedr, according to Aublet, very grod to eats 'The flowers appear in January, the fruit is ripe in April.
4. L. amara. Aubl. Guian. 716. t. 286 and 285.Leaves elliptic-oblong, pointed, entire. Clufters axillary and terminal, twice the length of the footitalks. Petals acute.-Found in the woods of Guiana, by Aublet, whofe ligure and defcription afford all the knowledge we have of this fpecies. He fays the trunk is' 10 feet high, bearing at the top many Atraight and horizontal brancbes, whofe fubdivifions are pendulous and leafy. In his French defrription, which will gencrally be found the molt original and authentic throughout his work, he lays this is a very lofty tree. The flowers are fmall, yellow, with two or three fcales upon their footltalks. 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 elliptic-oblong, pointed, entire. Clullers terminal. Petals obtufe, Calyx-leaves lanceolate. - Gathered by Aublet in the defert woods of the interior of Guiana, flowering in March, and bearing fruit in July. We have from fir Jofeph Banks a fpecimen of this fepcies, gathered in Dutch Guiana by Mr. Alexander Anderfon, which agrees well with Aublet's defeription, and helps us better to underftand the diftinctive characters, than profeffor Willdenow was able to do from his incorrect figure. The profeffor rightly expunges the quotations of Pifo, which belong to the firft ; but it is unlucky that the fpecific name belongs to them, or rather perhaps is common to many fpecies. This is a valt tree; its trunk 60 feet, or more, in height. Wood white, red in the centre. Leaves ftalked, from fix to ten inches long, and two or more in breadth. Cluffers at the ends of the branches, pendulous. Partial flower-falks an inch long, fwelling upward. Caly. -leaves broadilh at the bafe, tapering, concave, fharpifh from the inflexion of their edges at the fummit, flefhy, one-third of an inch in length, reddih when frelh. Petals large, rounded, flefhy, white bordered with rofe* colour, two of them much bigger than the reft, being equal to thofe of $L$. grandiffora. The fruit is about four inches in diameter. Seeds fweet, eatable, preferable to our almonds.
6. L. Idatimon. Aubl. Guian. 721. t. 289.-Leaves elliptical, pointed, entire. Clufters axillary. Stalks glandular. Calyx-leaves ovate, acute. Petals obtufe.-Native of wild forefts in Guiana. A tree agreeing with the laft in height, and in the general afpect of its leaves. Cluflers axillary, with zigzag, glandular red ftalks. Flozvers rofecoloured, not half the fize of the latt, with broader calyxleaves. Fruit little more than an inch in diameter. Aublet oblerved what he deemed a variety only, with yellow flowers.
7. L. parviffora. Aubl. Guian. 717. t. 287 and 28 .Leaves elliptic-oblong, pointed, entire. Clufters terminal, panicled. Petals acute. Capfule of two cells.-Found about the banks of rivers in Guiana. Aublet. A friall tree, with drooping branches. Leaves three or four inches long. Flowers much fmaller than even thofe of $L$. amara, bright yellow, and very frezrant. Fruit fmall, thin and brittle, of only two cells. Secds folitary, bitter.
8. L. multififora.-Leaves .... Cluiters terminal, panicled. Petals obtufe. Calyx-leaves broader than long, rounded, blunt, downy.-A native of Guiana, communicated by E. Rudge, efq. as a new fpecies of Lesythis,

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*hich it really appears to be. The leaves are wanting in our fipecimen. Cinflers 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 faiks are an inch long, fwelling upwands, downy or glandular, naked. Germen hemifpherical, downy, crowned with the fix calyxleaves, which are very fhort, rounded or heart-fhaped, blunt, minutely fringed, very like thofe of a Myrzus or Eugeria.
9. L. bradenta. Willd. n. 8. (Courcupita guianentis; Aubl. Guian. 708. t. 282. Pekia fructu maximo globofo ; Barrere France Equinoxiale, 92.)-Leaves tralked, obovate, pointed, entire. Clulters latcral. Calyx with a pair of acute bracteas at its bafe. 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. 'T'he fhape of the leaves feems molt to approach thote of E. grandiflora, and thefe two fpecies agree alfo in heving a pair of bracieas on each partial italk, juft below the calyx. Thefe are acute in the prefent, blunt in the former. Both alfo have a deciduous bractea at the bafe of cach partial ftalk. 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 feparated by an intermediate pulpy and fibrous fubltance, which may alfo be the caufe of its lid not falling off, as in all the above-defcribed. L. bracfeata is in flower and fruit nearly all the year round. Its corolla is of a full rofe-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, diffufed, as the fruit ripens, through all the internal part, among the feeds.

LECYTHUS, in Ancient Geography, a town of Greece, in Eubcea. Thucydides.

LECZENGA, in Geography, a river of Africa, which runs into the Mozambique gulf, S. lat. $17^{\circ} 20^{\prime}$.

LECZNA, a town of Poland, in the palatinate of Chelm; 24 miles N.W. of Chelm.

LEDA Negus, a town of Abyflima, in the province of Gojam; 120 miles S.S.W. of Gondar.
LEDAH, a town of Hindooltan, in the circar of Gangpour; 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-kill and other eminences, about one mile welt from the river Leddon, from which it derives part of its name. The town confills chiefly of two ftreets, croffing each other at right angles; the principal flreet runs north and fouth, and has a middle row near the old market houfe. This building is elevated on ftrong oak pillars, and compofed of timber and lath plaitered and white-wathed; the beams being coloured black. This mode of building is prevalent in the more ancient parts of the town; and many of the houfes have projecting flories: the modern houfes are of red brick, and of a refpectable appearance. The pavement, even in the high itreet, is very bad, and full of inequalities; the fmall flones that form it being preffed into the ltiff clay, which is the general foil of the county. Ledbury formerly belonged to the fee of Hereford; and bifhop Bohun procured the charter of a market from king Stephen, to be held on Saturdays ; but this having fallen into difufe, 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 fupport them. The church, which is a large edifice, of Saxon origin, confifes 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. Bihop 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 hofpital is a very ancient timber and plafter building. Here are alfo a free fchool, a charityfchool, and feveral alms-houles. The clothing trade was, at one period, very flourihing in this town; but the principal bufinefs now carried on is the manufacture of ropes, lincs, and facks. The cyder trade is very confiderable; great quantities being made in the vicinity. Ledbury is dittant from London 121 miles; the inhabitants, as afcertained under the act of 1800 , amounted to 3058 ; the number of houfes being 618 . The bifhops of Hereford formerly lad a palace liere.

On the Dog-hill, to the north of Ledbury, is Hope End, the feat of tir Harry Vane Tempett, bart. About two miles fouth of the town is the Vineyard camp; the works of which have been almoft defaced by the plough, and the area is cultivated. Beauties of England.
LEDER, a lake of the county of Tyrol; i8 miles W. of Trent.

LEDESMA, an ancient town of Spain, formerly called Bletija, 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 houfes. To the E. of Ledefma and rear it is a medicinal bath, made by a Moor for the ufe of the public. The water is moderately warm, and is reckoned good for the cure of different difeafes, particularly the itch; iS miles W. of Salamanca.
LEDETSCH, a town of Bohemia, in the circle of Czaffau; 13 miles S. of Czaflau. N. lat. $49^{\circ}$ 40'. E. long. $15^{\circ} 15^{\prime}$.

LEDETZ, a town of Bohemia, in the circle of Boleflaw ; feven miles S.E. of Jung-Buntzel.
LEDGER. See Book and Book-keeping.
Ledgers, among Builders. See Putlogs.
LEDGES, in a Ship, oak or fir fcantling, ufed in framing the decks, which are let in the carlings athwart the Chip. Thofe 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 coalt of Nova Zembla. N. lat. ${ }_{7} 6^{\circ} 40^{\prime}$. E. long. $59^{\circ} 1^{\prime \prime}$.

LEDIANOI, a cape on the N. coaft of Nova Zembla. N. lat. $78^{\circ}$. E. long. $73^{\circ} 24^{\prime}$.

LEDIGNAN, a town of France, in the department of the Gard, and chief place of a canton, in the diltrict of Alais. The place contains 666 , and the canton 3965 inhabitants, on a territory of $102 \frac{1}{2}$ kiliometres, in 13 communes; 15 miles N.W. of Nifmes.

LEDON, in Gardining. See Cistus.
LEDONG, in Gcograply, a town on the E. coa? of the ifland of Bornen. N. lat. $+33^{\circ}$. E. long. I1 $6^{\circ} 42^{\prime}$.

LEDOREN, a fmall ifland on the W. dide of the gulf of Bothnia. N. lat. $63^{\prime \prime} 12^{\prime}$. E. long. $20^{\circ} 56^{\prime}$.
LEDOYRA, a town of Spain, in Galicia; 12 miles N E. of Santiago.

Le dran, Henry Francis, in Eiography, a celebrated furgeon of the 18 th century, was a native of Paris, where his father practifed the fame profefion with confiderable reputation, and was deemed the firlt operator of his

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time. He foon equalled his father in reputation; and uniting with great dexterity, an excellent judgment and much acutenefs of mind, learning, and experience, he not only practifed with great fuccefs, but was the author of feveral works, which gave him a high rank among the furgeons of France. Thefe are, "Parallele des différentes manières de tirer la pierre de la veffie," Paris, 1730. "Obfervations de Chirurgic, auxquelles on a joint plufieurs Reflexions en faveur des Etudians," Paris 1731 , two vols. 12 mo . Both thefe works were tranilated into other languages, and paffed through feveral editions. "Traité des Operations de Chirurgie," ibid. 1731, 8vo. This was alfo a valuable work, was tranflated into Englifh, and feveral times reprinted. "Reflexions fur les plaies d"armes à feu," ibid. ${ }^{7} 3^{7} 7,8 \mathrm{Ec}$. 12 mo . A fhort treatife, but full of judicious and interefting obfervations, the refult of the author's practical obfervation during feveral campaigns, in which he accompanied the French ârmies. "Suite du parallele de la taille," ibid. 1756,8 vo. "Confultations fur la plupart des maladies qui font du reflort de la Chirurgie," ibid. 176;" another judicious and valuable work, which contributed to fupport the eminent character of the author. But his laft work, "Traité économique de l'Anatomic du corps humain," ibid. 1768, was inferior to the reft, his genius feeming to partake of the debility which age had now occafioned in his frame. Eloy. Dict. Hift.

LEDUM, in Botany, a name adopted from the Greeks, whofe $\lambda$ nioy is generally believed to be a fpecies of Ciffus. Linnæus, in applying it to defignate a not very diffimiar genus of flurubs, whofe fcent is fo powerful as to be unpleafant and hurtful, offers an etymology expreffive of that circumftance, a ledendo; but fuch explanations have fcarcely more than the merit of a pun, and none in this cafe 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. Juff. 159 . Lamarck Illuftr. t. 363. Gærtn. t. 112. Clafs and order, Decandria Monogynia, Nat. Ord. Bicornes, Linn. Rbododendra, Juff.

Gen. Ch. Cal. Perianth inferior, minute, of one leaf, with five teeth, permanent. Cor, of one petal, wheelfhaped, 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. Pif. Germen fuperior, roundifl; tyle thread-fhaped, the length of the ftamens; ftigma obtufe. 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. Capfuie of five cells, fplitting from the bafe; partitions from the margin of the valves.
I. L. paluftre. Marth Ledum. Linn. Sp, Pl. 56I. Fl. Lapp. ed. 2. 127. Ehrh. Arb. 113. Fl. Dan. t. 1031. (L. filefiacum ; Cluf. Pann. 69. Hilt. v. I. 83. Ger. em. 1288. Rofmarinum fylveftre ; Camer. Epit. 546.) Leaves linear, revolute, woolly beneatti.-Native of fpongy bogs in the noth of Europe, very plentiful in Lapland. With us it flowers in April and May, being cultivated in bog earth, like the fhrubs of North America. The Jlem is flarubby, erect, much branched in a determinate manner, about two feet high; the young branches woolly. Leaves fcattered, numerous, flalked, an inch or more in length, linear, obtufe, entire, revolute; dark green and fmooth above; clothed with denfe rufty wool beneath. Flowers numerous, in denfe, fimple, terminal, bracteated corymbs,
white and very pretty. The whole plant, efpecially when bruifed, has a ftrong aromatic oppreffive fcent, fomewhat like hops, inftead of which the inhabitants of Dalecarlia are faid by Linnæus fometimes to make ufe of it, but the confequences are a molt pernicious kind of intoxication, with obftinate head-aches, The Swedes walh their oxen and fwine with a decoction of it, to kill lice, and the fettlers in Lapland ftrew its branches among their grain to drive away mice.-A procumbent variety, a fpan long, is faid to be found at Hudfon's bay, juft as the birch grows humble, and almolt proflrate, in the upper parts of Lapland.
2. L. latifolium. Labrador Tea, or broad-leaved Ledúm. Ait. Hort. Kew. ed. I. v. 2. 65. Jacq. Ic. Rar. t. 464. (L. groenlandicum ; Fl. Dan. t. 567. )-Leaves elliptical, revolute, woolly beneath. Stamens fcarcely more than five. -Native of bogs in Greenland, Labrador, Newfoundiand, \&c. Differs from the laft chiefly in the broad form of its leaves and the very con'picuous denfe rufty wool of their under fide. The flamens are ufually from five to feven or eight, feldom ten.
3. L. buxifolium. Box-leaved Ledum. Bergius in Act. Petrop. for 1777, part 1.213. t. 3. £. 2. Dryand. Leaves elliptical, fmooth on both fides, nearly flat. Native of Carolina and New Jerfey. Introduced to our gardens by the celebrated Peter Collinfon in $173^{6}$. It is a much fmaller /hrub than either of the foregoing, with leaves refembling thofe of Azalea procumbens at firf fight. They are about $\frac{1}{4}$ of an inch long, elliptical or obovate, fmooth on both fides, moft fhining above, their edges fcarcely revolute, their midrib prominent underneath. Flowers white, about a quarter of the fize of the firlt fpecies.

Ledum, in Gardening, comprehends plants of the hardy evergreen kind, as the marf ciltus, or wild rofemary. The fpecies cultivated is the marfh ledum, (L. paluttre.)

It has varieties with erect and decumbent branches.
Method of Culture. - Thefe plants are increafed by fowing the feeds in pots filled with boggy earth, or in fhady borders of the fame kind of mould, in the fpring feafon. But the beft method is to take up the plants in their native fituations, with balls of earth about their roots, and plant them in horders of the above kind, keeping them well watered.

It is alfo found that layers of the young thoots will fometimes grow.

Thefe plants afford variety in flady fituations, where the foil is of the boggy kind.

LED.YARD, in Biograpby, 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 hiftory 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 ftudied their manners, and had practifed in their fchool the means of obtaining the pro* tection, and of recommending himfelf to the favour of favages. In the humble fituation of a corporal of marines, to which he fubmitted rather than relinquifh his purfuit, he had made with captain Cook the voy age of the world; and feeling on his return an anxious defire of penetrating from the northweftern coaft of America, which Cook had partly explored, to the eaftern coalt, with which he himfelf was perfectly familiar, he determined to traverfe the valt continent from the Pacific to the Atlantic ocean. His firlt plan for the purpofe was that of embarking in a veffel, which was then preparing to fail, on a voyage of commercial adventure, to Nootka found, on the weftern coaft of America; and with this view he expended in fea-ltores the greateft part of the money with which he had been fupplied by the liberality of

## LEDYARD.

fir Jofeph Banks, who has eminently diftinguifhed himfelf in this tray on other occafions for the promotion of every kind of ufeful feience. But this fcheme was fruftrated by the rapacity of a cuftom-houfe officer; and therefore Mr. Ledyard determised to travel over land to Kamtfchatka, from whence the paflage is extremely fhort to the oppofite coalt of America. Accordingly, with no mere than ten guineas in his purfe, which was all that he had left, he croffed the Britifh channel to OAtend, towards the clofe of the year 1586, and by the way of Denmark and the Sound, procceded to the capital of Sweden. As it was winter, he attempted to traverfe the gulf of Bothnia on the ice, in order to reach Kamtichatka by the fhortelt courfe; but iinding, when he came to the middle of the fea, that the water was not frozen, he returned to Stockholm, and taking his courfe northward, walked to the Arctic circle, and paffing round the head of the gulf, defcended on its eaftern fide to Peterfburg, where he arrived in the beginning of March 1787. Here he was noticed as a perfon of an extraordinary character; and though he had neither ftockings nor fhoes, nor means to provide himfelf with any, he received and accepted an invitation to dine with the Portuguefe ambalfador. From him he obtained twenty guineas for a bill, which he took the liberty, without being previoully authorized, to draw on fir Jofeph Banks, concluding, from his well known difpofition, that he would not be unwilling to pay it. By the intereft of the ambaffador, as we may conceive to have been probably the cafe, he obtained permiffion to accompany a detachment of ftores, which the emprefs had ordered to be fent to Yakutz, for the ufe of Mr. Billings, an Englifhman, at that time in her fervice. Thus accommodated, he left Peterfburg on the 21ft of May, and travelling eaftward through Siberia, reached Irkutik in Augult; and from thence he proceeded to Yakutz, where he was kindly received by Mr. Billings, whom he recollected on board captain Cook's hhip, in the fituation of the aftronomer's fervant, but who was now entrufted by the emprefs in accomplifhing her fchemes of difcovery. He returned to Irkutfk, where he fpent part of the winter; and in the fpring proceeded to Oczakow, on the coaft of the Kamtfchatkan fea, intending, in the fpring, to have paffed over to that peninfula, and to have embarked on the eaftern fide in one of the Ruflian veffels that trade to the wettern fhores of America; but finding that the navigation was completely obftructed, he returned to Yakutz, in order to wait for the termination of the winter. But whilit he was amuling himfelf with thefe profpects, an exprefs arrived, in January 1788, from the emprefs, and he was feized, for reafons that have not been explained, by two Rulfian foldiers, who conveyed him in a nedge through the deferts of Northern Tartary to Mofcow, without his clothes, money, and papers. From Mofcow he was removed to the city of Moialoff, in White Ruffia, and from thence to the town of Tolochin, on the frontiers of the Polih dominions. As his conductors parted with him they informed him, that if he returned to Ruffia he would be hanged, but that if he chofe to go back to England, they wifhed him a pleafant journey. Diltreffed by poverty, covered with rags, infelled with the ufual accompaniments of fuch clothing, haraffed with continual hardfhips, exhaufted by difeafe, without friends, without credit, unknown, and reduced to the mott wretched ftate, he found his way to Konigfberg. In this hour of deep diftrefs, he refolved once more to have recourfe to his former benefactor, and fortunately found a perfon who was willing to take his draft for five guineas on the prefident of the Royal Society. With this affitance he arrived in England, and immediately waited on fir Jofeph Banks. Sir Jofeph, knowing his difpotition, and conceiving,
as we may well imagine, that he would be gratified by the in formation, told him, that he could recommend him, as he believed, to an adventure almoft as perilous as that from which he had juft returned; and then communicated to him the wilhes of the Affociation for difcovering the Inland Countries of Africa. Mr. Ledyard replied, that he had always determined to traverfe the continent of Africa, as foon as he had explored the interior of North America, and with a letter of introduction by fir Jofeph Banks, he waited on Henry Beaufoy, efq. an active member of the fore-mentioned affociation. Mr. Beaufoy fpread before him a map of Africa, and tracing a line from Cairo to Sennar, and from thence weftward in the latitude and fuppofed direction of the Niger, informed him that this was the route by which he was anxious that Africa might, if poffible, be explored. Mr. Ledyard expreffed great pleafure in the hope of being employed in this adventure. Being afked when he 'would fet out? "Tomorrow morning" was his anfwer. The committee of the fociety affigned to him, at his own defire, as an enterprife of obvious peril and of difficult fuccefs, the tafk of travering from ealt to weft, in the latitude attributed to the Niger, the wideft part of the continent of Africa. On the 30 oth of June, 1788, Mr. Ledyard left London; and after a journey of 36 days, feven of which were confumed at Paris, and two at Marfeilles, he arrived in the city of Alexandria. On the 14th of Auguft, at midnight, he left Alexandria, and failing up the Nile, arrived at Cairo on the 19th. From Cairo he communicated to tha committee of the fociety all the information which he was able to collect during his ftay there: and they were thus fufficiently apprized of the ardent fpirit of inquiry, the unwearied attention, the perfevering refearch, and the laborious, indefatigable, anxious zeal with which he purfued the object of his miffion. The next difpatch 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 defeription of his journey, received with great concern and grievous difappointment, by letters from Egypt, the melancholy tidings of his death. By a bilious complaint, occafioned probably by vexatious delay at Cairo, and by too free an ufe of the acid of vitriol and tartar emetic, the termination of his life was haftened. He was decently interred in the neighbourhood of fuch of the Englifh as had ended their days in the capital of Egypt.

Mr. Ledyard, as to his perfon, farcely exceeded the middle fize, but he manifetted very remarkable activity and ftrength: and as to his manners, though they were unpolifhed, they were neither uncivil nor unpleafing. "Little attentive to difference of rank," fay's his biographer, "he feemed to confider all men as his equals, and as fuch he refpected them. His genius, though uncultivated and irregular, was origioal and comprehenfive. Ardent in his wifhes, yet calm in his deliberations; daring in his purpofes, but guarded in his meafures; impatient of controul, yet capable of frong 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 vaft regions of Tartary with the fcantinefs of his funds, will naturally ank, by what means he obtained a fubfiftence on the road? All that I have ever learned from him on the fubject was, that his fufferings were exceffive, and that more than once he owed his life to the compaffionate temper of the women. This remark is Atrongly 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

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humane: that they are ever inclined to be gay and cheerful, timorous and modelt; and that they do not hefitate, like men, to perform a generous actiono- Not haughty, not arrogaut, not fupercilious; they are full of courtefy, and fond of fociety; more liable, in general, to err than man ; but in general, alfo, more virthous, and perforining more good actions than he. 'To a woman, whether civilized or favage, I never addreffed myfelf in the language of decency and friend hip, without recciving a decent and friendly anfwer. With man it has often been otherwife. In wandering over the barren plains of inbofpilable Denmark, throuzh bongl Sevedin and frozen Lapland, rude and churlifh Finland, unprincipled Rufias and the zuide-pread regions of the wandering Tarlar, 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), thefe actions have been performed in to free and fo kind a manner, that if I was dry, I drank the fweeteft draught; and if hungry, I eat the coarfe morfes with a double relifh." Similar to this was the experience of Mr. Park. (See Africa.) Neverthedefs, though Mr. Ledyard found frequent relief and affittance from temale attention and kindnefs, he feems on many occations to lhave endured the utmof preflure of diltrefs. "I am accuftored," faid he, in his balt converfation with the writer to whom we are indebted for this account of him, "to hardflips. I have known be:h hunger and nakediefs to the utmolt extremity of human fuffering. I have known what it is to have food given me as charity to a madman; and I have at tumes been obliged to fhelter my felf under the mileries of that character to aroid a heavier calamity. My diltreffes have been greater than I have ever owned, or ever cill own to any man. Such evils are terrible to bear; but they never yet had power to turn me from my purpofe. If I live, I will faithfully perform, in its utinolt extent, my engagement to the fociety; and if I perihh in the attempt, my berour will till be fafe, for death cancels all bonds." Proceedings of the Affociation for promoting the Difcovery of the Interior Parts of Africa. London, 1790.

LEE, Nathamel, fon of a clergyman, was educated at Weltminfter fchool under Dr. Bußy. He was admitted a fcholar of Trinity college, Cambridge, in 166S, but quizted the univerfity without a fellowfhip, and attempted to pufh his fortune at court. In this he was unfuccefsful, and then began to write for the dlage. His firlt 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 fuccefs. 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 underftanding, an alliction which proved fo fevere as to bafle the powers of his medical friends, and which obliged his relatives to obtain for him an afylum in Bedlam. Here he remaincd 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 parinh of St. Clement Danes. According to Addifon, Me. Lce was equal to any of his contemporaries in a natural genius for tragedy, but his impetuolity led him into a turgid Hyle, approaching to bombaft, and he was apt to bury his thoughts in fuch a clond of words, that it was difficult to difeern their beauty. He is reckoned to excel in reprefenting the palfiun of love, which he fometimes touched with exquite tendernefs and force. Two of his pieces only are, at this time. ever brought on the flane, wiz. his "Theodolins," and his "Rival Queens." Biog. Brit.

Lee, in Geograply, a river of Ireland, which rifes in the mountains, on the weltern bonder of the county of Cork,
and having pafled Loughs Gougane-barra and Allun, fowe ealtward through the barony of Mulkerry. It receives in its way the rivers Sullane, Dripfy, Blarney, and Bride, with feveral fmaller Atreams, and below the city of Cork, which is built chiefly on iflands formed by it, it expands into that capacious and beautiful harbour, called Cork harbour. (Sce Cork.) There is alfo a fmall river of this name, which runs into Tralee bay, in the county of Kerry.

Lee, a county of Virginia, in the S.W. corncr 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 Powcl's fertile valley, but a third part of the county is mountainous. It contains 3295 free inhabitants, and 243 flaves. The chicf town is Jonefville.-Alfo, a fmall town in Strafford county, New Hamp fhire, about 12 miles N. of Exeter; formerly part of Dover and Durham ; incorporated in 1766, and containing 978 inhabitants.-Alfo, a townfhip in Berkfhire county, Malfachufetts; 140 miles W. of Bollon ; incorporated in 1777, and containing 1267 inhabitants. Houfatonick river runs towards the fouth through this town.

Lee, a term varioufly ufed at fea; though iss general ufe be to fignify the part towards, or oppolite to the wind.

This expreffion is chiefly ufed when the wind crofies the line of a fhip's courfe, fo that all on one fide of her is called to windward, and all on the oppofite fide, to lee-ward. Hence,

Lee-Shore is that on which the wind blows; fo that to be under the lee of the fhore, is to be clofe under the weatherfhore, or under wind; or at a fhort diftance from the fhore which lies to windward.

A-Lee the Helm. Sce A-Lee.
Lee, Harda. See Hard.
Lee-Hatch, take care of the, is a word of command to the man at the helm, to take care that the fhip do not go to the lee-ward of her courfe.
To Lee-sward, 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 faft by the wind, or which doth not fail fo near the wind, nor make fo good way as the fhould; or which is much to leeward of her courfe, when failing clofe-hauled.
Lee, To lay" a Ship ly the, or to come up by the Lee, is to bring her fo, that all her fails may lie flat agaiuit her mafls and fhrouds, 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 ligh fea, particularly when a large wave ftrikes her on the weather-lide.
Lee-Side, denotes all that part of a fhip or boat, which lies between the malt and the fide fartheft from the direction of the wind ; or that half of a fhip which is preffed down towards the water by the eflort of the fails, as feparated from the other half hy a line drawn through the middle of her length ; that part of the fhip, which lies to the windward of this line, is accordingly called the weather-f:de. Thus, if a fhip fails fouthaward, with the wind at eaft, then is her flarboard, or right fide, the lee-fide; and the larboard, or left, the weather-1ide.

Lee-I I'ap, or Leee-vard Way of a Ship, is the angle made by the line on which the thip mould run according to her ceurfe, or the point of the compals fteered upon, and the real line of the fhip's way'occalioned by contrary winds, and a rough fea.

All thips are apt to make fome lee-way ; fo that in calting

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up the log-board, fomething mult be allowed for lec-way. But the lee-way made by different fhips, under the fame circumflances of wind and fails, will be different; and even the fane fliip, with different lading, and having more or lefs fail abroad, will make more or lefs lee-way. The ordinary rules of allowing for it are thefe : they were given by Mr. John Buckler to the late Mr. William Jones, who firtt publifhed them about the year 1702.

1. When a fhip is clofe-hauled, has all her fails fet, the water fmooth, and a moderate gale of wind, fhe is then fup. pofed to make little or no lee-way. 2. Allow one point, when it blows fo frefl, that the fmall fails are taken in. 3. Allow two points, when the top-fail mult be clofe-reefed. 4. Allow two points and a half, when one top-fail mult 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-courfes are taken in. 9. Allow feven points, when the thip tries a-hull, or all fails are handed. When the wind has blowed hard in either quarter, and fhifts acrofs the meridian into the next quarter, the lee-way will be leffened. But in all thefe cafes, refpect mult be had to the roughnefs of the fea with the trim of the fhip; and hence the mariner will be able to correct his courfe.
LEEA, in Botany, fo named by Linnæus, at the fuggeftion of Profeflor 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 firf edition appeared in 1760, the fourth in 1810 . This book, whofe principles are borrowed from Limnæus, but which is particularly valuable for its gloffaries and tables of fynonyms, has been of primary ufe in making the Linnæan fyftem popular here. Its author was one of the belt practical botanifts, and mott experienced and fuccefsful cultivators. He loved to encourage and affilt all who had a talte for natural hiftory, and died generally efteemed, at an advanced age, in July 1795, leaving a fon in every refpect worthy to fuftain and extend his reputation. Linn. Mant. 17. Schreb. 638. 796. Willd. Sp. Pl. v. I. Ir 77. Mart. Mill. Diet. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 50. Juff. 153. (Aquilicia; Linn. Mant. 2. 146. Schreb. 154. S24. Juff. 266. Lamarck. Illufr. t. 139. Gærtn. v. I. 275. t. 57. f. 7.)-Clafs and order, Pentandria Monoğynia. Nat. Ord. Melie, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, coriaceous, bell-fhaped, five-toothed, permanent. Cor. of one petal; tube the length of the calyx; limb in five ovate, acuie, recurved fegments. Nectary attached to the infide of the tube, ereê, pitcher-fhaped, fhorter 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 ftigma. Pijf. Germen fuperior, nearly globular; ftyle dimple, fhorter than the nectary; ftigma capitate. Peric. Berry orbicular, deprefled, with five prominences, of one cell. Seeds five, gibbous at the outide, angular at the inner.

Eff. Ch. Corolla of one petal; limb in five fegments. Nectary of one leaf attached to the tube, five-cleft, erect, bearing the ftamens. Berry inferior, with five feeds.

1. L. fambucina. Elder-leaved Leea. Willd. n. i. (Aquilicia fambucina; Linn. Mant. 2. 215. Cavan. Diff. $37^{2}$. t. 218 . Lamarck. Dict. vo 1. 217 . Staphylea? indica; Burm. Ind. 75. t. 24. f. 2. Frutex aquofus fermina; Rumph. Amboin. v. 4. 103. t. 45. Nalugu; Rheede Hort. Mal. v. 2. 43. t. 26.)-Stem furrowed and angular,

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finooth. Leaves finooth, doubly pinnate; the terminal leafet largelt. - Native of the Ealt Indies, from whence it was procured for the Kew garden, by Sir Jofeph Banks, in 1790. It is a fmooth forind or fmall tree ten or twelve feet high, with the afpect of Elder; the branches tumid at the infertion of the leaves, Atriated and more or lefs angular. Leaves alternate, large, doubly pinnated; leaffets falked, oppofite, elliptic-oblong, pointed, veiny, Arongly furrated, very fimooth, paler bencath; the odd ones largeit. Panicles cymofe, oppofite to the leaves, pubefcent. Flowers finall, whitifh. Berris rather acrid, the fize of a pea, deprefled, black, purplifh internally. A decoction of the roots or wood feems, by the accounts given of its ufes, to be a valuable tonic medicine.
2. L. aquata. Dorny Leea. Linn. Mant. $124^{\circ}$ (Cajoe toca of the Malays.) - Stem round, downy. Leaves doubly pinnate, rough.-Native of the Eaft Indies, from whence Mr . Lee received and cultivated it before the year 1777. We find no figure of this fecies. Linnzus did not dittinguih it from the former, but they are very different. In both the leaves are bipimnate, or rather ternate in their firt divifion, pinnate in the fecond; but in this \{pecies the terminal leaflet is not larger than the relt, except in fome of the lateral divifions, and all the leaflets, as well as their fialks, are rough with minute rather rigid pubefcence. The ferratures are lefs ftrong than in L. Jumbucina.
3. L. crifga. Wing-ltalked Leea. Linn. Mant. 124. Meerburgh Ic. v. I. t. 50 . (L. pinnata; Andr. Repof. t. 355.)-Stem angular, with crifped wings. Leaves fimply pinnate.-Native of the Ealt Indies, not, as Linnxus fuppofed, of the Cape of Good Hope. The roots are tuberous. Stem fcarcely flarubby, remarkably bordered, as are the leaf-ltalks, with parailel, partly crifped, wings. Leaves pinnate, generally of two pair, with an odd one, of elliptical, pointed, ftrongly ferrated and copioufly veined leafiets, roughiih to the touch when dry, but not pubefcent. Fiocucrs much as in the former, with channelled, angular, or winged ftalks. Each fegment of the corolla, according to Andrews, is hooded at the point. We have feen one leaf imperfectly bipinnate.

It appears, from the Linnean herbarium, that Linnæus originally deftined 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 Leca and Aquilicia was firf difcovered, and the latter name gives place, as being the more recent, to fay nothing of the claims of the former refpecting the perfon it commemorates.

LEEBYRAN, in Geography, a fmall inland in the Eaft Indian fea, near the northealt coalt of Borneo. N. lat. $6^{2}$ 1'. E. long. $1 \mathrm{I}^{\circ} 12^{\prime}$.
LEECH, in Zoslogy. See Hirudo.
The hilfory of this animal, and the ftructure of its parts, by means of which it becomes ufeful to us, in fupplying sery 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 flefh of animals; the manner of its applying its mouth; the vermicular motion obferved within it while fucking, which refembles the common motion of deglutition; the tirse they have been known to live in the water without

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without any vifible food; and the faculty they have, in common with many other animals, of moving when cut into feveral pieces: thefe the awthor fuppofes already fufficiently known, and paffer on to what is lefs fo, the ftructure of its inner parts.

The part of this animal, by which it pierces the fkin of any creature to get at its blood, is generally called, fimply, its mouth; but it really confifts of five different parts, which are confounded under that general name. Thefe are two regular lips, a cavity, which is properly the mouth, certain initruments to pierce with, others which ferve it for fucking, and finally a fort of throat, or efophagus, through which it fwallows the blood. When the leech is in a flate of reft, its upper lip forms a regular femicircle, 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 fpot 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 occafion of feizing any thing folid, in order to move the reft of its body; or on the flefh of an animal, to give oppertunity to the piercing inftruments to exert their force and action.

Whether it be for either of thefe purpofes, that the creature fixes its mouth, the two lips regularly fix, and make in this ftate a fort of acetabulum, like the hollow of the tail. This may be feen in their fixing on the fides of a glafs-veffel in which they are kept, and the mouth, or aperture between the lips, is diftinctly feen. This mouth is formed, like the lips, of fuch extremely fupple fibres, that it takes the figure of the part to which it is applied, and fixes perfectly clofe to it. When the lips are fixed on the fefh, in order to fuck, this little mouth continues moveable under them, and fearches over the compafs of flefh, inclofed in the larger circle of the lips, for the fpot where it will be eafieft to draw much blood.

Within this mouth is placed the inftrument for piercing the fkin, which is more than the mere fucker 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 mult therefore alfo be larger. The fhape of this weapon may be difcovered by examining the wound it leaves. This is compofed of three cuts, making three rays, and uniting in a centre, under equal angles. This ftructure of the wound is mofl diftinctly feen when the fwelling is gone down, and the fkin is clean; and this is ufually on the fourth day after the application. The three openings are then plainly feen not to be punctures, but abfolute 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 roughnefs like that of a fine file, which evidently is owing to fome rough fubftance, of the hardnefs of bone. This is, in reality, a number of fine and fharp teeth; and when examined by a microfcope, they are found to be difpofed in three feries on three ribs, or, as they may be called, jaws; each of which is placed along the middle of a Arong mufcle of its own length; and thefe correfponding 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, thefe mufcles exert their action, and Arike in the teeth through the ikin.

Thefe are the infruments which pierce the veffel which is to afford the blood; and for the receiving it into the body of the animal, there is between thefe rows of teeth, or in the common centre of the mouth, a fmall aperture; and within this there is a little body to be difcovered, which by its motion feems very plainly to be a tongue, and which probably acts as a pifton 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 arimal. Finally, between the root of the tongue and the beginning of the ftomach, there is a fpace of two lines in length, in which it is eafy to difcover two different arrangements of fibres; the one fet are flat and plain, the others are circular. Thefe 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 ftomach, by their power of contracting the hollow, when the blood is received. The blood from hence enters into 2 membranaceous fort of fack, which ferves the animal for the ftomach and guts, and occupies the greateft 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. Thefe veficles, 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 nourithes the creature; and if any thing is excreted from it, it mult be merely by an infenfible perfpiration; fince the creature has no anus, fo far as can be yet difo covered, nor any aperture which can fupply the place of one.
Leeches are able to live in oil; and when removed out of this liquor into water again, they throw off a tender fkin, or film, of the regular fhape of their body, and refembling the fkin of an eel in miniature. Their living in oil feems a proof, that their organs of refpiration are not placed on the outfide of their bodies, as they are in many fmall animals, which therefore die on being only rubbed over with oil. But the leech feems to refire by the mouth; and this may be the more plainly difcovered, if the water, in which it is kept, be gently heated ; for then the animal, being uneafy, breathes hard, and very vifibly.

If a leech be kept in an eight-ounce glars 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 firal 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 relts until it begins to blow hard: if a remarkable ftorm of thunder or rain is to fucceed, for fome days before, it lodges almoft continually without the water, and difcovers great uneafinefs, in violent throws and convulfive like motions, In froft, as in clear fummer weather, it lies conftantly at the bottom; and in fnow, as in rainy weather, it dwells at the very mouth of the phial.
The phial fhould be covered at the mouth with a piece of linen rag, and the water fhould be changed once a week in the fummer, and once a fortnight in the winter. Gent. Mag. vol. xxiii. p. 28.
Leech, Sea. See Hirudella marina.

## LEECH.

Leecrit is alfo a name given by Boccone to a very particular water-animal, which he found fticking to the fides of the riphias, or fword fifh.

He calls it birudo, or acus cauda utrinque pennata, and obServes, that it is flightly mentioned by Gefner, and by Johnfon, in their books of fifhes. It is about four inches long; the belly is white and cartilaginous, and tranfparent ; there is no regular head to be fecn, but only a hollow fnout in the place of the head; this is covered with a very lard membrane, and differs extremely from the fkin of the belly: this fnout it thrufts up to the end into the body of the fifh, and fucks its blood with it; it has a tail Thaped like a feather, and under it two flender filaments of fibres, longer than its whole body. By means of thefe, when it is not faftened to the body of the fifh, it clings to flones, or fea-plants, to prevent its being carried away by the motion of the water; and when it is on the body of the lifh, thefe ferve it to hold much more fafly with, than it otherwife could do. This creature miferably aflicts the fword-fin, but it is itfelf 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 brownifh colour, and it is geacrally found faftened toward the tail of the creature, fticking as firmly as a limpet to a rock ; it is nearly of the bignels of a pea, and when cruhhed a little, will thruft out feveral flender filaments. This leech is not found, fo far as has yet been oblerved, on any other fifh but the fword.fifh; nor this loule among other creatures, befides this leech. Phil. Tranf. N ioa.

Leecies, Utility of, in the Cure of Difeafes.-Bleeding, or the taking away of blood, for the alleviation and cure of difeafes, is frequently one of the moft powerful means to which the phyfician and furgeon can have recourfe for the relief of their patients. It is divided into general and topical; the firlt fignifying the evacuation, as made from a large vein in the arm, or the temporal artery, the external jugular vein, $\& c$; the fecond denoting the evacuation of blood directly from the velfels of the part affected, or its vicinity, by fcarifications, cupping, or leeches. In the article Bueeding are defcribed moft of the furgical methods of taking away blood, with the exception of that by leeches, which more properly belongs to the prefent place, and of Cupping and Scarifications, for an account of which the reader is referred to thefe refpective 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 beft condition for ufe. According to Schmucker, even the medicinal leech, if taken out of unclear, muddy, ftagnant water, will caufe pain, fwelling, and inflammation, after being applied. Vermifchts Chir. Schriften, vol. i. p. 86. edit. 2.
With refpect to the art of collecting medicinal lecches, the beft time for taking them is when they fpawn in the earlielt warm weather of the year. June and July are ac. counted favourable months, if there is a good deal of fun, and the wind is either very flill, 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 poads in warm fituations, and freams flowing through, vallies. In culd and woody countries, the horfe leech can only be met with. The warmer the fituation of the water is, and the fatter the foil, the thicker and larger are the leeches. Thofe which are caught in waters abounding with fifh, do not bite and fuck fo well, as others taken out of poorer places. Frefi

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lively leeches bite the mon 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 lefs avidity.

With regard to the mode of appiying leeches, the part on which they are about to be put may firft be wahed with fome clean water and well dried. The leeches are then tw be placed on it with the fingers, either one by one, or all of them together, by putting them firlt into a tumbler, and then applying this to the $\mathbb{k}_{\mathrm{k}} \mathrm{in}$, in the naanner of a cupping glafs. 'The leeches fhould generally be fuffired to fall of the part fpontaneoufly, which they conmunly do, as four. as they are well diftended. But when the patient's weaknefs, or any other circumflance, requires them to be nore fpeedily removed, they may cafily be made to drop ofl hy fprinkling them with a little falt or fnuff. For the purpole of inducing leeches to bite with greater facility, fume prac. titioncrs firft wet the part on which they are to be put with a litule milk, or milk and fugar.

On fome occaficus, the application of lecches will proncure as copious an cracuation as phebotomy itfelf. The quantity of blood which may fometimes be taken away by twelve leeches, would furpife the inexperiunced. Whan the bites are expofed to the fteam of warm water, or fomented after the leeches have dropped off, the bleeding may often be kept up for an extraordinary length of time. The writer of this article las known inflances, where furgeons have been detained for nearly twenty-four hours, in employing means to fupprefs the continuance of the bleeding from the bites of leeches on inflamed parts. In cafes of hernia humoralis, where the fcrotum has been much reddensd and inflamed, he has often feen the hemorrhage, from the application of leeches, laft a very unpleafant 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 cafe, 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 atterdance having contented themfelves with merely wiping away the blood with cloths, as faft as it flowed out. (See his Climique Chirurgicale, tom. ii. p. 243.) In general, however, the bleeding, after leeches have dropped off, readily ceafes, either of itfelf or on cold being applied; and it is only when the part is highly inflamed, or exceffively vafcular, as we know the fkin of a very young infant to be, that the fubfequent hemorrhage is difpofed to continue long. In many inftances, the continuance of the bleeding a certain time is a moft defirable circumftance, as by this means a more effectual quantity of blood can be taken away than could otherwife be accomplifhed.

We learn from Galen, that Hippocrates was acquainted with the medical utility of leeches. (De Hirudimbus 'cum comunent. Sebizii). In inflammation of the liver, they were preferred by Aretreus, of Cappadocia, to cuppingglafles; and they are made frequent mention of in the writings of Diofcorides, Celfus, and Paulus Egineta. 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 conje:tures, alfo opened the pores. (Hit. Natural. I. xxxii. c. 10.) Horace has taken notice of thefe ufeful little animals in the follon. ing line of his fatires.
" Non miflura cutem nifi plena cruoris hirudo."
The Arabian phyficians well knew the ufefulnefs of leeches, and were in the habit of directing them to be applied in melancholic and hypochondriacal cafes. Rhazes, in particular, recites aumerous cures which he effected with their affite-

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ance. Yaracelfus uled to apply them in cafer of jaundice. By the chemical practitioners of medicine, leeches were not at all employed, becaufe they were accuftomed to reprobate all evacuations of blood as ufelefs and hurtful; and Van Helmont would not fuffer them to be applied to an hemorrhoidal fiwelling.

The ufe of leeches, in the practice of phyfic and furgery, appears to have been revived by Sennertus and Zacutus Lufitanus.

It would be almoft an endlefs talk to enumerate the great variety of medical and furgical cafes in which leeches may be ufed with advantage. We may ftate, 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 fuperficial 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 difeafes of the eye, joints, and teftis, is acknowledged by every practitioner, as well as the relief which they fpeedily afford in cales of inflamed hemorrhoidal tumours. Their utility in inflammations of the breait, and in alleviating the pain, and even retarding the progrefs of fchirrous fwellings of the fame part, deferves alfo to be mentioned. That they fometimes prove even capable of curing and reducing many indurations of the breatt, is a fact proved by daily experience. Nor mult we forget the bencficial effects, frequently arifing from the application of leeches in various examples of buboes, fcrofulous and fympathethic, as well as venereal.

In the majority of cafes, 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 mult be repeated from time to time, and, in fome inftances, once or twice a-day, according to the urgency of the fymptoms.

In infants of tender years, and perfons who have a particular dread of venefection, leeches may be ufed for the relief of all difeafes 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 cafes, 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 affeeting the pares 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 circumitances of the cafe.

In numerous inflances of extravafations of blood under the fkin, ecchymofes, contufions, \&c. leeches are frequently applied with great benefit to the patient.

In cafes of quinfy, when deglutition has been quite obftructed, and repeated venefection has proved uravailing, Schmucker affures us, that he has found the application of leeches attended with an extraordinary degree of efficacy. The fame experienced practitioner alfo obferves, that in pleurifies, he has found topical bleeding with leeches even more ufeful 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 ftage of the complaint.

This diftinguifhed furgeon likewife confirms, how fuperiorly ufeful the application of fixteen or twenty leeches to the perineum frequently proves in cafes of retention of
urine, when venefection, the warm bath, and other means alone are ineffectual. Vermifchte Chirurgifche Schriften, vol. ii. art. 2.

Leech, or Leetcu of a Sail, in a Ship, the outward edge or fkirt of the fail from the earing to the clew, or rather the middle of the fail between thefe two.

The leeches of all fails, whofe tops and bottoms are parallel to the deck, and at right angles with the mafts, are denominated from the fhip's fide, and the fail to which they belong, as the ftarboard leech of the main-fail, the lee-leech of the fore-top-fail, \&c. But the fails which are fixed obliquely upon the mafts, have their leeches named from their fituation with refpect to the fhip's length; as the fore-leech of the mizen, the after-leech of the jib, or fore-flay-fail, \&c. Falconer.

Leecif, or Leetch-lines, are certain ropes faftened to the leeches of the main-fail and fore-fail, and communicating with blocks under the oppofite fides of the top, whence they pafs downwards to the deck, ferving to trufs up thofe fails to the yard, as occafion requires. See Brails.

Leecir-rope, is a name given to that part of the bolt-rope, to which the border of a fail is fewed. In all fails, whofe oppofite leeches are of the fame 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 Dolphinfon, in Lanerkhire, in the year 1706. He was initiated in grammarlearning at his native place, from whence he removed to the univerfity of Edinburgh. Here he diltinguifhed himfelf by his great proficiency in different branches of learning. He began his theological ftudies in 1724, and in 1727 he was introduced into the weftern part of Scotland, which was deftined hereafter to be the principal fcene of his ufefulnefs. He undertook the education of a young gentleman at Caldwell, in Renfrewfhire, where he refided in the fummer months, but during the remainder of the year he lived at Glafgow, and was honoured with the friendhip of profeflors Hutchefon and Dunlop. About the beginning of 173 I he was licenfed as a preacher, but it was not till the year 1736 that he had any profpect of preferment. He was now ordained minifter of Beith, and remained in the difcharge 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 7 th of A pril, 1741, with a fermon to the clergy "On the temper, character, and duty of a minifter of the gofpel." This is thought to be one of the ableft charges ever delivered from the pulpit: it has paffed through many editions, and is ftill in very high reputation. In 1743 he publifhed a much longer difcourfe on "The Nature, Reafonablenefs, and Advantages of Prayer; with an Attempt to anfwer the Objections againft it." This fermon, as well as that juft 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 Belfaft, in Ireland, with the promife of a better falary than that which he enjoyed at Beith. This offer, upon due deliberation, he declined, and he was fhortly after elected to the profefforfhip of theology at the univerfity of Glafgow; an honour which he obtained only by the cafting vote of the prefident. The oppofite party did all in their power to prevent his being fixed in the fituation: they even commenced a procefs of herefy againft him, which had a direct tendency to injure his reputation and ufefulnefs, and to expofe him to general odium. The charge was founded on the fermon on prayer, which his enemies confidered as having laid too little ftrefs on the atonement and interceffion of

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Chrit. A paper of remarks was produced, confiting of eight articles, of what they deemed heretical omiffions. To each of the remarks the profeffor gave in written anfwers, which were neither deemed fatisfactory to the committee nor to the prefbytery, under whofe authority they acted. Mr. Leechman appealed to a higher court, viz. the fynod, the nembers of which, after hearing all that could be adduced on both fides of the quettion, almolt unanimoufly determined, that there was no reafon to charge him with any unfoundnefs in the paffages of the fermon complained againft. "Mr. Leechman's character, both as a preacher and profeffor, fhone out the brighter after this cloud was diffipated. Some of thofe who had appeared his keeneft adverfaries in the church procefs, lived with him afterwards on terms of fincere friendhip: even the prejudices of the common people in Glafgow gradually fubfided; fo that he came to be confidered there, as he had always been in every other plàce, a very acceptable preacher." Soon after he had been eftablifhed in the profefforfhip, he took the degree of doctor in divinity. He continued in the theological chair feventeen years, vindicating and eftablifhing the grand truths of natural and revealed religion, in anfwer 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 moft important and ftriking on every fubject 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 addreffed 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 fpeculative 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 univerfity of Glafgow by a prefentation from the king. He had previoully to this been in a very bad flate of health, and this change in his avocations was probably the means of prolonging his valuable life for five-and-twenty years. Though releafed from the more fatiguing part of his duties, he could not remain inactive, but entered warmly into every fcheme for the benefit and improvement of the fociety, propofed by other profeffors, and profecuted fome fchemes of his own fuggettion. He gave a lecture, for fome time, once a week, to the ftudents in divinity, and weekly lectures to the whole univerfity. Dr. Leechman's faculties remained in full vigour amidft the increafing infirmities of old age, and his talte for valuable knowledge continued as acute as ever. His mind feemed to be in a great meafure independent of all bodily infirmities and connections. In September, 1785 , he experienced a violent paralytic Atroke, from the effects of which he fpcedily recovered: but a fecond fhock of the fame kind in the following month deprived him of the power of his whole left fide. Still he continued in the full poffeffion of his mental facultics, and was as intelligent, judicious, and even as acute as ever. Another attack carried him off on the third of December, 1785 , wher he was almort 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-publifhed, with others, forming together two volumes, in the year 1789 . To the firft of thefe volumes is prefixed an account of the author, to which the reader is referred for more particulars relating to Dr. Leechman.

LEEDS, in Geography, a populous market-town in the
wapentake of Skyrack, in the Weft Riding of the county of York, England, is fituated on the north fide of the river Aire, over which is a landfome ftone bridge. It is a place of great antiquity, and its name is regiltered in the Domefday furvey. Here was formerly a flrong caftle, probably built by Ilbert de Lacy, whicls was befieged by king Stephen in 1139 ; and here the unfortunate Richard II. was confined about the year 1399. No veltige of this fortrefs remains; but its fcite is faid to have been at a place called Mill-hill. Leeds has long been diftinguifhed 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, fubfifted clieffy by clothing, reafonably 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 fharp action, its fortifications were ftormed by the forces which marched out of Bradford under fir Thomas Fairfax. A fecond charter was granted on the 13 th 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 thefe appointed hours. At fix in the morning in fummer, and feven in winter, the market-bell rings; and in a few minutes, without the leaft diforder, the whole market is filled, and all the benches are covered with cloth, each proprietor at the fame time flanding 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 tranfacting bufinefs, \&c. is given in the Monthly Magazine, vol. iii. P. 123, and vol. iv. p. 174.) In thefe places it is related that from ten to twenty thoufand pounds worth of cloth, and fometimes more, is fold with a whifper only; the laws of the market are certainly more ftrictly obferved than in any other place in England: the time of fale is terminated by another bell; and any merchant ftaying in the hall after the bell has ceafed, forfeits five fhillings. This extenfive bufinefs, which ufed formerly to be carried on in the open Atreet, 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 fquare, and is divided into feven particions or ftreets, each of which contains four rows of ftands; and thefe are the freehold property of feparate manufaeturers. The whole number of ftands is 1770 . The White-cloth Hall, built in 1775, is partitioned in a fimilar manner, and contains 1210 flands. Over the former building is an affembly-room, and over the latter a mufic-hall. The manufacture of broad cloth is now almoft wholly performed by machinery, which has occafioned a confiderable reduction in the price. By this means, very few hands are wanted in the firlt flages of the manufacture, particularly in carding and fcribbling the wool, and in fpinning it. This circumftance, on the firft introduction of machinery, deprived great numbers of people of their cuftomary employment.

Previous to the reign of Charles I. Leeds had but one church : here are now, however, feveral ecclefialtical edifices, appropriated to the eftablifhed religion, and to different fects of Diffenters. The church of St. Peter, the original, is built

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in the form of a crofs, with a tower in the middle ; and has a painting in frefco of the Afcenfion, by Parmentier, who prefented the town with this fpecimen of his genius. -St. John's church was erected in 1634 , at the fole expence of Mr Harrifon, who alfo built a free-fcheol and a market. crufs, and was in other refpects a great benefactor to the town. The church of the Holy Trinity, which is an elegant ftructure, with a fpire, was built in the eighteenth century. Eight other places of worfhip are appropriated to the feveral denominations of diffenters. Here are three alms-houfes, a charity-fchool, and an extenfive work-houfe, in which children are taight the eafy branches of the woollen manufacture. A fpacious infirmary was built by fubfeription in the year 1786. The Atreets, in the upper part of the town, are narrow; but in the other parts they are broad, and the houfes are moftly uniform, and many of them elegant. Here are feveral large open fquares, the areas of which are in fome cafes planted, and in others ufed as tenter grounds. The buildings are chiefly of brick, and covered with white flate; and every freet has a flagged foot-way on each fide. The civil government of the town is velted, by the charter of Charles II., in a mayor, twelve aldermen, and twenty-four common-council men.

Leeds is 192 miles diftant from London, and 25 miles from York. In the year 1800, it contained, according to the return made to parliament, 11,599 houfes, and 53,162 inhabitants: of the latter, 20,367 were flated 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 provifions. A confiderable pottery is eftablifhed here, which furnifhes 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 ufually thipped to foreign parts. The carriage of coals from the interior of Yorkflire is alfo a great fource of traffic: thefe 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 Firkftall Abbey, feated on the banks of the river Aire. For an account of thefe, with an interelting print, fee Day's 'Tour in Yorkfhire, 8vo. 1805. Weft of the town is an ancient feat of the Vavaron family. Aikin's Defcription of the Country round Manchefter, $4^{\text {to }}$, and Monthly Magazine.

Leeds, a county of Upper Canada, bounded.on the eaft iny the county of Grenville, on the fouth by the river St. Lawrence, and on the wett by the boundary line of the late townflip of Pittfourg, runnigg north until it interfects the Ottawa or Grand river, and thence defcending until it meets the north-wellernmoft boundary of the county of Grenville. This county comprehends all the iflands in the river St. Lawrence that are near it. The greater part of it lies fronting the St. Lawrence.-Alfo, a townhip in the county of Leceds, being the twelfth townifip in afcending the river Sit. $f_{2}$ wrence. It is watered by the Gananoque river, which has a good farbour at its entrance. There is a port of entry on the weat banl- of the Gananoque, near its routh in the St. Lawrence.-A. As), a town of America, in the eaftern part of Glonciter county, New Jerfey; 4 miles weft of the mouth of Mullicus ,iver.-Alfo, a town in Komebeck county, on the calt bank of Amerefkoggin river, eppolite to the mouth of Twenty miles ftream, in the sown of 'lurner, 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 courfe for horfe-racing.
LEEDSTON, a poft-town of Weftmoreland county, Virginia: 105 miles from Wahhington.
LEEGELLAN, a fmall ifland in the Eat Indian fea, near the ealt coalt of Borneo. N. lat. $4^{\circ} 10^{\prime}$ E. long. $118^{\circ} 40^{\prime}$.
LEEHEEM, a fmall illand nearly north-eaft of Borneo. N. lat. $6^{\circ} 9^{\prime}$ E. Long. $118^{\prime} 16^{\prime}$.

LEEK, in Botany, Gardening, and the Materia Medica. See Allium.

Leek, in Geography, a fmall ifland of Pennfylvania, in Delaware river.

Leek-Head, in the Manege. See Wart.
LEEKE, or LEEK-in-the-Moorlands, formerly called $L_{e f,}$, in Geography, a market-town and parifh in the hundred of Totmanflow, and county of Stafford, England, is feated at the northern extremity of that county, at the diftance of 154 miles from London, and 3I from Manchefter. Here are a weekly market on Wednefday, and feven annual fairs. In the year 1800 , this parill contained 780 houles, and 3489 inhabitants. Many of them are employed in the manu. facture of ribbons, filk-twift, and buttons; which may be confidered the ftaple articles of the place. But of late years this latter branch has very much diminifhed, and at prefent the chief trade is in thrown filk, and the manufacture of bandana and other handkerchiefs. The cotton bufinefs has alfo been introduced, within thefe few years, into this town. The church here is a large building, with a lofty fquare tower. In the church-yard is an ancient ftone-crofs, the fhaft of which is about ten feet in height. It has been called Danifh, from "the imagery and fret-work," as Mr. Gough obferves, 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 lordfhip of this town formerly belonged. In the vicinity of Leeke are fome lofty bare crags, called Leek-rocks and Henclouds. Blue-hills, in this neighbourhood, abound with coal-mines; and a fatt-fpring iffues from one of thefe hills. Eight alms-houfes were endowed here in 169G, by Mrs. Elizabeth Afh, for as many widows.
LEER, in Glafs-making, a fort of third furnace, intended to anneal and cool, by proper means, the veffels when made. See Furxace and Glass-house Furnace.
Leer, Lehr, or Lier, in Geography, a town of Eaft Friefland, on a river of the fame name, which foon after joins the Ems; ir miles S. of Einden. N. lat. $53^{\circ} 12^{\prime}$. E. long. $7^{\circ}{ }^{30}$.

LEERDAM, a town of Holland, on the river Linghe, which gave title of count to the noble houfe of Egmont; and afterwards to that of Naffau; in miles S. of Utrecht.- N. lat. $51^{\circ} 55^{\prime}$. E. long. $4^{\circ} 59^{\prime}$.

LEERSIA, in Botany, a genus of grafles, received its appellation from Dr. Swartz, in order, with peculiar propriety, to honour the memory of John Daniel Leers, an apothecary at. Herborn in Naffau, author of the Flora Herbornenfis, publifhed in 1775. This litt'e octavo volume, now very rare, contains fixteen plates, in which all the grafles are engraved by the hand of the author, with fuch exquifite and minute precifion, that they will bear infpection with a magnifier, almoft like the plants themfelves, and are unrivalled in natural hiftory. A life of the author by his fon is prefixed to this book, by which we learn that he dicd December 7,1774 , aged 47. The narrative contains few. diriking particulars, but the effufions of filial piety, with

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which it abounds, muft ever be interefting, and do honour both to the father and the fon. A fecond cdition of this work, from another hand, was publifhed many years afterwards, of which the plates ale extremely fanlty and inaccurate copies of the firft. Swartz. Prodr. 21. Ind. Occ. v. 1. 129. Schreb. 818. Willd. Sp. I'l. v. 1.325. Mart. Mill. Dict. v. 3. Brown Prodr. Nov. Holl. v. f. 210. Michaux Boreali-Amer. vo r. 39 . (Afprella; Schreb. 45. Homalocenchrus; Mieg. Act. Helvet. v. 4. 307. Hall. Helvet. v. 2. 20r. illion. Pedem. v. 2. 232. Ehrhartia; Wiggers Prinnit. 63.)-Clafs and order, Tirandria Digynia. Nat. Ord. Gramimu, Liun. Juff.

Gen. Ch. Calyw none. Cor. Glume of two clofed, boas. fhaped, concave, compreffed 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 leafists. Stam. Fizments three, in fome cafes one or fix, capillary, fhorter than the corolla; anthers oblong. $P_{i \%}$. Germen fuperior, ovate, compreffed; flyles two, capililary, fhort; ftigmas feathery. Peric. none except the permanent clufed corvila. Seed folitary, obovace, comprefled.

Eff. Ch. Calyx none. Corolla of two clofed vales.
Obr. Homalo enchrus, the name given to this genus by Mieg, was juftly, as compounded of another, thought exceptionable by Wiggers, who therefure preferred Ebrbartia; but the latter is now otherwife employed. (See Eninharta.) Dr. Solander it feems originally ditinguifhed this genus from Ploclaris, and the name applied to it by Swartz, was adopted from his manuferipts. We cannot account for the error of Wiggers, who afferts it to be gynandrous, the flamens growing out of the top of the germen. We find no traces of any fuch infertion, which would be truly lingular in a grafs.
I. L. oryzoides. Swartz. Prodr. 21. Willd. n. 1. iPhalaris oryzoides; Linn. Sp. Pl. 81. Swartz. Obf. 34. Schreb. Gram. fafc. 2. 6. t. 22.-Panicle fpreading. Flowers fpreading, triandrous; their plumes fringed at the keel. Native of watery places in Germany, France, Switzerland, Aultria, Italy, and Perfia. Seguier fays it is frequent in the rice-fie'ds about Verona," in weeding which this శrafs is detected, in its youngelt itate, by its glaucons foliage, and, at a more advanced period, by the minute prickles at the edges of its leaves.". The roughnefs arifing from thefe prickles feems the origin of the Italian name, Afperella. The roots are perennial, with long runnors. Stems four or five feet high, leafy, erect, fmooth, with hairy joints. Leaves linear-lanceolate, pointed, ftriated, rough, efpecially at the edges, fligh:ly glaucous; witly long, Ariated, roughifh fheaths; and a fhort notched ftipuia. Panicle at firlt enveloped in the upper Meath, then fpreading, a fpan high, with numerous, droaping, compound, zigzay brauches. Flocvers light green, very much refembling thofe of rice, but finaller.
2. L. virginica. . Willd. n. 2. (L. oryzoides; Michaux Boreali-Amer. vo 1. 39. Orỳza glumis carinà hifpidis; Gronov, Virgia. ed. 1. 153. Phalaris oryzoides; ed. 2. 18.)-Panicle, hoofe. Flowers motly triandrous, erect, -clofe-preffed; their glumes fringed at the keel.-Found in Kentucky, Pennlylvania, and Carolina. Michaux. In marfhes in Virginia, amongit Sinilaces and Rubi, flowering in Auguft. Clayton. Michaux thinks this is not fpecifically diftinet from the former; but Willdenow, who has obferved them both' in a garden, fays that, "t thongh much alike, they are conftantly different. The prefent has fhorter and broader Haves; a florter panicle, whole brarches are not zigzag but

Araight, and whofe fowers are clofely preficd to the flalks. The glumes are fimaller, narrower, fparingly fringed. The panicle of this is never covered by a leaf, but always expofed and fpreading." We have feen no fpecimen of this Lecerfic. Willdenow enquires "whether the Jamaica fyecies be the fame with it ?" By this he feems to mean, whether $L$. oryzoides of Swartz, which he lad already quoted with a doubt under the former, be this $L$. virginica. But Swartz no wherc mentions the oryzoides as a Weft Indian plant. He merely gives its character in italics, as ufual in his Prodromus, to contraft it with his own new fpecies, and thereby indicates it not to be a native of the Wefl Indies.
3. L. bexandra. Willd. n. 4. Swart\%. Ind. Occ. v. 1. 131-Panicle nearly erect. Flowers alternate, clofepreffed, hexandrous; their glames fringed at the keel, roughilh. - Native of watery places in the fouthern part of Jamaica, where it was gathered by Browne aild Swartz. Stom two feet high, nearly erect, with hairy joints, but otherwife fmwoth, flender, leafy, fometimes a littic branched. Leaves rather glaucous, lanceolate, acute, fpreading. flriated, rough at the edges. Stipula pointed, beardlefs. Panicle meally erect, the branches a little fpreading in every direction, by no means inclined to droop; the Howering part zigzag. Forers alternate, crowded, erect, fo as to approach the Alatk, purplif, fmaller than in L. oryzoides, but otherwife much like that fpecies. The famens however are conflantly fix. It flowers in the fpring.
4. L. auffralis. Brown Prodr. Nov. Holl. v. i. 210. -Panicle luofe, with alternate branches; the lower oies divided. Flowers hexandrous; their glumes fringed at the keel, finely toothed at their ribs; friooth at the fides.Gathered by Mr. R. Brown at Port Jackfon, as well as in the tropical part of New Holland. He thinks it fo near the laft, as to be doubtful of their being diftinct.
5..L. Lenticularis. Michaux Boreali-Amer. v. I. 39.Branches of the panicle nearly folitary, their fecondary divifions fpiked. Flowers imbricated; their glumes orbicular, tringed. Native of marfhes in the country of the Illinois. Michaux defcribes the glumes as rather large, lenticular, and confpicuoufly fringed.
6 L. monandra. Willd. n. 3. Swartz. Ind. Occ. v. 1. 130.-Panicle fimple, loofe. Spikes rensote, lax. Flowers inonandrous, fomewhat imbricated, fingle-ranked; their glumes roundifl, fmooth.-Obferved by Swartz in chalky groves in Jamaica, Howering in the fpring. He defcribes it as very different from all the other fpecies known to him. The flem is two or three feet high. Leaves long, upright and fmocth, of a bright green. Flowers the fize of Millet-feef, green, fmooth, with only one flamen in each.
Leersia, E. dw. Fund. v. 2. S8. See Encalypta.
LEERSTRAND, in Geograply, a town of Norway; eight miles S.W. of Drontheim.

LEES, the grofelt and thickeft parts of wine; oil, and other liquors; or the fediment found at the boitom 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 Bacchas; or, according to Du-Cange, from Lia, a corrupt. Latin word, fignif) ing the fame.

A kind of potafh, called cineres clavellatl, is made with the lces of wine burnt, and prepared, ufed by dyers, \&c: which ought to be remembered by people troubled with the tton, \& \& c.

The vinegar-makers makc'a great trade of the lees of wine dried, and made into cakes, after having iqueezed out the remains of the liquor in prefles,

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All the various kinds of lees, fuch as thole of wine, beer, ale, oil, \&\&c. may be made ufe of as manures, when they can be had in fufficient quantities for the purpofe.

LEESBURG, in Geography, a poft-town of Maryland, in America; 25 miles from Frederickitown.-Alfo, a pofttown of Virginia, and the capital of Loudon county; fituated fix miles S.W. of the Patowmac, and containing about 60 houfes, a court-houfe, and gaol; 20 miles from Salifbury.

LEESNITZ, or Legnica, a town of Silefia, 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; ftudied 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 counfellor of ftate, and the zeal and intelligence which he difplayed in the public fervice caufed him four times to be appointed to the fyndieate, or firft office in government, and likewife to be employed in important negociations; one of which was with Elizabeth, queen of England, in order to obtain fome pecuniary aid for the republic. He was employed upon a fimilar miffion to Holland, and obtained a fum from the prince of Orange, and the ftates general, upon the condition that the academy of Geneva fhould be re-eftablifhed. Leet fupported this meafure, and delivered an oration "De ftudiis libęralibus publica ob mala non deferendis." 'He was employed to defend the rights of the republic with his pen againft the duke of Savoy; and he vindicated the Proteftant religion in oppofition to the attacks of the prefident Favre. He was author of various publications in jurifprudence, and in polite literature. He died in 1611, highly refpected 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, \&cc. Gen. Biog.

Leer, Leta, (leth, lethe, 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 latbes, rapes, wapentakes, hundreds, and the like; and the Cheriff twice a year performed his tourn or perambulation, for the execution of juftice through the county. Afterwards the power of holding courts was granted to divers great men, within certain diftricts. And from hence, thefe courts, holden within particular parts of the county, have defcended 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 "Boofhooanas," and the refidence of their chief, fituated at the diftance 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 houfes 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 fpars erected at certain diftances. On the eaft fide of the circle, about the fourth part of the houfe was open, the other three-fourths entirely clofed. A round pointed roof covered the whole in the form of a tent, well thatched with long reeds, or with the ftraws of the holcus. From the centre to the back part of the houfe, a circular apartment is made off, with a narrow entrance into it, where the head of the family takes his nightly reft; the other members of the family fleep in the tore part,

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or between the large and fmall circles of the houfe. All the houfes are enclofed with palifades; and the fpace betweeri thefe and the dwelling ferves for a granary, and flore for their grain and pulfe. Thefe granaries are conttructed in the form of oil-jars, of baked clay, the capacity of each being at the leait 200 gallons; and they are fupported on tripods, compofed of the fame material, which raife them about nine inches above the ground. They are covered with a round ftraw roof erected on poles, and fufficiently bigh 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 fpecies of Mimofa, which conftitutes the principal food of the camelopardalis. The city in its circumference is eftimated as large as Cape Town, with all the gardens of Table valley; but it is im. poffible to afcertain the number of houfes, by a general furvey, on account of the irregularity of the ftreets, and lownefs of the buildings; but they are fuppofed to amount to between two and three thoufand, of the fame kind, but not fo large, as that of the chief. The whole population, including men, women, and children, were eftimated at between ten and fifteen thoufand perfons. The fituation of Leetakoo was calculated to be S. lat. $26^{\circ} 30^{\prime}$, and E. long. $27^{\circ}$.

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 midft of a morafs; formerly a place of ftrength, to which perfons condemned to banifhment were fent; 20 miles W.N.W. of Liege.

LEEWARD Islands, fo called in contraditinction to the Windward iflunds, an appellation given to them from their fituation in a voyage from the ports of Spain to Carthagena, or Porto Bello. Thofe that lie to leeward extend from Porto Rico to Dominica,

LEFCA, a town of the ifland of Cyprus, the refidence of an aga and a cadi. It was one of the four cities that bore the name of Arfinöe; 28 miles N.E. of Baffa.

LEFIKEH, a town of Aliatic Turkey, in the province of Natolia; near it is a convent, which is the refidence of a Greek bifhop ; 16 miles S.E. of Ifnik.

LEFOOGA, one of the Friendly iflands in the South fea, near Hapaee; in reality forming with three other iflands, viz. Haanno, Foa, and Hoolaiva, a group, diftinguifhed 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 refpects fuperior to Annamooka; its plantations were more numerous and more extenfive. Towards the fea, indeed, on the eaft fide, the country is ftill wafte, which is probably owing to its fandy foil, as it is much lower than Amamooka 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, fermed facious public roads, not only convenient but ornamental. Large fpots were covered with the paper mulberry trees, and the plantations were generally flocked with fuch roots and fruits as are the natural produce of the ifland. At one place was a houfe, four or five times as large as thofe of the common fort, to which, it is fuppofed, the people refort on certain public occafions. Near the landing place was obferved a mount, two or three feet high, covered with gravel; and upon it flood four or five fmall huts, in which, as the natives faid, the bodies of fome of their principal people had been interred. This ifland is not above feven miles long; and, in

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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 diftant ; and at low water, the natives can walk on this reef, which is then partly dry, from one ifland to the other. The fhore itfelf is either a coral rock, fix or feven feet high, or a fandy beach; but higher than the welt fide, 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. $19^{\circ}$ $47^{\circ}$ E. long. $185^{\circ} 40^{\prime}$.
LEFT, a town on the N. coaft of the ifland of Kifhma ; 12 miles N.E. of Kifhma.
Leg, Crus, in Anatomy. See Extremities.
Leg, Amputation of, in Surgery. See Amputation.
Leg, Dijlocations of. See Luxation.
Leg, Fradures of. See Fracture.
Leg, Mortification of. See Gangrene.
LEGaCY, Legatum, in the Civil Lazw, a donation by teftament; anfwering to what in common law is called a demife; and the perfon to whom it is given is ftyled the legatee.

Legacy is ufually defined fome particular thing given by a laft will and tellament ; becaufe if a man thus difpofe, or transfer his whole eftate to another, it is called bareditas ; and he to whom it is given is called bares. Though in common law, the diltinction is this : that he to whom all a man's lands and hereditaments defcend by right of bluod, is bares natus; the other, to whom it is bequeathed, is called hares fatius.

This bequeft 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 fpecific one of a piece of plate, I cannot in either cafe take it without the confent of the executor. (Co. Litt. II I Aleyn. 39.) For all the chattels are vefted in him; and it is his bufinefs firlt of all to fee whether there is a fufficient fund left to pay the debts of the teftator; the rule of equity being, that a man mult be juft before he is permitted to be gencrous, or, as Bracton expreffes the fenfe of our ancient law, "de bonis defuncti primo deducenda funt ea qua funt neceffitatis, et poftea que funt utilitatis, et ultime qure funt voluntatis.". In cafe of a deficiency of affets, all the general legacies mult abate in due proportion to pay the debts; but a fecific legacy, as of a piece of plate, a horfe, or the like, is not at all to abate, unlefs there be not fufficient without it. A fpecific legacy is where, by the affent of the executor, the property of the legacy will veft. As in one way there is a benefit to a fpecific legatee, that he fhall not contribute, in cafe of a deficiency, to pay all the legacies, fo there is a hazard in another way : e. go if fuch fpecific legacy, being a leafe, be evitted; or being goods, be loft or burnt ; or, being a debt, be loft by the infolvency of the debtor; in all thefe cafes, fuch fecific legatee Thall have no contribution from the other legatees, and therefore fhall pay none towards them. (I P. Wms. 539.) Hence a queftion of fome importance has arifen, viz. whether a legacy was /pecific or general? A fpecific legacy (Atrictly fpeaking) is laid by lord Hardwicke (I Atk. 417.) to be a bequeft of a particular chattel, fpecifically defcribed and diftinguifhed from all other things of the fame kind; or, in other words, an individual legacy. Money, fufficiently diftinguifhed, may be the fubject of a fpecific bequeft; as money in a certain cheft, or a particular debt. So a bequelt of a part of a fpecific chattel may be equally a fpecific legacy. (3 Atk. Io3.) Legatees, however, of fpecific parts, though not liable to abatement with general le-
gatees, mult neverthelefs abate proportionably among them. felves, upon deficiency of the fpecific thing bequeathed (2 Vez. 563. ) ; or on deficiency of the general affets for payment of debts. (I P. Wms. 403.) And fpecific legatees of diftinct chattels fhall abate proportionably on a deficiency of general affets. 2 P. Wms. 382 .
On the other hand, a mere bequelt of quantity, whether of money or any other chattel, is a general legacy; as of a quantity of flock (1 Atk. $4^{1} 4.2 \mathrm{~V}$ cz. 562.) ; and where the teftator has not fuch ftock at his death, it is a direction to the executor to procure fo much fock for the legatce. (Talb. 227.) The purpofe to which a general legacy is to be applied will not alter its nature. (I 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 hufband. 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 eccle. fiaftical court, a prohibition lies, untefs they take fecurity to refund. ( 2 Venfr .358 .). As an executor is not obliged to pay a legacy without fecurity firen him by the legatee to refund, if there are debts, becaufe the legacy is not due till the debts are paid, and a man muft be juft before he is charitable; fo in fome cafes, the executor may be compelled to give fecurity to the legatee for the payment of his legacy ; as where a teftator bequeathed 1000 l. to a perfon, to be paid at the age of 21 , and appointed an executor, and died ; afterwards the legatee exhibited a bill in equity againft the executor, fetting forth that he had wafted the eftate, and praying that he might give fecurity to pay the legacy when it hould become due : and it was ordered accordingly. I Ch. Rep. 136. 257.
If a legacy is devifed, and no certain time of payment is fixed, and the legatee is an infant, be fhall have intereft for the legacy from the expiration of one year after the teftator's death; but if the legatee be of full age, he fhall have no intereft but from the time of the demand of his legacy. Where a legacy is payable at a day certain, it mult be paid with intereft 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 devifed to be paid at a certain time, it carries intereft only from fuch time as it is demanded. A perfon having a legacy, of which he was unapprized till a great while afterwards, when the executors publifhed it in the gazette; here chancrry would allow no intereft, but the bare debt. Pr. Chanc. 1 If .

As legacies are gratuities, and no duties, action will not lie at common lave for the recovery of a legacy; but remedy muft be had in the chancery or fpiritual court. (Allen. 38.) If a legacy is payable out of the land, or its profits, an action on the cafe lies at common law ; but the ulual remedy is in chancery. (Sid. 44. 3 Salk. 223*) By chief juftice Holt, a legatee may maintain an action of debt at common law, againft the owner of land, out of which the legacy is to be paid ; and fince the ftatute of Wills gives him a right by confequence he fhall have an action at law to recover it. (2 Salk. 415.) It is now, however, pofitively determined, that no action at law lies for a legacy; the court of chancery being the proper juridiction foi that purpofe. ${ }^{5}$ Term Rep. 690.) An executor being in equity confidered as a truftee for the legatee, with refpect to his legacy, and as a

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trufee in certain cafes for the next of kin as to the undifpofed farplus, we hence derive the true ground of cquitable jurifdstion in enforcing the payment of a legacy, or diftribution of perfonal eitate. ( ( P. Wms. 544. 575.) The fpiritual court adminilters redrefs in the cafe of febtraction, or the withholding or detaining of legacies, as a confequential part of their tettamentary jurifdiction; but in this cafe the courts of equity exercife a concurrent jurifdiction, as in. cident to fome other fpecies of relief required; and as it is beneath the dignity of the king's courts to be merely auxiliary to other inferior jurifdictions, the caufe, when once brought there, receives there alfo its full determination. Blackit. Com. b. iiii.

Where a teftator gives his debtor a legacy greater than his debt, it flall be taken in fatisfaction of it; though where the legacy is lefs, it thall not be deemed as any part thereof; but as a legacy is a gift, the legatec lias been fornetimes decreed both. (i Salk. 155. 2 Salk. 508.) If a greater legacy is given by a codicil, to the fame perfon that was legatee in the will, it fhall not be a fatisfaction, unlefs fo exprefled. (I P. Wms. 424.) Although a legacy is a gift, yet upon a principle already ftated, that a man fhould be jult before he is kind, a bequeft of the fame fum by the debtor to the creditor, fhall be applied ia fatisfaction of the debt. (Pr. Ch. 394. 2P. Wms. 130. 3 P. Wms. 354. I. Vez. 123. 4 P. Wms.'6ı6.). Yet when there are aflets, and the teltator intended both, it may be as good equity to confider him as both juft and kind; and the conftruction of making a gift a fatisfaction has, in many cafes, been carried too far. (I Salk. 155 . ${ }^{\text {I }}$ P. Wms. 410.2 P. Wms. 616.) Cafes of this nature depend upon circumftances; and where a legacy has been decreed to go in fatisfaction of a debt, it mult be grounded upon fome evidence, or at leaft a ftrong prefurmption that the teftator did fo intend it; for a court of equity ought not to hinder a man from difpofing of his own as he pleales; and therefore the intontion 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. EEq. lib. 4.p. I. c. 1. §.5.) Jacob's Law Dict. by Tomlins, tit. Legacy. See Will.

Legacy, Contingent. See Contingent.
Legacies, Intereft on. See Interest.
Legacr, Lapfed, is where the legatee dies before the teftator, in which cafe the legacy fhall fink into the refiduum. (See Contingent.) A legacy to be paid, when he attains the age of 21 years, is a veffed legacy; an intereft which commences in prefenti, although it be folvendum in futaro; and if the legatee dies before that age, his reprefentatives fhall receive it out of the teftator's perfonal eftate, at the fame time it would have become payable, in cafe the legatee had lived. But if fuch legacies be charged upon a seal eftate, they fhall lapfe for the benefit of the heir; for in regard to devifes affecting lands, the ecclefiaftical court hath no concurrent jurifdietion with chancery. And yet where 1000 l. was given by a perfon out of lands to his daughter, and intereft 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 fhould be raifed notwithitanding, and the lord chancellor faid that this legacy was a velled one. (2 Vern. Rep. 617. Barnardift, 328. 330.) In cafe of a vefted legacy, due immediately, and charged on land, or money in the funds, which yield an immediate profit, intereft fhall be payable thereon from the teftator's death. See Interest on Legacies, and Legater.

Legacies, SubtraRion of. See Suetraction.
Legacy, in an Ecclefiafical Senfe, was a foul-feat, a bequelt to the church, or accultomed mortuary; which was

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to hold good, even though the teflament itfelf were declared null and invalid.

LEGAL Column, CEconomy, Subrogation, and Tutorage. See the feveral fubitantives.

LEGALIS, Hosso, in Lazw, a perfon who ftands reflus in curia, not outlawed, nor excommunicated, nor infamous. And in this fenfe are thofe words fo often ufed, probict les sales bomines.

Hence, alfo, legality is taken for the condition of fuch a man.

Legata, fem. Legate, plu. in Mufic. Sce Notes and Syncopation.

LEGATE, a prelate, whom the pope fends às ambaffador to any fovereign prince.

The term legate comes from legalus, which Varro derives from legerce, to chafe; and others from legare, delegare, to find, or delegate. Wicquefort.
There are three kinds of legates; wiz. legates a latere, legates de latere, and legates by cfice, or legali nati.

Of thefe, the moit confiderable are the legates a latere; fuch are thofe whom the pope commiffions to take his place in councils; who are thus called, becaufe the pope never gives this office to any but his greateft favourites aiid 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 thofe who, not being cardinals, are yet entruited with an apoffolical legation.

Legates by office, legali nati, are thofe 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 archbifhop of Rheims and Arles. But the authority of thefe legates is much inferior to that of the legates a la. tere. The power of a legate is fometimes alfo given without the title ; fome of the nuncios are invefted with it.

Legate, Court of the. See Court.
LEGATEE, or Legatary, in Lazv, the perfon to whom a legacy is left; which every perfon is capable of being, unlef particularly difabled by the common law or ftatutes, as traitors, and fome others.

Formerly Papits were under feveral difabilities, both as to purchafing lauds, and taking them by defcent or devife ; but in thefe more liberal and enlightened times, fuch difabilities are removed, and Papitts, or as we fhould rather call them, Roman Catholics, are rendered capable of purchafing and devifing lands, and having them by defeent, purchafe, and devife, on taking the oath prefcribed to them by 18 Gec: III. c. 60.

It feems to be neceflary that a legatee fhould be born at the time of making the will; and it has been adjudged, where legacies were given to a man's cbildren, that thole who were born afterwards fhould have no fhare. (s Bultt. 153.) But it has been otherwife decreed in chancery. (I Ch. Rep. 301.) The general rule with regard to legatees is, that if the legatee die bcfore the teftator, or before the condition upon which the legacy is given be performed, or before it be velted in intcrelt, the legacy is extinguilhed. (Treat. Eq. lib. 4. part I. c. 2.) But a bequeft may be fo fpecially framed as to prevent the death of the legatee from occafioning a lapfe of the legacy. (3 Atk. 572. 5 So.) Nor will the rule extend to a legacy bequeathed to two or more; for though, by the civil law, there is no furvivorhip among legatees, yet it is fettled that a legacy to two or more is not extinguihed by the death of one, but will velt in the furvivor. (Gilb. Rep. 137. 2 Att. 220.) Nor will

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the rule extend to thofe cales where the legacy is given over after the death of the firit legatee; for in fuch cafes the legatee in remainder flall have it immediately. (I And. 33. pl. 82. 2 Vern. 207. I P. Wms. 274. 3 P. Wms. 113. Pro. Ch. 37. Mofch. 319. 2 Vern. 378.) Nor will a legacy lap fe by the death of the legatee in the teftator's life-time, if he be to take as a truttee; (See I Vez. 140 ; and 2 Vern. 468.) in which latter cafe the point is doubted. When a father makes provilion 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 eftablifh 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 detigned two portions to one child. (I P.Wms. 680. 2 Ch. Rep. $5_{5} .2$ Vern. 115.257 . 2 Atk. 216. Ambl. 325. 2 Bro. C.R. 307.) But this implication will not arife, if the provifion by the will be by bequelt of the refidue (2 Atk. 216.); or if the provifion in the father's life-time be fubject to a contingency ( 2 Atk. 49r.), or be not ejifdem generis with the legacy ( r Bro. C. R. 425. ) ; or if the teftator be a flranger (2 Atk. 516. 2 Bro. C. R. 499.) ; and fuch implication is aiways liable to be refuted by evidence. 2 Atk. 516. 2 Bro. C. R. 165.519.

A bequett of money to one at the age of 21 , or day of miarriage, 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 devife had been to her when fhe fhall marry, or when a fon fhall come of age, and they die before. (Godb. 182. 2 Vent. 342.) But a devife of a fum of money, to be paid at the day of marriage, or age of 21 years, if the legatee die before either of thefe events happen, Thall go to the legatee's adminiltrator, becaufe the legatee had a prefent intereft, though the time of payment was not yet come; and it is a charge on the perfonal eflate which was in being at the teftator's death; and if it were difcharged by this accident, then it would be for the benefit of the executor, which was never intended by the teltator. (2 Vent. 366. 2 Lev. 20\%.) If the legacy be to the legatee payable to him at a certain age, and the legatee die befor he attain that age, this is a velted and tranfmiffable intereft in the legatee. (2 Vent. 342. 2 Ch. Car. 155. 3 Vern. 462. 3 P. Wms. 138. 2 Vern. 199.) Otherwife, if the legacy be to the legatee generally, at or when he attains fuch age. (2 Vent. 342. 2 Salk. 415 . I Eq. Ab. 259, 6. 1 Bro. C. R. 119.) If the legacy be made to carry intereft, though the words to be puid or payable are omitted, it is a velted and tranfmiffahle intereft. ( 2 Vent. $3+2.2$ Ch. Car. 255. 2 Vern. 673. 2 Vez. 263.3 Atk. $645^{\circ}$ ) So if the bequelt be to $A$. for life, and after the death of $A$. to $B$., the bequeft to B. is velted upon the death of the teftator, and will not lapfe by the death of B. in the life-time of A. (2 Vent. 347. i P. Wms. 566. 2 Vern. 378. Ambl. 167. i Bro. C. R. 119. 181.) A perfon by will, \&c. gives a portion or legacy to a child, payable at 21 years of age, out of a real and perfonal eftate, and the child dies before the legacy becomes payable; in that cafe, fo much of it as the pertonal eltate will pay, thall go to the child's executors and adminiftrators; but fo far as the legacy is charged upon the land, it is faid that it fhall fink. (2 P. Wms. 613.) dacob's Law Diet. by 'Tomlins, vol. ii. See Legacy and Executor.
Legatee, Refiluary, is the perfon to whom the refiduum, or what remains of an eftate, after funeral charges, debts, and legacies, are paid, is left by will. See Executor.

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LEGATINE Constitutions. See Constitutions. ILGATIS T'enementis. See Tenementrs.
LEGATO, Ital., in MIffic, bound, tied, conneded, fuf: tained.
LEGATORY, or Legatary, a term ufd in fpeaking of the government of the ancient Romans: Auguftus diyided the provinces of the empire into confular, legatory, and prefidial. The legatory provinces were thofe of which the emperor himfelf was governor, but where he did not refide, but adminiftered affairs by his licutenant, or legatus.

Legatony, or Legatary, the fame with legatee of a will. ( 27 Lliz. cap. 16.) It is derived from the Latin lega. tarius.
LEGATUM, in an Ecclefiafical Sinfe, was a legacy given to the church, or accultomed mortuary.

LEGATURA, Ital., in Modern Mufic, implies a binding note; as when the bar goes through the middle of the note, or two notes of the fame kind are ticd 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 chureh mufic, before the ufe of bars, and when the notes were chiefly fquare, fuch as the large, the long, and the breve, the laws of ligature conftituted the moft difficult and tedious part of a practical mufician's ftudy. The value or length of a note, in the fiftieenth or fixteenth centuries, was changed, by the polition of the tail being upwards or downwards, on the left or right fide of a note, or in the middle of a meafure. In the mufic-fchool at Oxford, a fet of mafs books is preferved, çontaining compofitions by Dr. Fairfax, Taverner, and other old Englifh malters, of Henry VII.'s and Henry VIII.'s time, that are totally unintelligible, except to very curious and fludious profeffors, who have made the ligatures their peculiar ftudy.
Ligatures were ufed by the early contrapuntifts, in vocal mufic, to connect fuch founds as were to be fuftained or fung to one fyllable, as is done at prefent by femicircular marks, called binding-notes, and flurs. The rules for theife are too numerous and vague to be explained without a long: difcuffion, and their powers will perhaps be beft compres hended in the esamples of ancient compofition of different parts, in partition, and barred. However, it may be ufeful to thore who undertake to decypher fuch mufic, to remember that all the fquare notes in ligature, with tail3 on the right band, defcending, are longs; on the leff, breves; and all with tails on the left, afcending, 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 caufe.

Ligatures

Ligatures explained by equivalent Notes.


Black, fquare, and lozenge notes, when mixed with white, are diminifhed one-fourth of the value they have, while open
or vacuate. And a note partially black, or demivacuate, isfruck twice, in the following proportions:


LEGATUS, among the Romans, a military officer, who commanded as depaty of the chief general.

Of thefe there were divers kinds; viz. a legatus in the army under the imperator, or general, anfivering to our lieutenant-general; and a legatus in the provinces, under the proconful, or governor.

When any confiderable perfon among the Roman citizens had occafion to pafs through any of the provinces, the fenate 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 frce legation, Iibera legatio; becaufe the perfon was not incumbered with any truft, and might lay it alide as foon 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 diftrict of Nantes; 21 miles S. of Nantes. The place contains 2893, and the canton 5227 inhabitants, on a territory of $167 \frac{1}{\frac{1}{2}}$ kiliometres, in 5 communes.

LEGEM, ad communtm, entry, in Larw, a writ of entry which lies where tenant for term of life, or for term of another's life, or by courtely, \&c. aliens and dies, when he in the reverfion thall have his writ againft any one that is in poffeflion of the land. New Nat. Brev. 461. See Entry.

Legem facere, to make law, or oath; and legem babere, 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 ufed in the old Romifh churches, containing the leflons that were to be read in divine fervice.

Hence alfo the lives of faints and martyrs came to be called legends; becaufe the chapters were read out of them at matins, and in the refectories of the religious houfes.

The firt Greek legend which is known is that of Simon Metaphraftus of the tenth century, who writ the lives of faints addapted to every day of the year. The firlt Latin legend is,

Legend, Golden, or a collection of the lives of the faints, compiled by James de Varafe, better knows by his Latin name of J de Voragine, vicar-general of the Dominicans, and afterwards archlinhop of Genoa, who died in 1298.

It was received into the church with great applaufe, which it maintained for two hundred years; but, in effect, it
is fo full of ridiculons and romantic accounts, that the Romanifts themfeives are now generally afhamed of it: The word legend itfelf is, on that account, come into difrepute.
Legend is alfo ufed by authors to fignify the words or letters engraven about the margins, \& \& co of coins.

Thus, the legend of a French crown is, sit nomen domini benedictim; that of a moidore, in hoc signo vinces: on thofe of the laft emperors of Conllaninople, we find iesvs christvs basilevs basileons ihs xps nica, iesvs christvs vincit. For a brief hiftorical account of the legend on coins, and the method of engraving it; fee the article Coinage.
Legend is alfo applied to the infcription of medals, which ferve to explain the figures or devices thereof.

In ftrictneis, the legend differs from the infcription; this lalt properly fignifying words placed on the reverfe of a medal, in lieu of figures. When the letters or words of a medal occupy the field, they are called an inforittion; 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 th:cir medals thould ferve both as images, and as emblems: the one for the common people, and the other for perfons of tafte and parts; the images to reprefent the faces of princes; and er blems 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 reverfe. The firlt generally ferves only to diftinguifh the perfon by his name, titles, oftices, \&cc; the latter is intended to exprefs his noble and virtuous fentiments, his good deed;, and the advantages the public has reaped by him. This, however, does not hold univerfally ; for fometimes we find the titles fhared between both fides, and fometimes alfo the legend.

In the medals of cities and provinces, as the head is. ufually the genius of the place, or, at leaft, fome deity adored there, the legend is the name of the city, province, or deity, or of both together; and the reverfe is fome fymbol of the city, \&c. frequently without a legend; fometimes with that of one of its magiltrates.

The ordinary fubjects of legends are, the virtues of princes, the honours they lave received, confccrations, fignal events, public monuments, deities, public vows, privileges, \&c.

Legends and infcriptions of medals are either in Latin or Greek. The Greek charater, confiling of majuicule, or

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-apitalletters, appears uniform on all the medals; no change or alteration being fcund in confronting the feveral characters; though it is cortain there was in the ordinary ufe and pronunciation. All we obferve on medals is forcetimes a mixture of Greck and Latin letters.

Upon many' of the coins flruck in the Greek cities, we find the legend of the obverfe in Latin, while that of the reverfe is in Greek. The reafon of this, fuggefted by Mr. Pinkerton, feems to be, that the magiltrate of fuch country mint, not having any portrait of the emperor, fent to Rome for one, which was returned in a die ready cut with the legend. To this a reverfe was made by the Greek artifts; the magilltrate inclining to fave the expence of cutting another obverfe. Th.is opinion is confirmed by the fact, that few or no coins occur with Latim legends on the reverfe, and Greek in front : belides, the dics are haltily done, and after the manner of different mints.

The character was preferved in all its beauty till the time of Gallienus.

From the time of Conftantine, and for the foace of five hundred years, the Latin tonguc was alone ufed in the legends of medals, even in thofe Aruck at Conttantinople. Michael began the firlt, whofe legend was in Greck; and from his time the language, as well as the characters, began to alter for the worfe. See Medil.

The Latin legends are all read from the left to the right; but the legends of fome Greek medals are wrote the contrary way, from the risht 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 obferved by Mr. Pinkerton in his excellent "Effay on Medals," that the legends of the earlieft Greek writers are very brief, rehearfing only the initials of the city or prince: as AӨE, money of Athens; Ir, money of Sybalis, \&c.: afterwards, A, money of Archelaus, king of Macedon; $\Phi$, money of Philip. Afterwards the name was put at full length; as ¢ıлппо , coin of Philip of Macedon; and Alexander the Great has the title of BAELAEYE, or king. In procefs of time, the Syrian and Egyptian kings, the fucceffors of Alexander, added fome cpithet of praife, as ereptetir, beneficent, or the like, together with the year of their era in which the coin was flruck. In this ftate the Greek coinage remained, till the Roman empire fivallowed up all the kingdoms and cities which ufed that language. "Under the dominion of the Roman emperors, the Greek mint affumed more of the Roman form, then more perfect, as to legend, than their own. On the face they gave the Roman emperor or emprefs, with their titles; the founder of their city, with his name; the fenate or the people of Rome, who had protected them; or the ideal buft of the genius of their city: while the reverfe prefents us with a legend indicative of the name of the magittrate under whom the money was ftruck; of fome treaty entered into with one or more neighbouring ftates; of the river or deity reprefented, and the like." The Greek artits, as the fame ingenious writer obferves, to their honour, even when their wint was deprefled by the Roman porwer, feldom or never explain by their legends the reverfes of their coins; commonly, and almoft univerfally, putting for the legend of the reverfe the name of the city, frequently adding that of the magitrate. The fymbols of their deities were familiar, and needed no explanatory legend. Perlonifications, rare on Greek coins, except of their cities and rivers, are eonmonly accompanied by an illuftrative legend; and the Egyptian coins have alfo fimilar legends. The Grecian cuins of 'cities feldom exprefs more in their legends than the game of the town, generally contracted till the Romin
times. When the Roman empire firal!ored up the Grecian the legends on Greek coins were as much diftinguifhed by their length as they had before been by their brevity. The titles of the emperors are tranflated from the Latin as lis terally as poffible, as AYTOKPATRP for Imperator, KAFEAP for Cæfar, \&c. In order to exprefs Latin founds, the Grecks were often obliged to put their own enunciation of the fame word, in characters very different from the Latin, as Kotintos for Quintus. On the reverfes of Greek imperial coins, the legends are very various; fuch are kolNON, the community; OMONOIA, the alliance; ArtoNOMOI, living by their own laws ; EAETOEPOR, free, \&c. Infcriptions filling the whole field of the reverfe are not fo common in Greek coins. Some few, however, occur, particularly upon thofe of Smyrna. Our author further obferves, that the noted S. C., fignifying Scnatus Confullo, by decree of the fenate, and expreffing the authority of the fenate of Rome for triking any coin, never appears upou thofe of gold or filver, in the fame fenfe as when it occurs upon thole of brafs. He fuggeits, that the Roman emperors had the fole difpofal of the gold and filver coinage, but left that of brafs entirely to the fenate. The Roman legends refembled, for fome tires, in their fimplicity thofe of the Greeks ; but gradually proceeded to more explicit length, and in time from elegant and fimple veracity degenerated into flattery. This remark is trictly applicable to the legends of the obverfe; whereas thofe of the reverfe began to flatter as foon as there was a prince, "an idol upon whofe altar to burn the cloudy perfume." Clemency and moderation are found upon the medals of Tiberius, and equivalent virtues upon thofe of Titus. The reverfes of the firlt imperial coins are not, however, wanting in adulation; which, fays Mr. Pinkerton, is not to be wondered at, "when we confider that Virgil and Horace, men of the moft enlightened minds, whatever may be decided of their claim to genius, were yet capable of even forgetting the found dignity of poetry, and proflituting it at the bloody footfool of a tyrant. What Montefquieu fays of the Englifh, that if ever they were reduced to be flaves, they would prove the meaneft of all flaves, was exemplitied in the conduct of the ancient Romans." In procefs of time, "a fucceffion of virtuous monarchs authorized the reverfes fo foreign to moft of their predeceffors. S. P. Q. R. optimo Principi, fo 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 grofs impropriety in the legends of the Roman coin." The Greeks alfo even furpafled the Romans themfelves in the bafe art of adulation. "The legends of the Roman imperial coins are defervedly celcbrated for their beautiful fimplicity, and emphatic brevity, fo as to be accounted models of the kind." Mr. Pinkerton has fubjoined feveral inftances to this purpofe. The compals of a coin is fo fmall, that artitts have always been obliged to ufe abbreviations in the legends and infcriptions. This circumftance occafions coniderable difficulty in interpreting them. Mr. Pinkerton, in the appendix to his valuable work, has furnifhed an explanation of thofe that moft conmonly occur.

Dr. Coningham, in his Tract on Modera Meda's, cited by Mr. Pinkerton, enumerates fise kinds of improper legends on modern medals; viz. poetianl, impious, jingling, intricate, and abufive. Of the firf kind he initances a French medal, flruck on occalion of fome advantage over the Englifh at fea; maturate fugan, which, he fays, reminds us of Virgil and not of the action. Mr. Addion, in his third dialog te ou medals, viadicates poetical legends. But Mr. Pinkerto

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jufly obferves, that medals are certainly meant to be hiftow rical, and that poetry has in it fomething alien to hiftory and celtruetive 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, gavet flumine non furdine, and alfo that of Ridhard Crommell, non defichat olivif, confounding the ulive-tree with Oliver Cromwell. To the intricate kind is referred the chronological coin of Gultavns Adolphus, king of Sweden, CheistVs DVX eheo TrIVMphVs, the numeral letters making the year 1632. Of the abulive kind is the Dutch medal on their ftadtholder, quantum nutatls ab hllo, and Louis XIV., viro mimortali cempistula in ano. To thefe long legends might be added. The ancient legends are remarkable for fimple brevity and energy; and the beft of the modern clafs 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 Miviles.

LEGER, Anthony, in Biography, a learned Piedmontefe, was born in the year 1594. After purfuing his ftudies at Geneva, he entered the work of the minilltry, the duties of which he difcharged many years with great punctuality. In 1628 he went to Conftantinople, as claplain to the ambaffador of the States-general in the Ottoman Porte, and there became intimatcly connected with the celebrated Cy rillus. On his return to Piedmont in 1637, he was cholen pattor of the church of St. John, a fituation which he retaingd fix years; during which he difplayed much talent and leapning in the defence of the Proteftant faith. In $16+3$, he was profcribed by the duke of Savoy, and was obliged to feek for fafety in Geneva, where he not only exerciled his profeffion, but was clected profeffor of the Oriental languages, and of divinity. He died in 1661, at the age of lixty-feven. He publifhed at Geneva an edition of the New Teitament in two vols. 4 to. 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 publifhed. Moreri.

Leger, Joirn, nephe of Anthony, was born in 1615 , and educated for the profeffion of the miniftry, was chofen 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 W Aldenses (which fee) broke out with great rage. Leger made his efcape to France, and from thence he tranfmitted an affecting account of the cruelties perpetrated on the Proteltants to Oliver Cromwell, who fent an extraordinary amballador to the duke of Savoy, to remonitrate with him on thofe proceedings. Leger likewife applied to the king of France, and to the Proteflant itates, foliciting their interference in behalf of his countryzuen. A treaty, now agreed on, feemed to promife future fecurity and toleration. Leger was at the ligning of this treaty, which being very fhortly broke, and new oppreffions 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 cuurt of Turin, that Leger was proclaimed a traitor, and his houfe ordered to be razed to the ground. He now became paftor of the Walloon church at Leyden, and in 1.664 he vifited fecretly the vallies, carrying with him confiderable fums of money collected from the Proteftants, for the relief of his perfecuted countrymen. He was author of a valuable hittory of the Evangelical churches in the vallies of Piedmont. Moreri.

## L E G

LEGEREMENT, Fro in Mufic, indicates a movensent more lively than gay; it is the mean between gay and quick, anfwering nearly to vivace in Italian.

LFEGER-LINE is ufed to fignify a line added to the ftaff of five lines, when the afcending and defcending notes run very high or very low. We often meet with feveral of thefe lanes both above and helow the flaff.
1.EGGE, Groncie, in Biografoy, baron of Dartmouth, and an eminent naval commander, was born about the year 1.647. The family derive sheir origin from Italy, but have for leveral centuries been refident in this country. Thomas Legge, from whom Gcorge defcended, was lord mayor of London in the years $13+6$ and 1353 . The fubject of this article, being intended early for the lica-fervice, was brought up under adminal Spragge, and at the age of twenty, obtained the command of allip. In 1673 he was appointed governor of Portimouth, malter of the horfe, and held an office under the dake of York. In 1682 he was railed to the peerage, and in the following year was fent to raze the fortifications of Tangiers. By James II. he was appointed malter of the horfe, general of the ordnance, and conitable of the Tower. He had alfo the command of the fletet 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 4. Englifh Peerage.

LegGe, Elizabetir, the eldeft daughter of Edward Legge, efq. an anceltor of the preceding, and alfo of the prefent earl of Dartmouth, was born in 1580: She ftudied the ancient and feveral of the modern languages, and had a fine poetical genius, but became blind by much ftudy. 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 fifter to be more than 100, and another died in her 112 th year.

LEGGIADRO, Leggiadramsxte, Ital. in Mufic, implies gaily, lively, brifly. See Ailecgo.

LEGLEA, in Geography, a town of Nubia; 16 miles W.N.W. of Dengola. N. lat. $20^{\circ} 6^{\prime}$. E. long. $29^{\circ} 3^{\circ}$.

Leghenich, or Leckenich. See Legkich.
LEGHI, a town of Arabia, in the province of Yemen; 56 miles E.N.E. of Aden.

LEGHORN, or Livorno, a confiderable, regular, wellbuilt, fortilied and flourilhing city and fea-port of. Etruria (formerly the grand duchy of Tufcany) ; and, on account of its canals, called the New Venice. It is a bihop's fee, defended by a caftle, two fmall forts, and a broad ditch, fituated in a marfhy and infalubrious territory on the fea-coatt, oppofite to Malora, a fmall ifland, and ditant about 14 miles from Pifa. The canals that interfect it environs bave rendered the marih fit for culture, and in fome degree contributed to its greater falubrity. Its flreets are draight, uniform, and fpacious; and many of the buildings are not inelegant. The town is of a fquare form, and 12,790 feet in circuit, and contains a ducal palace, many religious houfes, and from 40,000 to 50,000 insabitants, of $w h \mathrm{hcm} 5,000$ are Jews, who live in a particular part of the city, are allowed a handfome fynagogue, and though fubject to heavy impofts, a:e in a profperous itate, as the greateft part of the commerce of. the city is conducted by them. The Greeks and Armenians have each their peculiar church, moft of them aoknowledg. ing the pope's fupremacy. The free Turks and Turkih flaves have a mofque; but the Proteftants are not permitted: the public exercile of their religion, the Englin excepted, who are allowed to have a chaplain, becaufe of all fureign nations they are the beft cuftomers to Leghorn. Other Proteftants make ufe of chaplains of Mips. Protitutes are

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reflricted to a particular quarter, confifting of feveral flrects. 'I'he heavy taxes payable to the government, from various neceffaries brought into the town from the continent, together with monopolics of brandy, tobacco, and falt, render provifions and other commodities very dear. The inhabitants carry on an extenfive trade, which is much promoted by the freedom of the port; every bale of goods, great or fmall, paying only two pialtres or fcudi. 'The harbour, whick is fecure, is divided into the ontward and inward; the latter ferving merely for four or five gallies, which are fometimes fent to fea againft the corfairs, under the command of a knight of St. Stephen. In the open place before this harbour ftands a marble ftatue of Ferdinand I., and at the angles of the pedeftal are four brazen ftatues, of a gigantic fize, reprefenting four Turkifh flaves in chains. The outward harbour is formed by a mole or dam, 600 common paces in length, well paved, with a partition in the midule, that ferves to thelter the fhipping from the wind on one fide. "I'he mole ferves alfo for an occafional promenade. The harbour has not fufficient water for large fhips, which therefore lie out of the mole, moored to pillars and lurge 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 againtt winds and corfairs. Without the harbour on a rock is a light-houfe, where 30 burning lamps are contained in one lanthorn, and on the fhore, not far from it, is a lazaretto, where quaransine is performed by perfons and groods, that come from fufpected places. (See Lazanetro.) The power of the inquifition at Leghorn extends only to Roman Catholics, and comprehends only cales of religion. In June 1796 the French took poffeffion of this town, and deftroyed the fortifications. N. lat. $43^{\circ} 32^{\prime}$. E. long. $10^{\circ} 16^{\prime}$.

The principal monies of account at Leghorn are the lisa and pezza; the former being chiefly ufed in domeftic trade, and the latter in fureign commerce and exchanges. Each of thefe is divided into 20 parts called foldi, and the foldo is fubdivided into 12 parts called denari. The pezza of Leghorn was originally the Spanifh pefo, and lience it is called the pezza de otto reali by the Italians, the piaftre By the French, and dollars by the Englifh. This pezza, valued in filver, is worth $46 \frac{3}{4} \mathrm{~d}$. fterling, but valued in gold, it is worth 49 d. fterling ; which is the intrinfic 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 laster the real money of all Tufcany. The lira is, as in Florence, according to the rate of coinage, worth about $8 d$.

Accounts on Leghern are underftood to be in moneta lunga; and 23 lira moneta buona are worth 24 lira moneta lunga. The lira has its fubdivifions. The pezza is worth $5^{3}$ lira moneta buona; or fix lira moneta lunga. Foreign bills in Leghom, unlefs particularly excepted, muft be paid in gold, that is, in Florence fequins or rufponi, 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. Wednefdays, and Fridays. In freighting fiips at Leghorn, 20 chelts of fruit, 26 barrels of oil, 44 barrels of wine, 5600 lb . of alum, are reckoned one laft, or two tons. See Kelly's Univerfal Cambit. vol. i.

LEGINAU, a town of Pruffia, in the province of Ermeland; 22 miles S.E: Heilfberg.

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 legert; to choofe; becaufe
when the legions were raifed they made choice of fuch of their youths as were the molt proper to bear arms.
The number of foldiers and officers of which the legion confilled, was different at different times : but it is impolfible to determine the precife time and manner of their alteration. In the time of Romulus, the inftitutor of this corps, each legion contained three thoufand foot, and three hundred equites, or horfe : thefe were divided into three bodies, which make as many orders of battle; each body confiting of ten companies, or manipules, ranged at fome diftance from each other, though in the fame front. Each body had two gene. ral officers to command it, called tribunes; and each manipule, two centurions.

Under the confuls, the legion confifted of four thoufand, or four thoufand two hundred foot foldiers, who made four bodies, commanded by a conful, or one of his lieutenants; and each legion had its fhare of cavalry, which was three hundred horle.

About the year of Rome 412 , it was compoled of fire thoufand foot; which was the number of a legion during Julius Cæfar's wars with the Gauls. Under Aurultus, each legion conffited of fix thoufand one hundred foot, and feven hundred and twenty-fix horfe. After his death, they were reduced to five thoufand foot and lix hundred horte. Under Tiberius, the legion was raifed again to fix thoufand foot and fix hundred horie. In the time of Septimius Severus, the legion was compuled of five thoufand men: under the following emperors, it was the fame as it had been under Anguitus.

In the time of Marius, thofe four divifions of the legion which had taken place under the confuls, were unite into one, and augmented; and cohorts were appointed from five to fix hundred men, each under the command of a tribune. Each cohort confifted of three companies of manipules, each manipule of two centuries, and the legion was divided into ten cohorts, who made as many diftinct battalions, difpofed in three lines; fo that the legion, then, confifted of fix thoufand men.

Ifidore tells us, that the legion confifted of fix thoufand men, and was divided into fixty centuries, thirty manipules, twelve cohorts, and two hundred troops. According to the French academy, the legion confifted of fix thuufand foot, and feven hundred and twenty-five horfe. The legion confilted of four forts of foldiers, who differed in their age, arms, and names : they were called Velites, Haflati, Principes, and Triarii. (See Arms.) Till the deftruction at Carthage, thefe were citizens of Rome, but after the Social War, the frecdom of the city was gransed to other towns in Italy, and legionary troops were raifed which were called Roman, becaufe as they fhared the privilege of Roman citizens, they were incorporated in the republic.
The legions were by far the moft corifiderable part of the Roman army; their number, in the time of Auguftus; was thirty-three; they were compofed wholly of Roman citizens. The allies formed a body of auxiliary forces. See the fequel of this article.

The ftandard borne by the legions was various; at firt, a wolf, in honour of that which fuckled Romulus; afterwards an hog; by reafon, fays Feltus, 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 defigns were to be kept fecret, and inacceffible as the minotaur in the labyrinth. They alfo, bore a horfe, a boar, \&c. Pliny tells us, that Marius was the firtt who changed all thefe ftandards into eagles. See Eagle.

The different legions were difinguifhed, according to the order

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order in which they were raifed, into firft, fecond, and third, \&c. by the names of the emperors who formed them into legio Auguita, Claudia, Flavia, Trajana, \&cc. by the provinces where they had ferved, as legio Parthica, Macedonica, \&c. and by fome famous exploit or difplay of valour.
We fhall here fubjoin fome further particulars relating to the contitution and military fervices of the imperial legion. It was compofed of infantry and cavalry. 'The heavy-' armed infantry, which compofed its principal Atrength, was divided into ten cohorts (fee Conont), and lifty-live companies, under the orders of a correfpondent number of tribunes and centurions. The firlt cohort, which always clamed the polt of honour, and the cultody of the cagle, was formed of 110 ; foldiers, the moft approved for valour and fidelity. The remaining nine cohorts confifted each of 555 , and the whole body of legionary infantry amounted to O1O0 mea. Their arms were uniform, and admirably adapted to the fervice which they were required to perform; they confited 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 ftrongly guarded with plates of brafs. Befides a lighter fpear, the legionary foldier grafped in his right hand the formidable pilum (which fee); and as foon as he had darted this from his hand, he drew his fword, and rufhed forward to clofe with the enemy. His fword was a fhort well-tempered Spanifh blade, that carried a double edge, and was alike adapted to the purpofe of pufhing or ftriking ; but the foldier was always inftructed to prefer the former ufe of his weapon, as his own body remained lefs expofed, while he inflicted a more dangerous wound on his ad*erfary. See Veget. de Re Mil. 1. ii. c. I. Lipfius de Militia Romana. 1. iii. c. 2-7.

The legion was ufually drawn up eight deep; and the regular diltance of three feet was left between the files as well as ranks.

The cavalry, which was necefliary for perfecting the force of the legion, was divided into ten troops or fquadrons: the firft, as the companion of the firft cohort, conlifted of 132 men; whilift each of the other nine amounted only to 66. The entire eftablifmment formed a regiment, according to the modern expreflion, of 726 horfe, naturally connected with its refpective legion, but occafionally feparated to act in the line, and to compofe a part of the wings of the army. The cavalry of the emperors was not compofed, like that of the ancient republic, of the nobleft youths of Rome and Italy, who, by performing their military fervice on horfeback, prepared themfelves for the offices of fenator and corrful; and folicited, by deeds of valour, the future fuffrages of their countrymen. Since the alteration of manners and government, the moft wealthy of the equeltrian order were engaged in the adminiftration of juftice and of the revenue ; and whenever they embraced the profeffion 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 clafs of their fubjects, which recruited the ranks of the legion. The horfes were bred, for the moft part, in Spain or Cappadocia. The arms of the Roman troopers confifted in a helmet, an oblong fhield, light boots, and a coat of mail. A javelin, and a long broadfword, were their principal weapons of offence. The ufe of lances and of iron maces they feem to have borrowed from the barbarians. Confiderable levies were regularly made by the Romans among the provincials: and many dependent princes and communities, difperfed
round the frontiers, were permitted, for a white, to hold their freedom and fecurity by the tenure of military fervice. Even felect troops of hoftile barbarians were compelled or perfuaded to confume their valour in remote climates, and for the benefit of the itate. All thefe were included under the general name of auxiliaries; and their number was feldom inferior to that of the legions themfelves. By this inflitntion each legrion, to which a certain proportion of ausiliaries was allotted, contained within itielf every fpecies of lighter troops, and of miffile weapons; and was capable of encountering every nation, with the advantages of its refpect: ive arms and difcipline. Nor was the legion deftitute of what, in modern lauguage, would be ftyled a train of artillery. It confifted in ten military engines of the largett, and 55 of a fmaller fize; but all of which, cither in an oblique or horizontal manner, difcharged itones and darts with irrefiltible violence.

The camp of a Roman legion prefented the appearance of a fortified city, See the defcription of it under Cansp. In their march, the legionaries carried their arms, and alfo kitchen furniture, inflruments of fortification, and provifion for many days. Thus laden, they advanced by a regular liep, to which they were trained, near twenty miles in about fix hours. On the appearance of an enemy, they threw afide their baggage; and by eafy and rapid evolutions converted the column of march into an order of battle. The flingers and archers 1 kirmifhed in the front; the auxiliaries formed the firtt line, and were feconded or fuftained by the ftrength of the legions: the cavalry covered the flanks, and the military engines were placed in the rear.

As to the number of the legions, we may compute, that the legion, which was itfelf a body of 6831 Romans, might, with its attendant auxiliaries, amount to about 12,500 men. The peace eftablifhment of Adrian and bis fucceffors was compofed of no lefs thas 30 of thefe formidable brigades; and moft probably formed a flavding force of 375,000 men. As to the pofition of the legions, they were encamped on the banks of the great rivers, and along the frontiers of the barbarians. As their ftations were, for the moft part, fixed and permanent, the troops may be confidered as diftributed in the fellowing manner. Three legions were fufficient for Britain. The principal flrength 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 Mœfia, and two in Dacia. The defence of the Euphrates was entrufted to eight legions, fix of which were planted in Syria, and the other two in Cappadocia. A fingle legion maintained the domeflic tranquillity of each of the large provinces of Egypt, Africa, and Spain.. Italy was not left deftitute of a military force. About 20,000 chofen Soldiers, diftinguifhed by the titles of "City Cohorts" and "Pretorian Guards," watched over the fafety of the monarch and the capital.

Under Conllantine and his fucceffors, the legions were very confiderably reduced. When feven legions, with fome auxiliaries, defended the city of A mida againft the Perfians, the total garrifon, with the inhabitants of both fexes and the peafants of the deferted country, did not exceed the number of 20,000 perfons. Hence we may infer, that the conftitution of the legionary troops, to which they partly owed their valour and difcipline, was diffolved by Conitantine; and that the bands of Roman infantry, which. ftill afo fumed the fame names and the fame honours, confifted only of 1000 or 1500 men. Neverthelefs, the Tucceffors of Conftantine indulged their love of oftentation, by iffuing their orders to 132 legions, infcribed on the mufter-roll of their
numeroins armics. Under them the complete force of the military eftablifhment was computed at 645,000 foldiers. Cibbon's Decl. \&c. Rom. Emp. vol, io and iii.

Liegiox, Square, legio quadrata, was a legion confilting of four thoufand men.

Eegonum, Domelicus. Sce Domesticus.
Legon, Thundering. Sce 'I'munderivg.
Leglon, Theban, is a name griven by fome authors to a legion of Roman foldiers, who refolving not to facrifice to iduls, fuffered martyrdom under the emperors Dioclefian and Maximilian, about the jear of Chrilt 297. But the whole account of them feems to be fabulous.

LEGISLATOR, LAWGiver, a perfon who frames the laws of a kingdom or tlate founded by him.

The principal ancient legitators are-Mofes, Iegiflator of the Hebrews; Mercurius Trifmegiftus, and Bocchyris, of the Egyptians; Italus, of the Enotrians; Thefeus, Draco, and Solon, of the Athenians; Zoroatter, of the 13 actrians; 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 moit of the cities of the Grecia Major ; Parmenides and Zeno, of Elea, in Lucania; Xamolxis, of the Getx; Phoronens, of the Greeks; Bacchus, of the Indians; Saturn, of Italy ; Macarius, of the ifle of Lefbos; Zalencus, 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 legiflators; though Solon may be faid, in fome fenfe, to have been their legillator, as the decemviri, who were created for the making of laws, borrowed a great number from thofe of Solon.

With us the legilative 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 nuptix demonftrant" 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 mult be precedent to the birth. See Bastard.

## Legitimate Delivery. See Delivery and Labour.

Legitidate Tertion. See Fever.
LEGITMMATION, an act by which natural or illegitimate children are rendered legitimate. See Bastard, \&c.

By the French law, the father and mother, by marrying, render their children, begotten before marriage, legitimate; and this is called legitimatio per fubfequens matrimonium.

The right of legitimation was a thing unknown to princes till the time of Conftantire; but, fince his time, has been exercifed by moft of them. The Greek emperors invented feveral kinds of legitimation.

Anaftafius put it in the power of the father to legitimate his natural children by a bare adoption, provided he had no legitimate children. But Juftin, by his conftitution, and Juftinian, by his Novel 74, abolifhed this legitimation, as fearing the too eafy accels to legitimation fhould encourage concubinage.

In lieu of this, he eftablifhed a way of legitimation by the emperor's letters. This rendered baltards capabie of attaining to honours, and even of fucceeding to inheritances, provided the perfons were legitimated with the confent of their father and mother: which is agreeable to the canon law.

LEGIUNCARA, in Gcorraply, a town of Naples, inthe province of Bari; 21 miles N.IV. of Matera.

LEGNA, Asm, among the Ancients, a name given to the borders of the loga and pallium, that were on each hand; the extremities above and beluw being called ora.

LEGNANO, in Geugrapby, a town of Italy, in the Veronefe, on the Adige. The two divifions of this place are comeeted by a drawbridge; the eailern part is called Porto, and the weftern Legnano. It has feveral monatheriss, and a playhoufe. It is a populous town, and carrics on a confiderable trade by means of a corn-market held every Saturday, and a camal, running from Legnano to Oitiglia, in the territory of Mantua. 'Whis was formed in 1762, between the Adige and the lo; and for the better fecurity of its navigation, fluices have been conllructed at both its ends. The French took poffeffion of it in $1799 ; 22$ miles E.S.E. of Verona. N. lat. $44^{\prime \prime} 50^{\circ}$. E. long. $11^{\prime}$ I $18^{\prime}$.

LEGNOTIS, in Botany, fo named by profeflor Swart T, from $\lambda$ sevaios, fringed, becaufe its petals are curioufly laciniated and fringed. Schreb. 357. Swartz. Prod. 84 Ind. Occ. v. 2. $969^{\circ}$. Willd. Sp. M1. v. 2. 117 1. Mart. Mill. Dict. v. 3. (Caffipourea; Aubl. Guian. v. 1. 528. t. 21 1. Juff. 432 . Lamarck. Illuftr. t. 406.) - Clafs and order, Poly. andria Monogynia. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth inferior, of onc leaf, bell-flaped. four or five-cleft half way down, permanent; fegments ovate, acute, erect. Cor. Petals four or five, longer than the calyx; claws flender, almoft as long as the calyx, inferted into the receptacle; borders ovate, very much fringed, villofe. Stam. Filaments fixteen or twenty, thread-flaped, equal, the length of the calyx, inferted into the receptacle; anthers oblong, erect. Piff. Germen fuperior, roundif ; ftyle cylindrical, as long as the famens; ftigma capitate. Peric. Capfule large, elattic, triangular, with three cells and three valves. Sceds folitary, convex on one fide, angulated on the other.

Obf. Sometimes the number of cells and valves in the fruit is liable to variation

Ef. Ch. Capfule fuperior, of three cells. Petals inferted into the receptacle, very much fringed or torn.

1. L. elliptica. Swartz. Prod. \& \& Willd. n. 1-Leaves elliptical. Flowers on foottalks.-A native of lofty mountains in Jamaica, flowering in May and June.-This is a tree from ten to thirty feet in hreight, having a fnooth, brown bark. Brancbes determinately fubdivided, creet, fmooth; the fmaller ones flightly compreffed. Leaves on footitalks, oppofite, ovate-acuminate, or oblong-lanceolate, entire, fcarcely nervofe, fmooth on both fides, fomewhat rigid; footitalks fhort, flat above, roundifh underneath. ' Stipulas fmall, ovate, membranaceous, downy, deciduous, between the foottialk 3. Flower-flalks axillary, from three to five, fimple; fcarcely fo long as the leaf-talks, with a few minute fcales at their bafe. Capfule fmooth, white and downy within. Flowers. flefh-coloured, villofe with white hairs.

Obf. The downy ftyle becomes elongated to twice the length of the calyx, after flowering.
2. L. Cafispourea. Swartz. Prod. 84. Willd. no 2. (Caffipourea guianentis; Aubl. Guian. t. 211.)-Leaves ovate. Flowers feffile:-A native of moilt places in Cayenne, flowering in January.

A middling-fized trca with a grey bark, about five feet in height, branched at the fummit: finaller branches oppofite, knotty. Its wood is white. Leaves iffuing from the knobs, ovate, acute, fmooth, entire, nearly feffile, accompanied at their bafe by two very minute Jipulas. Flowers axiliary, in tufts, white, feffile, firuated between two oppofite brafleas.

LEGOUZIA, Juff. 45, a name deftined by M. Dit-

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rande, for thofe Campanules which have a nearly flat, or wheel-flaped corolla, and an oblong prifmatic capfule, which L'Heritier has likewife feparated from Campanula, under the appellation of Prifmalocarpus. Sce Campanula, fection **.

LEGRAD, in Geography, a town of Croatia, at the union of the Muner and Drave; 15 miles E. of Varafdin. N. lat. $46^{\circ} 30^{\prime}$. E. long. $16^{\prime} 54^{\prime}$.

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. courfe for nearly, 100 miles, and then turning to the W., difcharges itfelf into lake Michigan. At its confuence with the lake it is about 250 yards wide.

LEGRENZI, Don Grovanni, in Biography, an able malter and fertile Italian compofer of the leventeenth century. He was a native of Bergamo, and produced for the different theatres of Venice fifteen operns between the years 1664 and $16 \mathrm{~S}_{4}$. He was likewife a favourite compofer of cantatas, of which he publifhed at Venice two books: one of ten, in 1674 ; and a fecord book containing fourteen, in 1679. During his youth he was fome time organitt of Santa Maria Maggiore, in his native city of Bergamo; then maeftro di cappella of the church Dello Spirito Santo, in Ferrara; and laftly of St. Mark's at Venice, and matter of the Confervatorio de Mendicanti. He was the matter likewife of the two great muficians, Lotti and Francefco Gafparini, both of whom are faid to have refided in his houfe at Venice in the year 1684, in order to receive his inftructions. He was alfo an inftrumental compofer, and among the moft early trios for two violins and a bafe, may be numbered, "Suonate per Chiefa," by Legrenzi, publifhed at Venice, 1655; "Suonate, rla Chiefa e Camna," 1656; "Una muta di Suonate," 1664 ; and "Suonate a due Violini e Violone," 1677 . Of this latt work we are in poffeffion, and upon viewing it, find, that though Legrenzi has introduced into thefe pieces fome of the belt 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 expreffions of the violin, thefe compofitions have been long fince juftly fuperfeded and effaced by fuperior productions of the fame kind.

IEGS, the lower eatremities of the bodies of moft animrals, ferving them for fupport and motion. See Extremia:RS. See alfo references under Leg.
I. ${ }^{\text {css }, ~ i n ~ t h e ~ M a n e g e, ~ t h e ~ m e m b e r s ~ t h a t ~ f u p p o r t ~ a ~ h o r f e ' s ~}$ body, and perform the motion when he goes. Of the four Sogs, the two before have feveral parts, each of which has a peenliar name: fo that by the name of fore-legs, we commonly underitand that part of the fore-quarters that extends 1.0 m the hough to the paitern-joint, and call it the foank; the part that correfponds to this in the hind-quarters is alled the infep. But in common difcourfe we confound the Sore and the hind-quarters; and without any diftinction fay the four legs of a horfe. The French call a horfe droit fur itcs jnmbes, i. e. ftraight-membered, or ftraight upon his legs, when the fore-part of the pattern falls perpendicularly upon the coronet, and the fhank and the paftern are in a fraight live. See Straight and Long-jointed. See alfo Horse.

The horfemari's legs are likewife of fingular concern in the manege, for the action of thefe given feafonably, and with a little judgment, conftitutes one of the principal aids, which confifts in approaching more or lefs with the calf of the leg to the horfe's flank, and in bearing it more or lefs off as there is occafion. This aid a horfeman ought to give very nicely, in order to animate a horfe: and it is fo much
the finer, that it is hidden and private: for in fretching the ham he makes the horfe dread the fpur, and this aid has as much effect as the fpur itfelf. See Aid.

Legs, in Rural Economy; are the extremities that form the fupport of animals. In horfes they fhould have a due proportion to that of the body. The fore-legs are fubject to many infirmities, as being the parts that fuffer moft, and are commonly the weakeft. It is a mark of bad legs when they appear altogether ftraight, or, as if they were of one piece. A horfe is faid to be flraight upon his legs, when from the knee to the fore-part of the coronet, the knees, flank, and coronet defcend in a ftraight or plumb-line, and the paftern joint appears more, or at lealt as much advanced as the reft of the leg; fuch legs are like thofe of a goat, making a horfe apt to trip and fall; fo that in time the paftern is thrult quite forward out of its place, and the horfe becomes lame and liable to flumble.

Horfes which are Atraight upon their legs are quite contrary to thofe that are long-jointed, that is, whofe patterns are fo long and flexible, that in walking, they almoft touch the ground with them. And it is a greater imperfection than the former, becaufe fome remedy may be applied to them; but there can be none for thefe: befides it is a figa of little or no ftrength, fuch harfes not being fit for much fatigue. Some horfes, though they be long-jointed, do not bend their pafterns in walking; fuch hortes gallop and run with greater eafe to their riders than fuch as are fhort jointed.

In the language of the fable a horfe 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 Anched.
Legs, Compaffes of three. See Compasses.
Leas, Hyperbolic. See Hyprabonic.
Legs, Loong, in Natural Hifory. See Tipula.
Legs of the Martinets, in a Ship, are ufed for thofe fmall 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 fpliced into themfelves; they have alfo a fmall eye, into which the martinets are faftened by two nitches, and the end is feized into the flanding part of the martinets.

Legs of a Triangle. - When one fide of a triangle is taken as a bafe, the other two are called legs. See Tmangle.

LEGUEVIN, in Geograpby, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diftrict of Touloufe; nine miles W . of it. The place contains 6689 and the canton 9549 inhabitants, on a territory of $11 / \frac{1}{2}$ kiliometres, in 10 communes.

LEGUIGNO, a town of the duchy of Parma; 18 miles S.S.E. of Parma.

LEGUME, ia Botany, legumen, the pod proper to the pea or papilionaceous tribe of piants, thence termed, by fome writes, leguminous. (See Leguminos.s.) The Latin word legumen is faid by the ancients themfelves to be derived from lego, to gather; becaufe fuch fruits are gathered or plucked from their ftaks, not reaped nor mown. They are termed in Engliih pulfe.

This fort of feed-veffel is always folitary and fimple, formed of two moftly oblong, equal, more or lefs coriaceous, parallel valves, without any diftinet longitudinal partition, and bearing the feeds along one of its margins only. The top is terminated by the remains of the ftyle, which is fhort, and placed obliqualy, or out of the axis; the bafe is fomewhat contracted towards the flalk. One of the margins, where the feeds are inferted, is generally rather fhorter than the other, and externally more furrowed, the other being often
rounded

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rounded or wavy, and more compreffed. There are, however, various flapes of legumes, fome of which are peculiar to certain genera, as the fpiral ones of different fpecies of Medicago and Scorpiurus; the cylindrical, prifmatic, or xhomboid ones of other genera. Such differ effentially from that kind of feed-veffel termed a filiqua, or pod properly fo called, in having the feeds at one margin only, whereas the filiqua has them arranged along both. The furrowed edge of the legume, which bears the feeds, is called the future.
'I'ke capfules of Helleborus, and fome other plants allied thereto, termed by Linnæus rather incorrectly multifilique, are juftly indicated by Gartner as approaching to the definition of legumes. They differ, however, in confifting each but of one valve, and in not being folitary or fingle in each flower, except the inftance of a few fpecies of Larkfpur, Delpbinium, which differ from the natural character of their genus, in having one inttead of three germens and feedveffels; but analogy here teaches the true nature of the part in queltion. We are, indeed, obliged to have recourfe to the fame guide in a few papilionaceous genera, whofe feed-veffel, otherwife a true legume, contains but one feed, as in moft fpecies of Trifolium, or whofe valves do not feparate, but become thickened and hard, as in Pterccarpus, or leathery, as in Viminaria.
When a legume is divided into feveral cells, it is either by an inflexion of its valves, as in Afragalus and Mirbelia, or by tranfverfe conftrictions, as in Vicia and Genifa, or even membranous tranfverfe partitions, as in Securidaca and Caffa. Some, however, are fill more diftinetly divided, feparating as they ripen into diftinct joints, each of which contains a fingle feed, and does not in general burft till that feed forces its way by vegetating, as in Hedyfarum, Scorpiurus, and Hippocrepis. This latter kind of legume has lately been confidered as a peculiar fort of pericarp, and called lomentum; but the gradations leading to it are fo imperceptible, that unlefs a multitude of other diftinetions were made, we do not fee the eligibility of this.

Several legumes are internally fpongy, flefhy, or pulpy, in which refpects they vary greatly in the progrefs of their growth, as the bean (Vicia Faba), the Tamarind, the Ceratonia, the Hymenaa, \&c.

Amid all the diverities of fructure in this kind of pericarp, it is moft difficult to admit as a legume the three-valved feed-veffel of Gxrtner's Moringa; our Hyperanthera.
LEGUMINOSÆ, a natural order of plants, fo called from the nature of their fruit. (See Legume.) It is the 93 d order of Juffieu's fyitem, the 11th of his I4th clafs, and embraces the Linnæan Papilionacea and Lomentacea.

For the detailed character of Juffieu's I $4^{\text {th }}$ clafs, fee Ficoides. It has two cotyledons, many petals, and ftamens inferted into fome part of the calyx.

The Leguminofe are thus defined.
Calyx of one leaf, varioully 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 thefe the upper and outer one is the flandard, vexillum, half embracing the reft, and moftly exceeding them in dimenfions; the next two are the wings, ale, which are lateral ; the lower and innermoft is the keel, carina, which is either fimple or divided. Stamens ten, rarely more or fewer, inferted into the calyx under the petals, their filaments fometimes diftinct, or flightly united at their bafe, or more frequently diadelphous, (fee Diadelphia,) that is,
confilting of nine united into a tube, which is flit lengehwife under the flandard, with a tenth applied clofe to that lifure, or the whole are really monadelphous, the tube being undivided and decandrous; the anthers are diftinct, often roundifh and fmall, fometimes oblong and incumbent. Germen fimple, fuperior; ftyle one; ftgma undivided. Fruit in a few inftances capfular, of one cell, with fcarcely more than one feed, either of two valves, or not burfting at all ; in molt it is leguminous, as the name of the order implics, longifh, of two valves, (of three in Moringa, or Hyperanthera, of four in one fpecies of Mimofa, the feeds affixed to one of the lateral futures; fometines it is of a fingle cell, with one feed or feveral, fometimes of many cells feparated by tranfverfe partitions, each cell containing one feed, and all being occafionally 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 thofe with more regular flowers the radicle is ftraight, and there is a perifperm, or thickifh membrane, enfolding the cmbryo ; the lobes of the feed are moftly changed into feminal leaves, according to the ufual mode of dicotyledonous vegetables, but fometimes they remain diftinct below the firlt leaves. The ftem is either herbaceous, fhrubby or arboreous, branched for the moft part in an alternate manner. Leaves furnifhed with ftipulas, alternate, in a very few inflances imperfectly oppofite, fometimes fimple, but oftener ternate, or fingered, or once or more pinnate. The flowers are variouly difpofed.
The fections are eleven.
I. Corolla regular. Legume of many cells, moflly of two valves, with tranfverfe partitions, the feeds folitary in each cell. Stamens feparate. Thefe are trees or fhrubs, with abruptly pinnate leaves. The fection contains Mimofa, Gleditfa, Gymnocladus, Macrolobium of Schreber, Ceratonia, Tamarindus, Parkinfonia, Schotia of Jacquin, and Cafia. To thefe may be added $A f z e l i a$, Smith Tranf. of Linn. Soc. v. 4. 221.
2. Corolla regular. Legume of one cell, and two valves. Stamens ten, feparate. - Trees or fhrubs, with abruptly pinnate leaves. (In Hyperanthera they have terminal leaflets, and the legume, has three valves.)
This comprehends Hyperantbera, (Moringa of Juffieu,) Profopis, Hamatoxylum, Dimorpha, of Schreber, Cubaa of the fame, Adenanthera, Poinciuna, Cafalpinia (the two laft being really one genus) and Guilandina.
3. Corolla fomewhat irregular. Stamens diftinet, or only connected at their bafe. Legume of one cell and two valves.-Trees or fhrubs, with leaves either abruptly pinnate, or merely conjugate, or quite fimple.
Here are Dipteryx: and Dimorpba of Schreber, with Cynometra, Hymenaa and Baubinia of Limnæus, and Ginannia of the former. Jufieu admits Vouapa of Aublet, which Schreber unites to Outea of the fame author, ks own Ma. crolobium; fee fect. 1.
4. Corolla irregular, papilionaceous. Stamens diltinct, or rarely connected at their bafe. Legume moftly of one cell, and two valves.-Trees or fhrubs; their leaves either fimple, or ternate, or pinnate, with an odd leaflet.
Juffieu here enumerates oilly Cercis, Rittcra 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, eftablifhed by Dr. Smith, in the Annals of Botany, and in Tr. of Linn. Soc.v. 9. 245. Thefe are Puttenua, Aotus, Gompholobium, Chorozema, Daviefia, Viminaria , though the legume of this laft does not burit), $S \$:$ erolobium, Dillwynia, Mirbelia (though the legume has two cells), and Callif-
tachya.

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tachya. To thefe, mereover, are to be aded feveral genera from the new edition of Hort. Kew. v. 3 ; Edlowardfia, Ormoffu, Thermopfis, Virsilia of Lamarck, Cyclofia, Baptifía, Podalyria, Fodolobium, Oxylobium, Brachyfema, Burconiu, Jut Rfonia. (fee the bater in its place), Ěusaxia, Sclerchoanuus, G'alIrolobium and Euchius.
5. Corolla irregular, papilionaceous. Stamens ten, diaielphous. Legume of one cell and two valves. - Shrubs or herbs; their leaves fimple or ternate, or rarely lingered; the ftipulas fometimes fcarcely difcernible, formetimes confpicuous, cither attached to the bottom of the footllalk, or diltinet from it.

This ample fection contains Ulex, A/alathus, Borbonia, Liparia, Genifa (the latter including Spartium of Linnæus), Civijus, Crotularia, Iutimus, Ononis, Arachis, Anloylits, Dalea, Pforctlect, 'Trifeium, Melllotus, Misticayo, Trigonella, Lotus,
 are to be added Platylabium, Boffrica and Peiretia of Smith in Tr.ofLim. Soc.v.9.30t, allo ì isha of Kecnig and Roxburg, and Fathas of Thunberg, with doubtlefs many more.
6. Curnlla, Stamens, and Legume as in the latt. Herbs or firruls, or frmail trees, whofe leaves are pimate with an odd leaflet. In a few the legume has two cells.

Abrus, Amortsa (remarkable for wanting both wings and keel), Pijcidia, Rotinia, Caragana, Alragalus, Phata, Biferrilha, Colutea, Gljogrrbiza, Galerga, and Indigof:ra.
7. Cor. Siam. and Legume as in the two laft.-Herbs, with pinnate, or conjugate, or fonsetimes fcarcely any, leaves, the common foottalk ending in a tendril; ttipulas diftinct from the footitalk.
Latbyrus, Pi/jum, Orobus, Vicia, Faba, Ervum, and Cicer.
8. Cor. and Stam. as in the three lait. Legume compofed of fingle-feeded joints.-Herbs or fhrubs, rarely trees; leaves fimple or ternate, or more frequently pinnate with an odd one; !tipulas diftinet from the leaf-atalk.
Scorfiurus, Ornithopus, Hippocrepis, Coronilla, Hedjyamum, Efchyrnomene, and Diphysfa. Here belongs Smilhia of Ait. Hort. Kew. ed. r.
9. Corolla as before. Stamens mofty ten, diadielphous. Ilegume capfular, of one cell, ofter not burfting, with fearcely more than one feed.-Trees or flhrubs; leaves generally pinmate with an odd one ; Atipulas ditinct from the tootftalk, foon falling.

Da.bcrgia, Amerimncn of Browne's Jamaica, Galedupa of Lamarck, Andira of the fame, Geoffraz, Degulia of Lamarck, Nijuclia, Diptery: of Schreber, Acouraa of Aublet, and Pierocargus, are the genera claffed here by Juffieu, which have all a general affinity to each other.
10. Corolla irregular (fometimes wanting). Stamens ten, diftinct. Legume capfular, of one cell, generally not burfing, containing a fingle feed.-Trees or fhrubs; leaves enther pinnate with an odd ore, or fimple; ftipulas diftinct from the footitalk, foon falling.

Crudia of Schreber, Detaxium of Juffiev, Copaifera, and Myroxylum.-Accordjng to the defintion of this fection, Fiminaria belongs to it; but is too unlike the relk, and too clofely allied in habit and character to the phants with which we have placed it in fect. 4 , to be feparated from them.

If. Juffieu concludes here with four genera, termed by him "akin to the liguminofe." Thefe are Securidaca, which Seems to belong properly to fect. 3, Browusa, Z Zysia of Browne's Jamaica, and Aruza of Schreber.

It will eafily be perceived that this arrangement requires much correction and reformaticil, in confequence of difcoverics fubfequent to its publication. The whole order is
fo matural, that its fubdivffions are proportionably dificicult to be devifed, and the fame may be faid of its generic diltinetions. If limneus was obliged, by the laws of his artificial fyftem, to officr great violence to this order, as Jufficu and others have not failed to obferve, his clafs Diadelpbia does honour to his penctration, and to the comprehentive fyftematic powers of his mind.

Leguminous Flowers. See Fiower.
Leguminous Plants, in Gardening, a term applied to all fuch as are of the pulfe kind, as thole of the pea, bean, and other timilar defcriptions.

LEHE, in Geography, a town of the duchy of Bremen; 32 miles N. of Bremen.

LEHEIM, a town of Heffe-Darmftadt; 8 miles W. of Darmitladt.

LEHI, in Scripfure Geography, a city of Paleftine, in the tribe of Dan, near Eltak or Eltaka. This was a facerdotal city, given to the fons of Cohath. Here Samfon flew a thoufand Philiftines with the jaw-bune of an afs.

Lemr, Leljigh, or Lecha, in Geography, a river of America, which rifes in Northampton county, Pennfylvania, about 21 miles E. of Wyoming Falls, in Sufquehania river, and paffing, by a circular couffe, through the Blue mountains, difcharges itfelf into Deawrare river, on the S. fide of Euiton, ir miles N.E. of Bethlehem. Its courfe is about 75 miles, and it is navigable 30 miles.
LEHMKUHLEN, a town of folitein; 8 miles S.W. of Lutkenborg.

LEHRBERG, a town of Germany, in the margravate of Anfpach, on the Unter Retzat; 5 miles N.W. of Anfpecho

LEHSO, a town of Arabia Deferta; rqo miies S. of Cathen.

LEHSTEN, or Lemesten, a town of Saxony, in the priacipality of Altenburg, celebrated for its quarries of flate; 45 miles S.S.W. of Altenburg. N. lat. $50^{\circ} 25^{\prime}$. E. long. $11^{1} 35^{-1}$.

LEHTIMAKI, a town of Sweden, in the government of Wafa; 6 万miles E.S.E. of Wafa.

LEIDEN, a towa of Auftia; io mites W.N.W. of Crems.-Alio, a town of Auftria; is miles S.W. of Crems.
Leiblingen, or Lyptingen, a town of Germany, in the lordflip of Natenberg; 6 miles E. of Tuttlingen.

LEIBNITZ, Godfrey William de, in Biograpby, an eminent German philofopher and mathematician, was born at Leipfic in the year ${ }^{1646}$. He loft his father when he was very young, and of courfe the care of his edvcation devolved or his mother. She piaced him under able mafters, who had been colleagues to his father in the univerfity, of which he had been profeffur of moral philofophy, and fecretary. The fon made a very rapid progrefs in the different branches of fcience and learning. He not only became a decp-claffic, but availed himfelf of the adrantages of a large and well chcfen library, which his father had left him, and read all the books which it contained in regular order, as the poets, orators, hiftorians, civilians, philuforiners, mathematicians, and divines. Such was his application, that he could repeat the works of the principal puets, and fo tenacious was his memery, that even in old age he could, without hefitation, run through the whole of the Eneid, without mifing a line or a word. He had a talent for making verfes, and is faid to have emmpofed three hundred in one day. When he was fifteen years of age he became a fudent in the univerfity of Leipfic, where he profecuted, with great fuccefs, the various fludies of the law, medicine, philofophy, and theology. Having finifed his fludies at Jena, theprin-
eipal objects of his attention were hifory, law, and the mathematics. He was particularly attached to the writings of Plato and Arittotle, and is faid to have fpent whole days in meditation, in a forelt near Leeipfic. He principally devoted limfelf to the Atudy of the law, and took his degree of bachelor in 1665 , and in the following year he fupplicated for his degree of doctor, which was refufed, under the pretence that he was too young, being then only in his twentieth year, but it was inagined that the real canfe was his having abandoned the tenets of Ariflote and the fehoolmen. Offended at this treatment, he went to Altolorf, where he maintained a thefis, "De calibus perplexis," and in the difputations on this occafion, he difplayed fuch uncommon abilities, that he had the degree of docter inffantly confurred upon him, and was even offered a profefforfhip extraordinary in law, which he declined. He about this period publifhed a work, entitled "Ars Combinatoria," intended to fhew in what manner univerfal arithmetic may be applied to other feiences. This was accompanied with "A mathematical Demoniltration of the Exitence of God." From Alddor§ Leibnitz went to Nuremberg, to vifit the learned men in that miverfity. He was at this place initiated in the mylleries of Alchemy. From Nivermberg he went to Mentz, and publifhed, in 1668 , " Nova Methodus Docendæ Difcendrque Juriprudentix," which gained him great applaule. He nest thewed himfalf as a politician, and wrote a treatife to induce the Poles to choofe the elector-palatine their king, which fo pleafld the electo:, that he invised the ant!or to refide at his court, which invitation he would have accepted, had he not a: the fame time obtained the offce of counfllur se the chamber of resiew in the chancery of Mentz. In 16,0 he reprinted, with a preface and notes, the treatife of Marius Nizolius de Berfello, "De veris Principiis, et vera ratione Phitofophandi contra Pfeudophilofuphos," to which he fubjóined 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 greateit mathematicians in that metropolis, and made further and confiderable progrefs in the fludy of mathematics and philofophy. Here alfo he met with Paical's arithmetical machine, the defects of which he foon difcovered, and to obviate thefe he invented a new one, which was highy approved by the minitter Colbert, and the Academy of suirnces. He was offered a feat in this body with a ponfion, and hat the profpect of many other advantages if he womld fetrle at Paris, but to attain this eminence he mult embrace, or be haperofed to embrace, the Catholic religion, which neithre honutes nor emolusints could induce him to do In 16,3 he came to England, and became acquainted wilh Mr. Oldenburg, the fecretary, and Mr. Collins, a diflinguifhed member of the Royal Society; from whom it was faid he received forme hints of the method of fluxions, which had been invented in 9664, or 1665 , by Mr. Ifaac Newton. Leibnitz improved thefe hints, and under the name of "calculus differentialis" the gave the fank method of analyfis with fuxions. (See Keil and Newtox:) While Mr. Leibaizz was in Eugland he loit bis patron, the elector of Mentr, and with him a penfion which that prince had allowed him. Ife retursed to France, whence he wrote to Frederic duke of Brunfwic Lunenburg, informing him of his circumitances. This prince immediately appoiated him a member of the Aulic council, with a regular falary, but he permitted him to remain at Paris, till his arithmetical machine fould be perfect. ed. When he eatered upon his office at Hanover, one of his earlieft cares was to furnifh the prince's library with the belt books in the various branches of fcience and litcrature. In 1677 he firlt meationed his mathematical invention of diffc-
rentiala to Nexton, who had previsuny to this writen to Leibuitzan account of his invention of fluxions: akout the fame period, he gave an account of fome difeoveries in uptics and mechanics, deferibing a new method of polifking glafts. Le became a conftant contributor to the "Acta Eruditorum" of Leipfic, and among other piecers he pulslifhed in this work "Thoughts on Rnowledye, Truth, and Ideas." He next undertook a hatory of the hosice of Brumfic, and to render himfelf more competent to the tafk, he travelled over Germany and Italy, collecting materials, In paffuri from Venice to Mefola, a terrible florm arofo, during which the pilot, unagining that he could not be waderftood by a German, whom, as a heretic, he regarded as the caufe of the tempett, propofed to ftrip him of his clothes and money, and throw him overboard. Leibnitz, hearing the converfation, without the leaft emotion, drew a fet of beads from his pogket, and began turning then over with great feeming devotion. The artifice fucceeded; one of the failors obferving 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 induftry feveral objects of very different kinds. In a theological dispute he appeared the friend of toleration, and in 1693 he publifhed a work on the law of nations, entitled "Codex Juris Gentium Diplomaticus." He next wrote his treatife "De ipfanatura, five Vi inlita," which was:mended to improve and correct the philofoplical notion of fubllance: and he likewife conceised the idea of a new fuience of forces, in which the laws of machanics, and the meafure of living forces might be clearly defiticed. This fuence he denomiwated Dynamies (which fee), and infer ed a fpecimen of it in the "Acta Eruditorum." He publihed "Thoughts on Locke's Effay on the Human Underltandiar," in which he controverted that philofopher's upinions on innate idcas, fubflance, a vacuum, and other fubjects; communicated to the world his ingeniuus invention of binary arithmetic; and wrote a reply to Bayle in defence of his doctrine of preeftablifhed harmony. Without attempting to follow our author in all his publications, which were very numerous and important, we may obferve that he fpent much time in the invention of an univerfad language; but did not live to complete his delign. In 17 io he publifhed "A Diftertation on the Goodnefs of God, the Liberty of Man, and the Origin of Evil." The writings of Laibnitz had long rendered his name famous in every part of Eurupe: he had horours beflowed upon him by feveral vother prizes, hefijes the clector: of Hanover and Brandenburg, and in 1711 he was made $A$ ulic: counfeilor to the emperor, and at the fame period the cra: Peter the Great appointed him privy counfellor pf juftice, with a penfion of a thoufand ducats. In $175+$ his patrore the elector of Hanover, was raifed to the throne of Geeat Britan, and in a thort time Leibnitz pailct over to England. where he received new marks of favour and friendfhip, and frequently made his appearance at court. It was during this vifit, that, at the detire of the princefs of Wales, afterwards queen Caroline, he engaged in a dilpute with the celebrated Dr. Samuel Clarke, upon the fubject of free will and other important metaphyfical tupics. This controverfy continued till the death of Leibnitz, which event took place in ${ }^{17} 16$. He was author of many other works befides thofe already mentioned. His intellectual abilitics and attaiaments entitle him to be ranked among thofe univerfal geniufes which at once furprize and benefit the world: With great flrength of andertianding, an excellent faculty of invention, and a moft capacious and retentive memory, he united an uncommon degree of indultry. Hence he was enabled not only to acquire much general knowledge, but to become eminent in

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áttainments of various kinds. The improvements which he made in the higher geometry and algebra, rank him among mathematicians of the firtt clafs. He thoroughly underttood the doctrines of philofophy, both ancient and modern, and calt new light upon almolt every branch of knowledge. In theology he was well read in the writings of the Chrintian fathers, and in the controverfies of his own times. On hittory and jurifprudence he wrote in fuch a manner as might lead a reader to fuppofe that thefe fubjects were his chief or only ftudy. The philofophy of Leibnitz is a fyllem formed partly on the Cartelian, and partly in oppolition to the Newtonian theory. After the difpute refpecting the difcovery of fuxions, he became the violent. oppofer of our great philofopher. He even charged his fyltem with having an impious tendency, becaufe it afferted that the fabric of the univerfe, and the courfe of nature, would not continue for ever in its prefent flate, but would require, in procefs of time, to be re-eftablifhed, or renewed by the land of its former. According to his own principles, deduced, as he thought, from the wifdom and goodnefs of the deity, and his principle of a fufficient reafon, he concluded the univerfe to be a perfect work, or the beft that could poffibly have been made; and that other things, which are evil or incommodious, were permitted as neceffary confequences of what was beft; that the material fyltem, confidered as a perfect machine, can never fall into difforder, or require to be fet right ; and that to fuppofe that God interferes in it, is to leffen the fkill of the author, and the perfection of his work. Among many other of his notions (for an account of which fee Leibnitzian Pbilofophy) we may add this, that the ąts of the foul and body proceed by neceflary 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 feparate independent machine. The volitions of the mind are followed inflantly by the defired motions of the body, not in confequence of thofe volitions in the lealt, but of the nice and well-adjufted machinery of the body. The impreffions produced in the fenfory have no effeet on-the mind, but the correfponding idea arifes at that precife time, in confequence of a chain of caufes of a different kind. Moreri, Maclaurin, \&c. See Leibiitzian Pbilofophy.
Leibnitz, in Geography, a town of Saxony, in the margravate of Meiffen ; 4 miles $S$. of Drefden.- Alfo, a town of the duchy of Stiria, on the Sulm ; 16 miles S. of Gratz,
LEibnitzian Philosophy, or the philofophy of Leibnitz, is a fyttem of philofophy formed and publifhed by its author in the 1 th ch century, partly in emendation of the Cartefian, and partly in oppofition to the Newtonian. The bafis of Mr. Leibnitz's philofophy was that of Des Cartes; for he retained the Cartefian fubtile matter with the univerfal plenitude and vortices; and reprefented the univerfc as a machine that fhould proceed for ever, by the laws of mechanifm in the molt perfect ftate, by an abfolute inviolable neceffity, though in fome things he differs from Des Cartes. After fir Ifaac Newton's philofophy was publifhed in 1687 , he printed an efflay on the celeltial motions (Act. Erud. 1689 ), where he admits of the circulation of the ether with Des Cartes, and of gravity with fir Iraac Newton; though he has not reconciled thefe principles, nor fhewn how gravity arofe from the impulfe of this ether, nor how to account for the planetary revolutions and the laws of the planetary motions in their refpective orbits. That which he calls the harmonical circulation is the angular velocity of any one planet, which decreafes from the perihclium to the aphelium in the fame proportion as its diftance from the fun increafes;
but this law does not apply to the motions of the different planets compared together; becaufe the velocities of the planets, at their mean dittances, decreafe in the fame proportion as the fquare roots of the numbers expreffing thofe diftances. Befides, his fyftem is defective, as it does not reconcile the circulation of the ether with the free motions of the comets in all dircetions, or with the obliquity of the planes of the planetary orbits; nor refolve other objections to which the hypothefis of the plenum and vortices is liable. Soon after the period juft mentioned, the difpute commenced concerning the invention of the method of fuxiors (which fee), which led Mr. L.eibnitz to take a very decided part in oppofition to the philofophy of fir Ifaac Newton. Sec 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 diftinguifh between the quantity of motion and the force of bodies; and, whillt he owns, in oppofition to Des Cartes, that the former varies, to maintain that the quantity of force is for ever the fame in the univerfe, and to meafure the force of bodies by the fquares of their velocities. See Fonce.
This fyRem alfo requires the utter exclufion of atoms, or of any perfectly hard and inflexible bodies; the advocatés of it allege, that, according to the law of continuity, as they call a law of nature invented for the fake of the theory, ail changes in nature are produced by infenfible and infinitely fmall degrees; fo that no body can, in any cafe, pafs from motion to reft, or from refl to motion, without paffing through all poffible intermediate degrees of motion; whence they conclude that atoms or perfectly hard bodies are impoffible : becaufe if two of them fhould meet with equal motions, in contrary directions, they would neceffarily top at once, in violation of the lav of continuity.
Mr. Leibnitz propofes two principles as the foundation of all our knowledge; the firft, that it is impoffible for a thing to be, and not to be, at the fame time, which, he fays, is the foundation of fpeculative truth : the other is, that nothing is, without a fufficient reafon why it fhould be fo, rather than otherwife: and by this principle, according to him, we make a tranfition from abfltracted truths to natural philofophy. Hence, he concludes, that the mind is naturally determined, in its volitions and elections, by, the greateft apparent good, and that it is impoffible to make a choice between things perfectly like, which he calls indif. cernibles; from whence he infers, that two things perfecily like could not have been produced even by the Deity: and he rejects a vacuum, partly becaufe the patts of it mult be fuppofed perfectly like to each other. For the fame reafon alfo he rejects atoms, and all fimilar particles of matter: to each of which, though divifble in infonitum, he afcribes amonal (Act. Lipfix 1698, p. 435), or active kind of principle, endued, as he fays, with perception and appetite. The effence of fubtance he places in action or activity, or, as he expreffes it, in fomething that is between acting and the faculty of acting. He affirms abfolute reft to be impoffible, and holds motion, or a fort of $n$ ifus, to be effential to all material fubitances. Each noonad he defcribes as reprefentative of the whole univerfe from its point of fight; and after all, in one of his léters he tells us, that matter is not a fubłtance, but a fubfantiatunn, or pberomené bien fondé. (See MonAD.) He frequently urges the comparifon between the effects of oppofite motives on the mind, and of weights placed in the fcale of a balance, or of powers acting upon the fame body with contrary directions. His learned antagonilt Dr. Clarke denies that there is a finilistude betwcen a balance moved by weights, and a mind aesing

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upon the view of certain motives ; becaufe the one is en- in this ifland, and held the natives in military fubordination. tirely paffive, and the other not only is acted upon, but As thofe conquerors marched from the fouth-eall, towards acts alfo. The mind, he owns, is purely paffive in receiv- the central and northern parts of the country, they could ing the impreffion 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 alfo. The balance, for want of this power, cannot move at all, when the weights are equal ; but a free agent, be fays, when there appear two perfectly alike reafonable ways of acting, has ttill within itfelf a power of choofing; and it may have itrong and very good reafons not to forbear. Collection of Papers which paffed between Mr. Leibnitz and Dr. Clarke in 1715 and 1716, \&c. 8vo. 1717, p. 121. See Liberty.

The tranflator of Mofheim's Ecclefiaftical Hiftory obferves, that the progrefs of Arminianifm has declined in Germany and feveral parts of Switzerland, in confequence of the influence of the Leibnitzian and Wolfian philofophy. Leibnitz and Wolf, by attacking that liberty of indifference, which is fuppofed to imply the power of acting not only without, but againft motives, Atruck, he fays, at the very foundation of the Arminian fyftem. He adds, that the greateft poffible perfection of the univerfe, confidered as the ultimate end of creating goodnefs, removes from the doctrine of predeltination thofe arbitrary procedures and narrow views, with which the Calvinits are fuppofed to have loaded it, and gives it a néw, a more pleafing, and a more philoforhical afpect. As the Leibnitzians laid down this great end as the fupreme object of God's univerfal dominion, and the fcope to which all his difpenfations are directed ; fo they concluded, that, if this end was propofed, it mult be accomplifhed. Hence the doctrine of neceffity, to fulfil the purpofes of a predeftination founded in wifdom and goodnefs; a neceflity, phytical and mechanical, in the motions of material and inanimate things, but a receffity, moral and firitual, in the voluntary determinations of intelligent beings, in confequence of prepollent motives, which produce their effects with certainty, though thefe effects be coutingent, and by no means the offspring of an abfolute and effentially immutable fatality. Thefe principles, fays the fame writer, are evidently applicable to the main doctrines of Calvinifm; by them predeftination is confirmed, though modified with refpect to its reafons and its end ; by them irrefiftible grace (irrefifitible in a moral fenfe) is maintained upon the hypothefis of prepollent motives and a moral necefiity; the perfeverance of the faints is alfo explicable upon the fame fyttem, by a feries of moral caufes producing a feries of moral effects. Mofheim's Eccl. Hift. by Dr. Maclaine, vol. v. p. 464 . 8 vo. edit.

For an account of Leibnitz's famous doctrine of a preefablifbed 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 lface Newton's Philofophical Difcoveries, \&c. book i. chap. 4. or P. 79, \&c. 4to. edit. Brucker's Hiftory of Philofophy, by Enfield, vol. ii. P. 556, \&c.

LEICESTER, commonly pronounced Lefler, in Geograpby, the county town of Leicelterhire, England, was formerly written Lege-ceatria, Legeoceiter, and in the Saxon Annals Leger-ceatter; and during part of the heptarchy it was a city. Without reffring it to a Britih origin, or eptering into a difcuffion refpecting 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 themfelves
not have obtained poffeffion of this diftriet, till the intermediate places between it and the fea were fubjugated, and competent garrifons eltablifhed. Having accomplifhed this, and overpowered the Coritani, they took poffeflion of the chief town of that people. This town, or ftrong hold, was the fcite of the prefent Leicefter, and, at the time of its conqueft, was denominated Ratx in the Itineraries of Richard, Antoninus, and Ravennas ; but Ragæ in fome other writings. "The real name, therefore," fay's Mr. Whitaker, " mult be equally Ratx and Ragx; 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 ftation here is unequivocally manifefted by the teffellated pavements, and other remains that have been difcovered at different periods: and, according to Antoninus, Ratz was one of their ftipendiary towns. The fofs-road in its way from Londinio, London, to Lindum, Lincoln, came by Verinonx; whence to Rate was twelve miles, and thence to Verometum thirteen miles; and thefe di:tances very nearly correfpond with thofe between Claychefter, Leicefter, and Willoughby. That this ftation was formed on the northern bank of the Soar, that an artificial channel was cut for the water to flow up to, and conflitute one boundary of the Itation, and that the Romans were fettled here for fome length of time, are circumftances eafily proved, as ample evidences remain, and are recorded in fupport of thefe inferences. Many teffellated pavements, coins, urns, and other domeflic and military relics of the Romans, have been difcovered at different times: fome of which are ftill carefully preferved as memorials of ancient art, but many of the moft interelting objects mutt have been deftroyed during the ravages of war which Leicetter experienced under the Saxons, Danes, and Normans. Of the Mofaic pavements, that which was found in a cellar nearly oppofite the town-prifon, in the year 1675 , is the moft worthy of notice. But the moft curious relic of antiquity, and one that has provoked the molt copious differtations, is the milliary, or Roman mileitone, which was difcovered in 177 I , on the fide of the Fofs-road, at the diftance of about two miles north of the town, and thence removed into the town at the expence of the corporation: by this Itone the flation of Rate is clearly defined. In different parts of the town, and at diltant periods of time, a great number of Roman coins have been found : among which were feveral with the names of Titus, Trajan, Dioclefian, Conftantine the Great, Conftantine Junior, Conltantius, Hadrian, Theodofius, Honorius, \&c: Here is alfo a curious fragment of Roman architecture, commonly called the Jewry wall; confifing of a mafs of brick-work, ftones, and rubbifh, 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 fome artificial banks, known by the name of radykes, or rawdykes: thefe were formerly about four yards in height, and confifted of two parallel mounds of earth, extending 67 yards in length, at the ditance of fifteen yards from each other. If thefe remains are not peculiarly worthy notice as works of art, they are curious as veltiges of remote times, and of a particular people.

The hiftory of Leiceiter, during the Saxon heptarchy, is very vague and uncertain, though, from the concurrent teftimony of all writers, it was certainly a place of confiderable note from the departure of the Romans to the time of the Norman conqueft. According to Godwin, a bifhop's fee was transferred from Sidnacefter to Leicefter in the year
737. At this period the Saxon kingdom of Mercia hard, azcolding to fonce authors, three epilicopal fees: Lichfield, Dorchefter, and Leicefter. From the Saxon annals, it appears that Ethelfrid, king of Northumberland, being an avowed enemy to Chritianity, marched an army to Leicefter, where he made a great flaughter of the inhabitants. Jowallenfis relates that Ethelred, king of Mercia, and his queen Elfreda, who was danghter of Alfred the Great, repaired the town about the year got, and rebuilt and collarged the walls, which were now made to inclofe the cafle; previous to that period the caltle appears to have been on the outlide of the town. On the conquett of England by William the Norman, Leicelter foon besane part of the royal demefne, and a caftle was either newly ereeted, or enlarged and ftrengthened to enfure the fubmiffion of the inlabitants, and thofe of the furrounding country. On the death of the conqueror, Leicefter citadel, being held by the adherents of duke Robert, was nearly demolifhed by the fucceffful partizans of William Rufus. In the reign of Henry I. Robert, earl of Leicetter, repaired, enlarged, and fortified the caltle, which he made his primcipal relidence. He was very liberal to the town; as was allo 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 thofe times for fovereigns to revenge themfelves, 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, leazuing with the king's fon in his unnatural rebellion, Leicefter, the chief refort of the difaffected, was, after a lont fiege, almolt dettroyed, and the cattle 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 dittinguilh it from the caltle with its criginal buildings, which was confidered as the old works. The Newark is faid to have been founded by Henry, third earl of Lancafter, and his fon Henry, the firt duke of that name. By thefe two noblemen fome large buildings were crected here; and John of Gaunt, who was earl of Leicefter, added confiderably to the pile. When completed, the whole mult have formed a griand difplay; but nearly all of thefe have falien beneath the de, uftating hand of man, and the flowly devouring tooth of time. From the remains of the ferrounding wails, it is prefumed that the Newark was an inclofed area, bounded on the north by the caftle, on the fouth by fielces, to the well by a branch of the river Soar, and to the eaft by a fereet of the fuburbs. At this fide is atll remaining a large eallellated gateway, called the magazine, which name it obtained in 1682, when it was purchaied by the conunty, and applied to the ufe of the train bands. Throfby fays it "was built with the New-works, by the founder of the hofpital and collegiate church." This gateway has a large pointed arched entrance with a fmall poftern door way, and communicates with an area nearly furrounded with buildings.?

Among the ancient religious houfes 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 afhes of its inhabitants. It is faid to have been founded in the year 1143 by Robert Boflin, earl of Leicefter, who became one of the regular canons on his own foundation. The abbey foon acquired celebrity, and obtained numerous privileges. It was poffefted of lands in thirty-fix parimes in and about Leiceller, and in moft of the manors in this and many other counties. Several kings
of England, and other diftinguifhed perfonages, were entertained and lodged at this houfe in a grand and fumptuous Atyle. The once great and magnificent cardinal Wolfey died at this abbey, November 29th, 1530 .

In this town was formerly a mintage; and the feries of coins that have been collected, prove that at the Leicenter mint, a regular fucceffion of coinage has been produced from the reign of the Saxon king Atheltan dowa to Henry II. This feries has been engraved in Mr. Nichols's valuable hiftory of this town.

The firt charter granted to Leicefter was by king Joha in the firlt year of his reign ; and at the fame time Rotert Fitz-Parnel, earl of Leiceiter, invefted the burge ffes with the power of buying and felling lands, \&c. A charter, granted in the following reign by carl Simon de Montfort, fhews the peculiar intolerance of the times; it fpecilies that "no Jevo, or Jcruefs, in my time, or in the time of any of my heirs, to the end of the world, fhall inhabit, or remain in" the town of Leicelter. Henry VII. by charter dated 1504, confirmed all the previous privileges, and empowered the juftices to take cognizance of trealons, murders, felonics, \&cc. A charter by queen Elizabeth fpecifies that the borough of Leicefter is very ancient and populous, and from remote times has been a borough incorporate; and the former liberties and immunities are fpecified and extended. The corporation are thereby empowered, among other privileges, to refufe the building of malt-kilns within the diftance of thinty yards from any other building. This charter alfo grants a market for wool-yarn and norted, and for other conmoditics. All fines and ansercements were ordired to be applied to the ufe of the poor. The corporation confifts of a mayor, recorder, theward, bailifs, 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, Leicefter 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 excifed much popular difturbance, Henry VII. ordained that "the mayor and his brethren flould choofe forty-eight of the molt difereet inhabitants of the town," who fhould elcet 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 vefted in "the freemen, not receiving alms, and in the inhabitants paying foot and lot." The number of voters is about 2000.

At the time of the Norman conqueft, there appear to have been fix churches in this town; and it would be highly interefting to the architectural antiquary to afcertain if eirher of the prefent ftructures contains any part of the building then ftanding. Of the religious edifices now remaining, St . Nicholas's church is efteemed the molt ancicut. It ftands contiguous to the Jewry wall, and appears to have been partly conftructed with the bricks, tiles, \&ec. taken from the fallen parts of that building; whence fone antiquaries have thought that they are both parts of the fame ftructure, or built about the fame period. The church of St. Mary, diltinguifhed by the addition of infica or juxta caltrum, is a large pile of irregular building, compoted of various fpecimens, or ftyles of architecture, from a very early period to a late one, when all ityles were difregarded. Thefe varieties tend to mark "the difaters of violence, accident, and time," and prove that the neighbourhood of the calle, within the outer ballimm, or precinct of which it ftood, was often moft dangerous. That there was a church on this fpot in the Saxon times feems almoit certain, from fome bricks,
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apparently the workmanniip of that people, found in the clancel; and the chevron work round the windows of the chancel proves that the firt ivorman earl of Leicenter, Robert de Bellomont, conltructed a church on a plan nearly like the prefent, and adorned it with the architecture of his time. The interior of this church is fpacious; and on the fouth fide of the nave is a dingularly large femicircular arch, laving a fpan of thirty-nine feet. The fouth aitle is faid by Mr. Care 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 founjed, in H.ary VIIth's reign, by fir Richard Sacheverele, and the good lady Hungerford. Refpecting this guild, the following litt of articles, bought in for the year $1 ; 08$, will ferve to fhew the value of money, and prices of provilions at that period. "A dozen of ale, 20\%.; a fat wether; 25.4 d. ; Seven lambs, 7 s .; fourteen gollings, 4 s .8 d . ; fifteen capons, 5s.; half a quarter of malt, 2 2s. : $^{\text {f }}$ four gallons of milk, 4 d . ; a pir, $5 d$." At the weft end of the church is a handiome tower, furmounted by a lofty and elegant fpire. The latter has twice fuffered from ftorms. 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. Oppofite 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 Lancaltrian princes, was the fcene of frequent parliaments ; at prefent it is ufed only for hulding the allizes and other county meetings. The church of All Saints is a fmall modern ftructure, confifting of a nave and two ailes, all nearly of the fame length. The church of St. Martin, formerly called $S$.. Croffi, is a large old building, confiting cf a nave, tluree aifes, and a tower, with a lofty crocketted fpire. This church, being the largelt in the town, and even in the whole county, is ufed at all the public meetings of the diltrict for the bifhop, judges, \&c. The churchwardens' accounts refpecting this ciurch and parifh are copious and well preferved. They begin in 1544 , and contain many curious notices, defcriptive of the peculiar manners and cuftoms of the different times. In this church was held St . George's guild, a fraternity which was inveled with peculiar privileges, and annuaily ordained a fort of juzblice in the town, called "the Riding of St. George." It contained alfo another guild called Corpus Chritti, which Mr. Throlfy fays, "was the moft ancient and principal in Leicefter." $T$ The regiller of this parifh records the calamitous effects of a plague which raged here in the years 1610 and 1611, during which period 266 perions were buried. In the marriage regilter is an entry of the names of Thomas Tilfey and Urfula Ruffel, the firlt of whom being "deofe and alfo dombe, it was agreed by the bihop, mayor, and gentlemen of the town, that certain ligns and actions of the bridegroom fhould be admitted inftead of the neceffary words. ${ }^{-1}$ St. Margaret's church, according to Leland's account, is "the fairelt church in that place, which once was a cathedral cliurch, and near which the bifhop of Lincolne hath a palace, whereof little yet flandeth." This edifice conitits of a nare, fide ailes, chancel, and a handfome tower, and was annexed as a preteod to the college of Lincoln by the bifhop of that diocele, at the time when the other churches were given to the abbcy. Befides thefe churcbes, here are chapels or mecting-houfes for different feets of diffenters, preßyierians, independents, and baptifts. The county gaul, erected in the year 1591, at the expence of fix thoufand pounds, occupies the fcite of an old prifon, and is built after the plan recommended by Mr. Howard, with folitary cells, \&c. The town gaol is a commodious fone building, de-
figned by Mr. Johnfon, a native of this town, and executed by Mr. Firmadge in 1592. The other public buildings are a free granamar fchool of great antiquity ; feveral charity fchools; various hofpitals; an afylum for indigent lunatics; an exchange for public bufinefs; the hotel, now ufed as affembly rooms; and a commodious theatre. Among the curiolities of the town, is the old wo den bedtead faid to have belonged to king Richard, and on which he flept, or rather reclined, the sight preceding the battle of Bolworth.

The principal, and almon only article of manufacture in Leicefter, is that of flockings, which has been an cltablifhed and Itaple commodity here for above two centuries. It finds employment for a great number of perfons, as holiers, ftocking-makers, wool-combers, dyers, frame-fmiths, combmakers, winders, fizers, feamers, fy inners, hobbincers, finkermakers, thosking-needle-makers, \&ic. \&ec. Mr. Throfy ftates that in Leicelter there were "upwards of feventy manufacturers, called holiers, who, it is computed, employ 3000 frames; including the wrought goods they individually purchafe; about 6000 perfons being dircetly or indirectly employed in this great bufinefs." 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 molt 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 flourihing, and in the "Wa:k through Leicefter" it is ftated "that 15,000 dozen per week" of tuckings are made on an average. (See Srocknags.) Leicefter is 97 miles diltant from London: the market is held on Saturdays; and feven fairs anhually ; all on a very large fcale. 'This town was returned to parliament in the year 1801 as containing 3290 houfes, and 16,953 inhabitants.

Among the natives of this town, of literary eminence, is 1)r. Richard Farmer, who was born ia 1735 , and died in 1797. Nichols's Hithory and Antiquities of Leiceflerßire, feven vols. folio. A Walk through Leicelter, 12 mo . is an interetting and well written topographical work.

Leicester, a townhip of America, in Addifon counts, Vermont, fituated on the ealt fide of O:ter creek, containing 522 inhabitants.

Leicester, called by the Indian natives Tozutuil, a confiderable polt-town in Worcefter county, Maffachufetts, containing 1103 inhabitants; fituated upon the poft-road from Boiton to Hartford, New York, and Philadelphia: 6 miles W. of Worcifter, and 5.4 W . by S. of Böflon; fettled in 1703, and incorporated in 1720 or 1721 . It has three meetung-houfes for Congregationalits, Anabaptills, and Quakers; and an academy incorporated in 178 4 , and well endowed. Wool-cards are manufactured in this turn.

LEICESTERSHIRE, called in the Domelday Survey Ledacefteffire, is an inland county, fitmated nearly in the middie of England, and environed by the counties of Rutland and Lincoin to the eaf, Nottingham and Derby on the north, Staffordhire and Warwickfire to the weft, whilt part of the latter county and Northamptonflize attach to the fouthern border. A part of the great Roman road, called Watling-itrect, appears to have formed a regular. divilion between Leicefterf(nire and Warwick/hire. The ditrict included within thefe boundaries was, at an eariy period, a part of the territory belonging to the Coritani. After the Romans had fubjugated the Britons, and had eftablifhed colonies in diferent parts of the inand, this county was included within the province of Flavia Cafarienfis, and had military flations eltablifhed at Ratr. (Leicefter); Verno-
metum,

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metum, on the northern border of the county; Benonæ, near High-Crofs; and Manduelfedum, at Manceter. Thefe ftations were connected by regular artificiel roads, or military ways, known by the names of Watling-Street, Foffe-Way, and Via Devana. The firft enters this county at Dowbridge or Dovebridge, on the Northamptonfhire border, where the ftation called 'Tripontium was fixed: hence to Mandueftedum it paffed nearly in a ftraight line, having the fmall Itation of Benonex on its courfe. Near this place the Foffe-Way interfects it at right angles, and palles on to Ratic; whence it continues in a northerly direction to Ver. nometum, and thence on to Margidunum, a fation near Eaft Britford, in Nottinghamfhire. After the Romans had evacuated the illand, this diftrict became part of the kingdom of Mercia; and when the fubdivifon of the Anglo-Saxon provinces into counties was eftablifhed, and bifhops' fees crected, the town of Leicefter was conftituted the feat of the diocefan. The Mercian kingdom was divided into fouthern and northern: and the inhabitants of Leicefterfire were denominated Mediterranæ, or Middle Angles. They were frequently harafled by the invading Danes, who entering the diftrict from the eaftern coaft, laid the whole country under contribution between the German ocean and Leicelter; and having conquered this place, eftablifhed themfelves here for fome length of time: indeed, Leicefter was conlidered as one of their five chief cities in the ifland. After the Norman invafion in 1066 , Leicefterfhire 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 lordhips, 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 kuight's fervice. The king, the archbifhop of York, and the bifhops of Lincoln and Conftance, were alfo poffeffed of landed property in the county; and fome was annexed to the abbies of Peterborough, Coventry, and Croyland. The Norman chiefs, in order to fecure their newly-acquired poffeffions, foon built, on their refpective eftates, ftrong and magnificent caftles, which might at once fecure themfelves, and keep the conquered Englifh in awe. The feveral townfhips, in which fuch caltles are known to have been erected, with the names of the founders, are Leicefter, Mount Sorel, Whitwick, and Shilton, founded by the earls of Lcicefler; Groby and Hinckley, by Huģo de Grentemaifnell; Donington, by Euftace baron of Halton; Melton, by Roger lord Mowbray; Ravenfton, by Goesfrid Hanfelin; Sauvey, by lord Baffet of Weldon; and Thorpe, by Ernald de Bois. Moit of thefe calles, during the unquiet reigns of Henry II., John, and Henry III., being held by the rebellioue barons, and rendered receptacles of thieves and freebooters, were, by command of the latter king, utterly demolifhed; and though fome of them were afterwards rebuilt, yet it this day there is not one of them remaining entire, and even the ruins of mof of them are entirely defaced. The Norman chiefs, after fettling their poffeffions, and fortifying themlelves within their refpective domains, next directed their atzention to the religious habits and prejudices of the times; ss to fecure the favour and influence of the monks, in an age when they were almolt omnipotent, or at leaft could command and intimidate the whole community, was a neceffary branch of military policy, which the provincial barons neither overlooked nor neglected. Accordingly, part of their eftates were appropriated to the foundation of abbies, priories, nunneries, and other monaftic eftablifhments. In this county were founded four abbies, at Croxton, Garendon, Leicelter, and Olveiton; twelve priories, at Belvoir,

Bradley, Bredon, Charley, Hinckley, Kirkby Beler, Laund; at Leicefter were four, for Eremites, Black Friars, Grey Friars, and Auftin Friars; and Ulvefton; two nunneries at Gracedicu and Langley; two collegiate churches in Leicefter; and various free chapels, hofpitals, preceptories, and chantries, in different parts of the county.

At the time of compiling that great national work, the Domelday Survey, Leicelterfhire was divided into four wapentakes or hundreds ; Framland, Guthlaxton, Gartre, and Gofcote : and thus it continued till the 20th of Edward III., when an additional hundred, Sparkenhoe, was taken out of Guthlaxton; and aftewards Gofcote was divided into two, denominated, from their fituations, Eaft and Weft Gofcote. In thefe fix hundreds are 196 parifhes, and $1_{2}$ markettowns, viz. Leicefter, Ahby de la Zouch, Bofworth, Hallaton, Harborough, Lutterworth, Melton Mowbray, Mount Sorel, Billefdon, Hinckley, Loughborough, and Waltham on the Wold. The whole county is within the ecclefiaftical jurifdiction of the fee of Lincoln, and in the province of Canterbury; under one archdeacon, and fix deaneries. Mr. Nichols ftates, from the Domefday 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 ftated to be employed in agriculture, and 42,036 in trade and manufactures: the number of houfes being $26,734^{\circ}$. The reprefentatives in parliament are but four: two for the county, and two for the borough of Leicefter. The circumference and extent of the county have not been fatisfactorily defined. Mr. Nichols ftates the former to be "about 150 miles ;" whilft Mr. Monk fets the fame down at "about 96 miles." The fuperficial contents are eftimated at about 540,000 acres.

This county has not any rivers of importance ; but thofe which pals through it are convenient and ornamental. The chief are the Soar, the Swift, the Welland, the A von, the Wreke; and the Anchor. The Soar, anciently called Leire, which is the largeft of thefe, rifes from two heads or fources in the fouth-weftern part of the county, and, after receiving a fmall tributary fream near Whetftone, paffes by the weft and north fides of the town of Leicefter.
Leicefterfhire being more an agricultural than a commercial diftrict, and deprived of any particular mines, has uot equally participated with many other Englifh counties in canal navigation. Some plans for this purpofe 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 Warwickfhire, to pafs through a great part of Leicefterfhire; but being oppofed by a variety of interelts, it failed of fuccefs. In i 780 , another bill was introduced for opening a canal com. munication between Loughborough and Leicefter; 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 ftyled in this act, "the company and proprietors of the Leicefter Navigation" In the fame year, another act was obtained for makiug navigable the rivers Wreke and Eye: and in 1793 , a bill was paffed for making the "Oakham Canal," from a town of that name in Rutlandfhire, to Melton Mowbray.

The whole of Leicefterfhire prefents nearly a flat furface, and is chiefly appropriated to the grazing fyftem. It has obtained peculiar celebrity, among agriculturifts, for a breed of theep, diftinguifhed by the name of the fhire: and the late Robert Bakewell of Difhley, acquircd for himfelf and the county much popularity, by the experiments

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and improvments he made in the breed of cattle and fheep. Among the different breeds of fheep in the county, the Old Leicelter, the Foref, and the New Leiceiter, or Difhley, conftitute the principal forts, and of them the latter is in the higheft repute. The extraordinary price for which many -of the New-Leicefter-fheep have been fold at public auctions, and the large fums for which fome of the rams and bulls have been let out for the feafon, ferve at once to fhew their eftimation 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; fivc, at 45 guineas each; ten, at 30 guineas; and feveral at 25,20 , and 16 guineas each. One of thefe fheep, which was killed at Walgrave in Northamptonfhire, was of the following weight: the carcafe 144 lb ., blood 5 lb ., fat $16 \frac{5}{2} \mathrm{lb}$., head and entrails 12 lb ., Kkin 181 b . ; making in the whole $195 \frac{1}{2} \mathrm{lb}$. It is no uncommon thing to falt down the mutton as a fubflitute for bacon. In the year 1/93, 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 "Shakfpeare," defcribed in the catalogue as " (bred by the late Mr. Fowler) by Shakfpeare, off young Nell. Whoever buys this lot, the feller makes it a condition, that he fhall have the privilege of having two cows bulled by him yearly"-Four bundred guineas: a bull calf $3^{1}$ 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 foil; nor is there any great quantity that may properly be called clay. The bett foil is upon the hills; and the worft, or neareft approaching to the clay or cold lands, in the vallies; though there are many exceptions to this rule. The foil, or what the farmers generally call mould, is generally deep, which makes it very proper for grafs; fuch deep foils not being very foon affected by dry weather. About Lutterworth, fome part is a light rich loam, excellent for turnips and barley; a part fliff, 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 alfo, though not fo well adapted for being eat off the land by fheep. Moft of the land round Hinckley is a good mixed foil, bearing good crops of grafs. Afthby-de-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 ftiff impervious clay, mixed with fmall pieces of lime-itone. Thefe lands are very wet in winter, and the turf fo tender, as fcarcely to be able to bear the treading of fheep, without injury. At Market Harborough the foil is in general a very itrong clay, chiefly in grafs.

Since the commencement of the laft century, cheefe has become an article of fome importance to the Leicefterfhire 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 fineft, and confequently obtains the higheft price. It acquired the title of Stilton from a place of that name, on the great North road in Huntingdonfhire, where it is well known to have been firft publicly fold by retail. This cheefe is fometimes called the Parmefan of England, and is ufually formed in fquare vats. The cheefes feldom weigh more than twelve Vol. XX.
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.

Leicefterfhire is defcribed by Mr. Marfhall, in his "Rural Economy," as a very fertile diftriet; and the only parts which are not abfolutely in good cultivation, are Charn-wood-Foref, alfo 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 Hiftory and Antiquities of Leicefterflire, 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 Biograpby, was born at Shadwell, in Leicefter/hire, in the year 1602. He received the rudiments of learning at Walfal, in Staffordfhire, and in 1616 was entered a commoner of Magdalen-hall, in the univerfity of Oxford. From the univerfity, he went to ftudy the common law in the Middle Temple. When the plague broke out in 1625, he went into France for a fhort time, and returning thence, he applied himfelf moft feduloufly to his ftudies, which comprized not only the law, but divinity, hiftory, and the learned languages. During the civil wars he was chofen 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 diftinguifhed for the talents and learning which he difplayed in the debates of that affembly. In the year 1648, when the Prefbyterian party was excluded from the houfe by the army, he was in the number of profcribed nembers, and was for fome time kept in confinement. From the period of his liberation till the reftoration, he chiefly employed himfelf in profecuting his literary ftudies, and in publifhing various works, which difcover profound erudition and general knowledge. He died in 167 r , at the age of 69 . He was author of "Selected and choice Oblervations concerning the twelve Cefars ;" "Analecta Cæfarum Romanorum;" "A Treatife of divine Promifes;" "Critica Sacra," in 2 vols. 4to; "Annotations on all the Books of the New Teitament;" "A Philological Commentary, or an Illuftration of the moit obvious and ufeful Words in the Law;" "A Syftem of Divinity;" "Annotations on the five poetical Books of the Old Teftament, viz. Job, Pfalms, Proverbs, Ecclefiaftes, and Canticles;" "Choice Obfervations on all the Kings of England, from the Saxons to the Death of King Charles I." Gen. Biog.
Leigh, Charles, a phyfician of the feventeenth century, was born at Grange, in Lancafhire. 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 Hiftory of the Counties of Lancafhire, Chefhire, and Derbyfhire, \&c." Oxford, 1630, folio. London, 1700, with plates. "Phthifiologia Lancaftrienfis, cum tentamine philofophico de Mineralibus Aquis in eodem comitatu obfervatis," London, 1694, 8vo. "Exercitationes quinque de Aquis Mineralibus, Thermis calidis, Morbis acutis, Morbis intermittentibus, Hydrope,'" ibid. 1697. "Hiftory of Virginia," drawn up from obfervations made during a refidence in that country, London, 1705, 12 mo .
Leigh, $W$ eft, in Geography, a market town in the hundred of Wefl Derby, Lancafhire, England, is fituated fix miles from Wigan, and 198 from London. The church 3 S

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is a handfome ftructure, with a fquare tower ; the body being fupported by two rows of pillars. Leigh has a conGderable manufactare of fuitian and other cotton ftuffs; and by its canal navigation, which communicates with the rivers Merfey, Dee, Ribble, Oufe, Severn, Humber, Thames, Avon, \&c. it carries on an extenfive traffic. Coals are abundant; and the dairies round the town produce excellent cheefe. The town, according to the official report in 180 r , contained 277 houfes, and 1429 inhabitants. A weekly market is held on Saturdays; and a fair on the 26th of April. The parifh is of great extent, and contains the townhips of Aftley, Bedford, Pennington, and Tyldefley, the hamlet of Shackefley, and the chapelry of Chowbent, inhabited altogether by nearly 13,000 perfons.

The chapelry of Chowbent has greatly increafed in houfes and population within the laft 20 years. Its chapel, though regularly confecrated by the bifhop of Sodor and Man, is exempt from epifcopal jurifdiction, and the patronage is velted 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 houfe, which was built by Gibbs, is large, and has a fpacious cubical entrance hall. A plan of this manfion is given in the "Vitruvius Brittanicus."

The townfhip of 'I'yldefley 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 'Tyldelley, who fignalized himfelf during the troubles of Charles I.'s reign, and fell in the battle of Wigan lane, Auguft 25, 1650. He was buried in Leigh church; and on a pillar near Wigan is fixed a brafs plate, with an infcription to perpetuate his memory. Beauties of England, vol. ix.

Leigh's Ifand. See Cocoa-nut Ifland.
LEIGHLIN, a bifhopric of Ireland, in the province of Dublin, founded in 632, and united with Ferns in 1603 . The united bifhopric comprifes the whole counties of Carlow and Wexford, with part of the Queen's county, Wicklow, and Kilkenny. There are 232 parifhes in the union, forming 79 benefices, in which are 75 churches and fix glebe houfes. The cathedrals are fmall, and ferve for parifh churches. The relidence of the bifhop is at Ferns.

Leighlin, Old, a village of Ireland, near the river Barrow, and in the county of Carlow, $2 \frac{1}{4}$ 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 ftill the feat of the cathedral church of the diocefe.

Leighlin Bridge, a polt-town of Ireland, in the county of Carlow, on the river Barrow, over which it has a bridge, firt built in the year 1320. It originated in a monaltery, which, on the fuppreffion of religious houfes, was converted into a fort to proted 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 preßyterian 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 publifhed, entitled "An Appeal to the Parliament ; or Zion's Plea againtt Prelacy." For this he was tried in the high-commiffion court, and being convicted, which, in thole days, and in that court, was but another term for being accufed, he was condemned to be imprifoned for life, and pay a fine
of 10,000 l: 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 paffed on him, the cruel Laud exhibited figns of the molt indecent joy, and publicly gave God thanks for it. Excepting the imprifonment for life, and the fine, the fentence was put into execution to the full extent. He was releafed by the Long Parliament after an imprifonment of ten years. His confinement and cruel ufage had fo impaired his health, that when he was releafed he had fcarcely 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 prifon. He died in 1644, infane. Toulmin's Neale's Hit. vol. ii.

Leighton, Robert, a Scotch prelate in the feventeenth century, was fon of the preceding. He was educated in Scotland, where he diftinguifhed himfelf above his contemporaries, in all the branches of ufeful learning, particularly in the ftudy of the fcriptures. Having finifhed his courfe of academical ftudies he went to the continent for improvement, and fpent fome years in France. On his return he obtained Prelbyterian ordination, and was chofen to a congregation at Newbottle, near Edinburgh. Very foon after his fettlement at this place he conceived a difike to the Prefbyterian form and manner of church difcipline, and chofe rather a life of retirement than to attend at the prefbytery. His main object was to inftruct his flock in the principles and duties of religion and morality, urging them not to trouble themfelves with religious and political difputes. In the year 1648, he declared himfelf for the engagement for the king, on account of which he would have expofed himfelf to much trouble, had not the earl of Lothian, who lived in his parifh, proved his friend, and prevailed with the men in power not to moleft him. At length, finding that he could no longer fubmit to the ecclefiaftical impofitions of the Prefbyterians, and being unwilling to live in ftrife and contention, he refigned his parifh in filence, and withdrew into retirement. Shortly after, he was chofen principal of the college of Edinburgh, the duties of which office he performed with great reputation during ten years. Upon the reftoration, when it was determined to eftablifh epifcopacy in Scotland, Leighton was fixed on as a proper perfon for the mitre. He was confecrated, with other bifhops, at Weftminfter ; he would now gladly have promoted fome plan for uniting the Prefbyterians and Epifcopalians, but was thwarted in all views on this fubject. When he found that the government was determined to enforce conformity on the Prefbyterians by the moft rigorous meafures, he laboured with all zeal to thew the impolicy of fuch proceedings: but he Itruggled ineffectually againlt 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 reft of his dignified brethren. Thefe, however, profited but little either from his advice or from the exemplary conduct which he manifelted. He remonftrated with the king refpecting the arbitrary proceedings of the ecclefiattical high-commiffion court, and more lenient meafures were promifed to be purfued with refpect to Scotland. He begged permiffion to refign his fee; but the king, fo far from litening to the prayer of his petition, urged him to accept of the diocefe of Glafgow, which was a more important bifhopric, and one in which he might be more ufeful. To induce him to accept of this preferment, he was promifed the affittance of the court in bringing about his favourite fcheme of a comprehenfion of the Prebyterians. He accepted the fee, but after a fhort time found
himfelf wholly unable to carry on his great defigns of healing the divifions, and reforming the abufes in the church, and begged permifion to retire into private life, which was at length granted him. He went to live in Suffex, where he occupied himfelf in doing all the good in his power. He died in $168_{4}$, at about the age of eighty. He was author of "Prelectiones Theologicæ:" "A Commentary on the firtt and fecond Chapters of the firt Epiltle of St. Peter;" and of "Sermons," including other pieces: to the volume of fermons, publifhed 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 erudution in mufic; he publifhed, in 1614, "The Tears or Lamentations of a forrowful Soul,", compofed with mufical airs and fongs, both for voices and divers inftruments. The belt compofers of the time contributed to this publication. See Lamentations.

Leiguton-Buzzard, or Beaudefert, in Geography, a market town and parifh in the hundred of Manhead 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 houfes and 1963 inhabitants, of whom 1014 were ftated to be employed in trades and manufactures. The market, which is held on Tuefdays, is one of the moft ancient in the county; the tolls were valued at $\%$ 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 priucipal antiquity in the town is a beautiful pentangular crofs, built of fone, and fituated in an open area near the market-houfe: it is fuppofed to have been erected about the beginning of the fourteenth century. It confifts of two flories; and the whole height is thirty-eight feet. (For a particular defcription, 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 conftructed with the fame fort of fone. It has a fquare tower, furmounted by a fpire, the whole being 193 feet in height. A priory of foreign monks was eftablifhed in the reign of Henry 1I. at a place called Grovebury, within this parifh: and here was alfo a houfe of Citercian 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 circumftances, Leighton-Buzzard is fuppofed 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. to.

LEIGNE'-sur-Usseau, a town of France, in the department of the Vienne, and chief place of a cantor, in the diftrict of Chatellerault. The place contains 311, and the canton 5127 inhabitants, on a territory of $142 \frac{1}{2}$ kiliometres, in 13 communes.

LEILAM, or Lexlam, a town of the Arabian Irak; 30 miles N. of Bagdad.

LEIMA, a river of Ruffia, which runs into the Irtifch; 24 miles N. of Tobolk.
LEINA, or Leine, a river of Weftphalia, which rifes in the territory of Eichfeld, paffes by Heiligenfladt, 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 Gotba.

LEINE, a river of Germany, which runs into the Neffa, 4 miles N. of Gotha.

LEINEN Zem, a town of Pruffia, in the palatinate of Culm ; 9 miles E. of Thorn.

Leiningen, or Linange, lately a county of Germany, bordering on the bihoprics of Worms and Spire, and almoft furrounded by the palatinate. The foil is fertile in corn, fruit, and wine; the foreft abounds with game, and it has alfo mines of copper and iron, and quarries of fone. By the peace of Luneville it was annexed to France.
Leinisgen, a town of France, in the deparment of Mont Tonnerre, the caftle of which was demolifhed by the French; 11 miles S.W. of Worms. N. lat. $493 \mathrm{c}^{\circ}$. E. long. $84^{\prime}$.
LEINLETTER, a town of Bavaria; 10 miles S.E. of Bamberg.

LEINSTER, the eaftern province of Ireland, comprifing twelve counties, viz._Louth, Dublin, Wicklow, and Wexford on the fea-coaft; Meath, Weftmeath, 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 Englifh invafien, and it was the fovereign of it who facilitated the con* queft by foliciting aid from Henry II. and giving his daughter in marriage to earl Strongbow. The Englifh pale was entirely within this province, and it is, on the whoke, that which is moft populous and beft cultivated.
LEIOBATUS, in Ichthyology, a name given by Ariftotle and Athenxus to a fpecies of the ray-fifh, called by many of the old authors bos marinus, and by the later authors laviraia, or raia oxyrynchus; which fee.
L. EIOPODES, formed of $\lambda$ ebs; light, and $\pi e \xi$, foot, an epithet ufed by the old medical writers to exprefs fuch perfons who had feet perfectly fmooth and even at the bottom, without the ufual 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; II miles N.E. of Ulm.

LEIPNIK, a town of Moravia, in the circle of Prerau; 6 miles N.E. of Prerau. N. lat. $49^{\circ}$ 28. E. long. $177^{\circ}$.

LEIPODERMOS, from $\lambda \varepsilon$ sias, to be deficient, and ief $\mu \alpha$, the finin, one who has loft the prepuce.
LEIPSICK, or Leipzig, in Geograpby, a city of Saxony, and capital of a circle of the fame name. This is one of the molt celebrated towns in Germany, pleafantly dituated in a fertile plain, on the river Pleife. Its circuit is eftimated at $S_{954}$ paces; and its fuburbs are extenfive, and confift of good buildings and gardens, being feparated 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 univerfity, which is famous, was founded in 1409 , and contains fix colleges, two good Latin fchools, 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. Befides its foreign commerce, it has three celebrated fairs, at Eafter, Michaelmas, and the beginning of the year, at which foreign and domeftic wares afford an extenfive trade. It has allo a diftinguighing privilege, confifting in the right of having all itaple commodities, imported within the circuit of 60 miles, uuladen here, and at leaft for three days offered for fale to the burghers of the place, and then carried asway without being unladen any where elfe. In the citadel, called Pleiffenburg, fituated on the Pleiffe, are a mint, founded in
${ }_{3} \mathrm{~S}_{2}$
1732:

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1752 ; and a chapel for the Roman Catholic worfhip. The market place, which is fpacious, and the council-houfe, ftand 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 parifh churches for Lutherans, and alfo a place of worfhip for Calvinilts. The manufactures are various; confifting of gold, filver, filk, wool, and linen yarn, which are wrought here ; and alfo of ituffs, velvets, itockings, cloths, and linen. Here are alfo houfes for the dyeing of filk, the printing of cotton, and the making of tapeftry. Leather, Pruffian bluc, \&c. are prepared here, and the Orphan-houfe is appropriated to the culture of filk. In Leipfick are fuppofed to be 20 book Fellers, 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 fubfifted, 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. $51^{\circ} 13^{\prime}$. E. long. $12^{\circ} 19^{\prime}$.

Leipfick, as well as Drefden and the whole of Saxony, keep accounts in rix-dollars of 24 good grofchen; each grofche being divided into 13 pfenings current. A fpecie rix-dollar is reckoned at $\mathrm{I}_{\frac{\pi}{3}}$ 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 Auguft 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 firtt days of the fair, is during the five firft days after the clofe of the fair is proclaimed; in default of which the bills mult be protefted before 10 o'clock at night, or the drawer is not liable.

During the fair, when Drefden was in its glory, ferious operas were frequently performed at Leipfick by the beft muficians, vocal and inftrumental; and to the greatelt perfonages in Germany. In 1774, the comic operas of M. Hiller, in the language of the country and without recitative, were the favourite amufements of that flourifhing city. Every part of Europe, except Italy, feems unanimous in banifhing 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 purpofes.
LEISZNIG, a town 'of Saxony, in the circle of Leipfick, on the Mulda, containing two churches, and having manufactures of cloth, lace, ftockings, \&c. It has a citadel, called Mildenftein ; 24 miles E.S.E. of Leipfick. N. lat. $51^{\circ} 7^{\prime}$. E. long. $12^{\circ} 50^{\prime}$.

Leita, or Leytha, a river that rifes in the S.W. part of Auftria, and joins the Raab at Raab in Hungary ; and afterwards, the united ftream 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 originallyidenominated 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 firt 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

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year 1128. About a century afterwards the harbour of Leith and its mills were granted to the magillrates 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 Reltadrig. Mary of Guife, queen regent of Scotland, conttituted this town a burgh of barony in the year 1549. At this time the inhabitants of Leith were divided into four clafies, or corporations; the mariners, maltmen, tradefmen, and traffickers, each of which ftill retains its original charters. In the fanc reign, the citizens purchafed the fuperiority of their town from the defcendant's of Logan, but after the death of the queen, Francis and Mary, in violation of the private rights of the people, fold the fuperiority of the burgh to the magiltrates of Edinburgh, to whom it has fince been confirmed by feveral fucceflive charters. Leith fuffered confiderably when the earl of Hartford invaded Scotland in the year 1541, being on that oceafion pillaged and burnt by the Englifh foldiers. After this, however, Leith was rebuilt and fortified anew, but foon after the expulfion of the French in 1560, the council of the kingdom, to prevent the danger arifing to the liberties of the country, from the introduction of foreign troops, ordered the fortifications to be demolifled. Oliver Cromwell once more raifed fortifications for its defence. The citadel, which ftill remains, was built by that ufurper. It then confifted of five baftions, but two of them were entirely demolifhed at the reftoration of the Englifh monarchy, and the fcite of the whole given to the duke of Lauderdale, then prime minitter for Scotland, from whom the magiftrates of Edinburgh were compelled to purchafe it, at the enormous fum of $6000 \%$. fterling. 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 weftward of the citadel, for the defence of the port and fhipping. A party of artillery conftantly refide at this battery, which is kept in excellent order; and of late a confiderahle park of artillery has likewife been flationed here.

Leith is divided into two parifhes by the river from which it derives its name. Thefe are diftinguifhed 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 erected. The greater part of the town is fituated in the parifh of South Leith, which alfo extends over a confiderable country diftrict, and includes the ancient parifh of Reftalrig. North Leith is a much fmaller parin, and confifts of only about 170 acres. Both on the fouth and north fide of the river, the ftreets of this town are extremely irregular, and of mean appearance. In the fuburbs of South Leith, however, a number of refpectable houfes have been erected by the more opulent merchants, and may be faid to vie, in internal accommodation and exterior appearance, with thofe of Edinburgh.

Prior to the year 177 1, $^{2}$, Leith was ill fupplied with water, and the ftreets were neither properly cleaned nor lighted; in that year, however, an act of parliament was obtained to remedy thefe defects; and the great change which has taken place fince that period fhews the good effect of the act, and that it had been judicioufly prepared and was carefully executed. At Reftalrig are ftill extant fome ruins of the old or mother church. This place is about a mile eaftward of Edinburgh. The church was founded by king James III,, and endowed by the three fucceeding monarchs. It was highly ornamented with Itatuary and fculpture, reprefenting many objects of religious worfhip. In 1650, the general aflembly, in their zeal againft Popery, ordered this church, as a monument of idolatry, to be pulled down and entirely demolifhed. In confequence of this mandate, the inhabitants of South

Leith reforted for divine worflip to the chapel of St. Mary, which was afterwards declared by aurhoricy of parliament to be the parifh church of the diftrict. It is a handfome fpacious building; but being found infufficient to contain the inhabitants, it chapel of eafe was erected in 1772. Here is alfo an epifcopal chapel; and, as in all towns of any confequence in Scotland, fome meetings of Prefbyterian diffenters.

The civil government of Leith is vefted in a magiftrate fent from Edinburgh, having the power and title of admiral of Leith, and in two refiding bailiffs, who are elected from the inhabitants of Leith by the town-council of Edinburgh.
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 foring tides about fixteen. It is entirely a tide harbour ; the water in the river being too trifling to give any important aid towards the navigation. About the beginning of the laft century, the magiftrates of Edinburgh improved the harbour at a great expence, by extending a tone pier to a confiderable diftance into the fea. In the year 1777, they further improved it by erecting an additional ftone quay towards its weft fide. 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 eaitern coaft of Scotland. It has been thought advantageous to exrend the harbour further into North Leith; and very confiderable works arenow carrying on for that purpofe; which, when completed, will render it a very capacious, as well as a fafe and convenient ftation for trading veffels of almolt 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 moft excellent anchorage at all times.

Leith carries on a very confiderable trade; the impprts from the fouthern parts of Europe are wines, brandy, and fruits; from the Weft Indies and America, rice, fugar, rum, and dye-ftuffs; but the principal traffic is with the Baltic, for which it is peculiarly well fituated. The fhipping of Leith caufes a great demand for ropes and fail-cloth; of which articles here are feveral manufacturing companies. Two glafs manufactories are eftablifhed here, which, in the year 1790, wrought above nine million pounds weight of that article. The manufactures of foap and candles are alfo carried on to a very great extent; here are alfo a confíderable carpet manufactory, and feveral iron forges. In 1784, the trade of Leith was eftimated at half a million fterling, exclufive of glafs-works and fhip-building ; and there is every reafon to believe that, fince that period, the'ameunt has been doubled. In the year 1791 the population of North Leith was 3409 , and of South Leith $11,+32$; total ${ }_{1} 3,841$, which was an increafe of 4436 fince the year 1755 . Beauties of Scotland, vol. i. Picture of Edinburgh.

Lerti 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 bifhop, fuffragan of Prague.
The circle, diftinguifhed by its beauty and fertility, is called the "Bohemian Paradife ;" and, independently of its own refources, it has ample fupplies, by means of the Elbe, from other countries. It is famous for the wines, produced near Aufti, and called "Podfkallky," and for the
falubrious mincral waters of Topolitz. In this circle, which comprehends 89 feignories, eftates, and feats, are tin and precious ftones; 28 miles N.N.W. of Prague. N. lat. $50^{\circ} 31^{\prime \prime}$. E. long. $1^{\circ}{ }^{1} 5^{\prime}$.

LEI RIM, a county of Ireland, in the province of Connautht, which is bounded on the north by Donegal and Fermanagh ; on the eaft by Cavan; on the fouth by Cavan, Longford, and Rofcommon, and on the welt by Sligo. In form fomewhat like an hour-glafs, it varies greatly in breadth, being in the wideft parts 16 , and in the narrowef only fix miles acrofs. Its length is 41 Lrifh, or 52 Englifh miles. It contains 255,950 acres, or about 400 fquare miles ( 407,260 acres, or 652 fquare miles in Englifh meafure.) The parifhes are 17 in number, partly in the diocefe of Kilmore, and partly in that of Ardagh. There are very few unions, and a church in almoft every parifh. When Dr. Beaufort wrote, the number of houfes was rated at 10,026 , from which he eftimated the population at upwards of 50,000 ; but Mr. Robertfon in 1806 , on what authority he has not ftated, 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 vallics. Thefe are the mountains of Sliebh-anewr and Dartry, the latter of which towers to an immenfe height above the level of the fea. Near the interior, the immenfe Sliebh an-Erin divides the mountainous from the level parts of the country. Thefe great hills are far from unprofitable, for producing abundance of coarfe grafs, they annually pour forth immenfe 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 bafe of Quilca mountain, forming Lough Clean, a fmall 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 ftreams, which are ftored 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 alfo found on the lower grounds; and a vigorous fearch would undoubtedly difcover it in almolt every fituation. Copper and lead are alfo met with, but not in fuch quantities. Coal in deep and rich flrata is vifible in many places. A variety of clays and plenty of limeftone gravel are likewife found. The foil is exceedingly diverfified. A rich dark foil on a limettone bottom, a ferruginous loam on the mountains, and an argillaceous ftratum, are its chief characteriftics. 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 pafturage. The farms are fmall, 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 Leitrim and Dromahare. The traveller who is anxious for variety, will no where find it in greater perfection than in Leitrim. Extenfive tracts of walte may be contrafted 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 ftupendous moun-

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tain, and the beauties of the rich luxuriant woods on the demefnes, are enriched by the vicinity of beautiful fhects of water. Near a century ago, the county was a continued foreft. Immenfe heaps of charred timber are feen at Dromthambo. A confiderable time ago, great exertions were made to plant woods, and it now abounds with almoft every variety which the nurfery can afford. No town of any fize ornaments the county. Carrick on Shannon is the flire town, but does not contain above 100 houfes.
"The obitacles," fays Mr. Robertion, "which have fo long retarded the improvement of Leitrim, have been occafioned by the inhabitants, not by nature; fhe has made ample flore for the exertions of their induftry, by beftowing on them valuable minerals. Thefe, 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 fpeedily obviated. Pafturage being purfued to a confiderabie extent, has in a great degree impeded the general improvement. The confequent want of population has retarded the cultivation of the bog and other watte land. But when the true interelt of the people fhall be fufficiently underftood, the minerals will be wrought, palturage 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 moft wealthy counties in Ireland." Beaufort's Memoir ; Robertfon's Traveller's Guide.

Leitrin, a fmall town of Ireland, which gives name to the county, but is not confiderable enough to be a pofttown. 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, AElvejion, among the Athenians, perfons of confiderable eftates; who, by their own tribe, or the whole people, were ordered to perform fome public duty, or fupply the commonwealth with neceffaries 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 poft-town of the county of Kildare, Ire: land. It is beautifully fituated on the banks of the river Liffey, and near it is a fine waterfall, called the Salmon Leap. It is eight miles W. from Dublin.

LEKEO, one of the Japan inlands, about 120 miles in circumference; 20 miles S. of Ximo. N. lat. $31^{\circ} 20^{\prime}$. E. long, $15^{\circ} 4^{\circ}$.

LEKINPOUR, a town of Hindooftan, 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 Chrift's college, Cambridge. He removed from this univerfity to All-fouls, Oxford; and for farther improvement, efpecially in the Greek language, he went to Paris, cultivated an acquaintance with the principal fcholars of the age, and acquired a knowledge of feveral 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 perfon in this kingdom before or after poffeffed. To the title was annexed a commif-
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 vititing all the remains of ancient buildings and monuments of every kind, with the view of collecting every thing that could illuftrate the hiftory and antiquitirs of this nation. At the diffolution of the monafteries 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 houfe in London, for the purpofe of digefting them and preparing the publications he had promifed the world; but either intenfe application, or fome other caufe, brought upon him a derangement of mind in the year 1550, from which he never recovered. He died in 1552. During his life, he publifhed feveral Latin poems, and fome tracts on antiquarian fubjects. His MS. collections, after paffing through many hands, came into the Bodleian library, furnilhing very valuable materials to Camden, Dugdale, Burton, and others. After his deceafe in 1589, a volume of his fmall Latin poems was publifhed by Mr. Thomas Newton of Chemire, under the title of "Principum et illuftrium aliquot et eruditorum in Anglia virorum Encomix." From his collections, Anthony Hall publifhed, in 1709, "Commentarii de Scriptoribus Britannicis." "The Itinerary of John Leland, the Antiquary," was publifhed by Hearne at Oxford, in nine vols. 8vo. The fame editor publifhed "Joannis Lelandi Antiquarii de rebus Britannicis Collectanea ;" fix vols. Biog. Brit.

Leland, John, a diffenting minifter, was born at Wigan, in Lancafhire, 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 underftanding and memory. In this melancholy condition he remained twelve months, but after his recovery, he recommended himfelf to much notice by the quicknefs of his parts, and by the proficiency which he made in his learning. He was therefore educated for the Chriftian miniftry among the Diffenters; and was, in due time, invited to become joint-paltor with the Rev. Mr . Weld, to which office he was ordained in 1716. He firt appeared as an author in 1733, by publifhing " An Anfwer to a late Book, entitled' Chriftianity as old as the Creation \&c." in two volumes." In 1737, he embarked in a controverfy with Dr. Morgan, by publifhing "The divine Authority of the Old and New Teftament afferted againlt the unjult A fperfions and falfe Reafonings of a Book, entitled The Moral Philofopher." The learning and abilities difplayed by Mr. Leland in thefe publications, and the fervice which he rendered by them to the Chriftian caufe, procured him many marks of refpect and efteem from perfons of the higheft rank in the eftablifhed church, as well as from the moft eminent of his diffenting brethren; and from the univerfity of Aberdeen he received, in the mof honourable manner, the degree of doctor of divinity. In the year ${ }^{1742}$, Dr. Leland publifhed an anfver to a pamphlet, entitled "Chriftianity not founded on Argument;" and in 1753, he diltinguifhed himfelf ftill further as an advocate in behalf of Chritianity, by publifhing "Reflections on the late Lord Bolingbroke's Letters on the Study and Ufe of Hiftory; efpecially fo far as they relate to Chriftianity and the Holy Scriptures." Dr. Lelaid was now juftly confidered a matter in this branch of controverfy, 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 laft and prefent Century, with Ob.

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fervations, \&c." The defign of this work was to give fome idea of the productions of the deitical writers, and of the feveral fchemes which they have advanced, as far as the caufe of revealed religion is concerned. In this work, the author ably maintained the reputation which he had acquired by his former producions, and i: met with a very £avourable reception. He afterwards publifhed a fupplement relating to the works of Mr. Hume and lord Bolingbroke, and this was followed by a third volume, comprehending the author's additions and illuftrations, with a new edition of his "Reflections upon Lord Bolingbroke's Letters, \&c." The whole of this work is now comprifed 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 publifhed, in two volumes 4to."The Advantage and Neceffity of the Chriftian Revelation, fhewn from the State of Religion in the ancient heathen World, efpecially with refpect to the Knowledge and Worhip of the one true God; a Rule of moral Duty, and a State of future Rewards and Punifhments, \&c." This work was afterwards reprinted in two volumes, 8vo. Dr. Leland died in his feventy-fifth year, on the 16 th of January 1766 ; he was diftinguifhed by confiderable abilities, and very extenfive learning; he had a memory fo tenacious, that he was often called the "walking library," After his death a collection of his fermons was publifhed in four volumes octavo, with a preface containing fome account of the life, character, and writings of the author, to which our readers are referred for farth information refpecting him.

Leland, Dr. Thomas, a divine of the church of England, was born at Dublin about the year 1703. Having received the elements of a good education, he was admitted a ftudent, and afterwards became fellosv of Trinity College, Dublin. He was author of "A Hiftory of Ireland," 4to.; "The Life of Philip of Macedon;" and "The Principles of human Eloquence." He alfo tranlated the orations of Demothenes, in two volumes, 8 ro., which came out feparately, and were well received by the public. Dr. Leland died in ${ }_{17} 85$, at the age of eighty-three.

LELCZA, in Geography, a town of Ruffian Poland, in the palatinate of Volhynia; 60 miles N . of $Z$ ytomiers.

LELEGES, in Ancient Geograpby, a collection of people from different nations, as the fuppofed etymology of their name, derived from $\lambda_{\text {evis, }}$ 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-weft of the gulf of Adramyttium, they paffed over into Caria, and took poffeffion of the environs of Halicarnaflus. Their town was the metropolis of Caria, near Myfia. They were a kind of robbers and vagabonds, who refembled the Cilicians in their difpofition and manners. The firit king of Laconia, according to Paufanias, was Lelex; and the country took the name of Lelegia from thefe people.

LELIAN, in Geograpby, a town on the north coaft of the ifland of Bouro.

## Lelit Pattan. See Pattan.

LELOW, a town of Auftrian 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 mof excellent portrait-painter this country poffefled, after the death of

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Vandyke. Many of his works continue to be held in mok deferved eftimation, and to be ranked amongft the claffics of the art. He was born at Soeft, in Welfphalia, in $161 \%$. His family name was Vander Vaas; but from the circunftance of his father, who was a captain of foot, being borr in a perfumer's thop, whofe fign was a lily, and receiving the appellation of captain Du Lys, or Lely, our artift obtained it as a proper name.

He was firft inftructed in the art by Peter Grebber at Haerlem; and having acquired a knowledge of its principles, and a very confiderable degree of fkill in execution, he came to England in 1641 , and commenced portraitpainter. After the kingdom had fuftained the irreparable lofs of Vandyke, and the reftoration was completed, he was appointed ftate-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 aooplexy, while painting a portrait of the duchefs of Somerfer, and died inftantly, at the age of fixty-three.

Though Lely's talents, as an artift, do not entitle him to hold a rank equal to that filled by his great predeceffor; yet they jufly claim very great refpect and admiration. He fell thort of Vandyke in two very effential parts of portraiture, viz. tafte and expreffion. Of the former it mult be acknowledged that he fometimes caught a glimpfe; and, in the difpofal of a piece of loofe drapery, exhibited it with an enchanting ftyle : but that high clafs of tafte, which evidently fways the artift's mind who arranges, without apparent ftudy, all the parts of a compofition in an agreeable and effective manner, he does not appear ever to have felt or underftood. It is in parts only that he wrought with tafte: in the ringlets of the hair, for inftance; feldom in the actions of his figures, and fcarcely ever in the tout-enfemble of his pietures. As to the expreffion of his portraits, it is almoft entirely defcribed, at leaft in thofe of his females, by what the poet has faid, that he

> " - on animated canvas ftole The fleepy eye that fpoke the melting foul."
The confequence is, that individual expreffion, the very effence of portrait-painting, is loft fight of; and a certain air of general refemblance is feen in them all.
Yet in fpite of thefe great deficiencies, Lely's pictures, by the maftery of his execution, and his fkill of imitation, where he pleafed to employ it, will ever command admiration. He poffeffed the art of flattery more than moft artifts; and no doubt by that fecured the approbation of his contemporaries, and confequently great practice. He paioted drapery in a ftyle peculiarly his own, with great richnefs and fulnefs of effect; and he underitood fully the union of folds, though he did not always difpofe them in juft or agreeable fhapcs. 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 almoft every noble manfion 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 furnifh himfelf with a collection of pictures and drawings. Thefe, at his death, were fold by auction, and were fo numerous, that forty days were confumed in the fale; and the product amounted to 26,000l.; belides which, he left an eftate he had purchafed, of 900 l . per annum.

LEMA, in Geography, a fmall ifland in the Chinefe fea. N. lat. $22^{\circ}$. E. long. $114^{\circ} 17^{\prime}$.

Lema Ifands, a clufter of fmall iflands in the Eaft Indian fea,

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fea, near the weft coalt of the inland of Borneo. S. lat. $\mathrm{I}^{\circ}$ 10'. E. long. $108^{\circ}+8^{\prime}$.

LEMAIRE, in Biography, is now generally fuppofed to have added, about the middle of the feventeenth century, the fyllable $\sqrt{2}$ to the hexachord, in order to furnifh a name, in folmifation, to the fharp 7 th of the key, and eafe the ftudents in finging of the embarraffments of the mutations. Many volumes have been written for and againft the mutations. We believe that in the confervatorios at Naples and Venice they are tlill preferved, and by the organifts of our cathedrals who teach the choritters; but in many other parts of Europe, befides France, the $\sqrt[f i]{ }$ has been adopted. Though much has already been faid on both fides the queftion, much itill remains to be faid by the champions of both methods. See Mutation, Solmisation, Hexachord, and the fyllable $\mathrm{Si}_{1}$, in their feveral places.

Leman Lake, in Geography. See Geneva and Lake.

Leman, Department of, one of the eleven departments of the eaftern region of France, compofed of Gex and Geneva, and the north part of Savoy, in N. lat. $46^{\circ} 10^{\prime}$, 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 eaft by the Valais, and the departments of the Doria and Mont Blanc ; on the fouth by the department of Mont Blanc; and on the welt by the departments of the, A in 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 diftricts, 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 amouut 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 paftures. It has forefts and iron-mines.

LEMAVI, in Ancient Geograpby, a people of Spain, in the Tarragonenfis. Their capital was Dactonium, according to Ptolemy.

LEMBA, a town of Afia, which Jofephus claffes in the number of thofe which the Jews poffeffed in the country of the Moabites.

Lemba, in Geography, a town of Africa, in the kingdom of Congo.-Alfo, a town on the welt coalt of the inland of Celebes. S. lat. $3^{\circ} 15^{\prime}$. E. long. I $19^{\circ} 5^{\prime}$.

LEMBACH, a town of Auitria; 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 diftrict of Pau; 15 miles N.E. of Pau. The place contains 960, and the canton 11,626 inhabitants, on a territory of $217 \frac{1}{2}$ kiliometres, in 47 communes.

LEMBERG, or Leopold, a city of Auftrian 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 Popifh archbifhop, and alfo of a Ruffian and Armenian bifhop. It has two caftles, one within and another without its walls; the latter ftanding on a high hill, and having the Carmelite monaftery, which is fortified, for a citadel: and it carres on a confiderable trade. Lemberg has a magnificent cathedral, feveral other churches, a gymnalium or feminary, an arfenal, a public granary, two Jewinh fchools,
\&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 Proteltants are tolerated; 72 miles S.S.E. of Chelm. N. lat. $49^{\circ} 51^{\prime}$. E. long. $23^{\circ} 59^{\prime}$.

LEMBO, a town of Africa, in Congo, on the Zaire ; 40 miles S.W. of Etrona.

LEMERY, Nicholas, in Biography, an eminent French chemitt, was born at Rouen, in November 1645. His father, Julian Lemery, was a procureur in the parliament of Normandy, and of the Calvinit perfuafion. Nicholas was brought up to the bufinefs of pharmacy, under an apothecary of Rouen ; and he went to Paris in $\mathbf{x} 666$, with the view of obtaining farther improvement, efpecially in the art of chemittry, which he perceived to be the bafis of correetnefs in the proceffes of pharmacy. Here he fludied under Glafer, demonftrator of chemiftry in the royal garden; and afterwards fpent fix years in travelling, for the purpofe 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 fkill, he announced a courfe of lectures on chemiltry, 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 firft Ccientific characters in Paris, but to ladies, who reforted thither partly from a love of knowledge, and partly from fafhion. Chemiftry was then indeed coming into great rogue in that metropolis; and Lemery contributed greatly to its ad:ancement, by treating it in a fimple and perfpicuous manner, đivelting it of the jargon of myfticifm in which it had been hitherto obfcured, and, by the dexterity of his experiments, exhibiting the facts which it difclofes to the comprehenfion of every underftanding. By thefe means, Lemery eftablifhed fuch a character for fuperior chemical fkill, as enabled him to make a fortune by the fale of his preparations, which were in great requelt 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 magittery of bilmuth, and known as a coimetic by the name of Spani/b white, which no other perfon in Paris knew how to prepare. In 1675 he publifhed his "Cours de Chymie," which was received with general approbation and applaufe, and paffed through numerous editions: indeed feldom has a work on a fubject of fcience been fo popular. It fold, fays Fontenelle, like a novel or a fatire : new editions followed year after year; and it was tranflated into Latin, and into various modern languages. Its chief value confilted in the clearnefs and accuracy with which the proceffes and operations were detailed: the fcience 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 philofophical chemift ; and his materials are not arranged in the moft favourable manner for the inftruction of beginners in the fcience. 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 chemift, though openly profeffing Calvinitic. principles, had not been interrupted by the fpirit of perfecution, which difgraced the latter part of the reign of Louis XV. ; but in 1681 ; he received an order to difcon-

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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. Circumiltances, 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 himfelf from farther perfecution. He actually acquired confiderable employmeit in his new character at Paris; but the rewocation of the edict of Nantes, in 1685 , by which the practice of phyfic was interdicted to Proteltants, deprived hint of his means of fubfiftence, and reduced him to fuch difficulties, that his conflancy 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 the agam derived confiderable emolument from the fale of his medicines. In 1697 and 1698 he publifhed two werks of confiderable value, but not without many imperfections. Thefe were, I. "Pharmacopée univerfel'e," containing a collection of the formulx given in all the reputable difpenfatories ill Europe, with corrections ànd improvements. Like the pharmaceutic works of that time, it was overloaded with articles, but was fuperior to its contemporaries. 2. His "Dictionuaire univerfel des Drogues Simples;" which was a itill more ufeful work than the former.

On the re eltablifhment of the Academy of Sciences in 1699 , Lemery was appointed affociate-chemift, and fucceeded to the office of penfionary, on the death of Bourdin. He then read before that body the papers on the fubject of antimony, which were printed in' 1707, under the title of "Traité de l'Antimoine." Upon this fubject he had a controver!y with an anonymous critic, in which he was conGidered as not very fucceffful. He was now advancing in years, and found the infirmities of age increafing upon him, when his life was fuddenly terminated by a fit of apoplexy, on the $19^{\text {th }}$ of June 1715 . Lemery was one of the ableft chemilts of his time, and indefatigable in his refearches; having \{per:: his life in his laboratory, or ftudy, at the bed-fide of the fick, or in the Academy. He was a man of great fimplicity of mauners, fincere in his friendfhips, and of the fricteft integrity in the commerce of life. Eloy Dica. Hift de la Med. Gen. Biog.

Lemeay, Louis, fon of the preceding, was born at Paris in January $\mathbf{1 6 7 7}_{7}$, and obtained a reputation for knowledge in chemittry and medicine worthy of his name. He was intended for the profeffion of the law; but he had im. bibed from the purfuits of his father fo great a talte for thofe fciences, that he entered the faculty of medicine of his native city, and received the degree of doctur in 1698. Two years afterwards he was admitted into the Academy of Sciences, and in 1 y08 he delivered lectures on chemitry in the royal garden. In 1710 he was appointed phylician to the Hotel-Dien, a polt which he occupied during the re. mainder of his life. In 1712 he obtained the rajk of afociate in the Academy, and fucceeded his father in that of penfionary in 1715 . He purchafed the office of king's phyfician in 1722 ; and in that capacity he accompanied the infanta of Spain on her return from France, whither fle 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 phyfician. In 1731 he was appointed profeffor of chemittry in the royal garden, in the place of Geoffroy. At a fubfequent period, he became particularly attached to the eftablifhment of the duchefs of Brunfwick, whom he frequently vifited in the palace of

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Luxembourg; and he likewife obtained the patronage of the princefs of Conti, in whofe hotel he regularly paffed a part of every day, and there compofed feveral of the chemical papers which he read before the Academy of Sciences. Thefe papers treat of the fubjects of iron, of ritre, and fome other falts, of vegetable and animal analyfes, of the origin and formation of montters, \&ce. Louis Lemery died on the $9^{\text {th }}$ of June 1743, and the lofs of him was much regretted; for to the mild and polifhed manners of the gentleman, he united great fincerity and conffancy in his aftachments, and fentiments of liberality and generolity in all his pro.
ceedincr. ceedings.

In addition to the papers publifhed in the Memoirs of the Academy, he left the following works: 1. "Traté des Alimens," Paris, 1702, which was frequently reprinted, and greatly augmented by Bruhicr in the edition of 1755 , 2 vols. 12mo, 2. "Differtation fur le Nourriture des Os," Paris, $1704,12 m 0$. In this work he maintains that the bones are nourimed by a peculiar gelatinous fluid, depofited in their fubltance by the fmall arteries, and not by the marrow, as had been fuppofed hy fome. He likewife publinhed three letters, on the gencration of worms in the human body, in oppofition to the treatife of Andry, with whom a Tharp controverfy was carried on upon this topic. Eloy Dict. Hitt. Gen. Biog.

LEMEYBAMBA, in Geography, a town of Peru, iu the diocefe of Truxillo; 22 miles S.W. of Chacapoya.

LEMGO, or Lemgow, a town of Weftphalia, in the county of Lippe, on a fenall river, near the Werra, divided into the Old and New Town, each of which has its own magiffrates; formerly one of the Hanfe towns; 17 miles S.S.W. of Minden. N. lat. $52^{2} 2^{\prime}$ E. long. $8^{\prime} 44^{\prime}$.

LEMIA, a fmall ifland in the Pacific ecean, near the coaft of Chili. S. lat. $44^{\circ} 6^{\prime}$.

LEMINGTON, a polt-town of America, in York county, Maine; 610 miles N.E. from Wafhington. - Alfo, a townfhip in Effex county, Vermont, on the W. bank of Connecticut river, and near the N.E. corner of the flate. It contains 52 inhabitants.

LEMLANT, a fnall inand in the Baltic, near the S.E. of Aland; about 20 miles in circumference. N. lat. $60^{3}$ $4^{\prime}$. E. long. $19^{\circ} 5^{\prime}$.

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. $31^{\circ} 43^{\prime}$.

LEMMA, in Botany, a name borrowed from the ancient Greek writers, whofe $\lambda \varepsilon \mu \mu$, is fuppofed to have been fo called from $\lambda$ ents, a fcale, bark, or membrane, and to have been either our Duckweeds, fee Lemsia; or fome other aquatic production, whether of the vegetable or the corol. line kind, that adhered to fhells. Juff. 16. - This name was given by Bernard de Juffieu to the proper Marfflea of Lin. næus, for which it feems difficult to give a good reafou. We may indeed affent to the feparation of Micheli's Salvinia from that genus (fee Juffieu); but this does not oblige us to ábrogate a name long dettined to commemorate a meritorious naturalit. See Marsilea.

Lemma, A $\uparrow \mu \mu x$, of $\lambda \mu \mu b \alpha v a$, I afjume, in Mathematics, denotes a previous propofition, laid down in order to clear the way for fome following demonitration; and prefixed either to theorems, in order to render the demonfration of them lefs perplexed and intricate; or to problems, to make the refolutions of them more eafy and fhort. . Thus, to pro\%e a pyramid one-third of a prifm, or paralielopiped, of the fame bafe and height with it, the demonftration of which, in the ordinary way, is dificult and troublefome, this lemma may

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be premifed, which is proved by the rules of progreffion, that the fum of the feries of the fquares, in numbers in arithmetical progreffion, beginning from 0 , and going on, $\mathbf{1}, 4,9,16,25,36, \& \mathrm{c}$. is always fubtriple of the fum of as many terms, each equal to the greatelt ; or is always onethird of the greateft term multiplied by the number of terms. Thus, to find the inflection of a curve line, this lemma is firt premifed, that a tangent may be drawn to the given curve, in a given point.

So, in pliyfics, to the demonflation of moft propofitions, fuch lemmata as thefe are neceflary firlt to be allowed: that there is no penetration of dimenfions; that all matter is divifible; and the like. As alfo in the theory of medicine, that where the blood circulates, there is life, \&c.

Lemma, in the Ancient Mufic, a reft or paufe of a Joort fyllable in the catalectic rhythm. See Rhythm.

Lemma, $\lambda s \mu \mu \alpha$, in Pbarmacy, a term ufed to exprefs the hufk or fhell of certain fruits, as the almond and the like; and, in general, whatever is taken off in decortication: thus, the hufks of oats, barley, \&c. are the lemmata of thofe feeds.

LEMMER, Tue, in Geography, a fea-port of Friefland, near the Zuyder fea; 20 miles S. of Lewarden. N. lat. $52^{\circ} 52^{\prime}$. E. long. $5^{\circ} .3^{\prime}$.

Lemmer, or Lemming, in Zoology. See Sable Mouse.
LEMNA, in Botany, $\lambda s \mu v \alpha$ or $\lambda s \mu \mu \alpha$ of the Greeks; fee Lemma. Duckweed or Duck's meat. Limn. Gen. 478 . Schreb. 620. Willd. Sp. Pl. v. 4. 193. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 956. Wiggerf. 66. Ehrh. Beitr. falc. 1. 43. Brown Prodr. Nov. Holl. v. I. $345^{\circ}$ Lamarck Illuftr. t. 747. (Lenticula; Juff. 19. Mich. Gent 15. t. II. Dill. Gen. II8. t. 6.)-Clafs and order, Diandria Monogynia. Nat. Ord. Mifcellanex, Linn. Nä̈ades, Juff. Hydrocharidee, Brown.

Gen. Ch. Cal. Perianth inferior, of one leaf, roundifh, obtufe, oblcurely two-lobed, foon difappearing. Cor. none. Stam. Filaments two, awl-fhaped, fpreading, more or lefs unequal, longer than the calyx ; anthers terminal, of two round lobes. Pif. Germen fuperior, ovate; ftyle columnar, florter than the ftamens; Atigma fimple, or flightly notched. Peric. Capfule roundifh, of one cell, not burfting. Seeds few, oblong, itriated, pointed at each end, vertical, ranged in a fimple circular row.

Eff. Ch. Calys of one leaf, inferior. Corolla none. Capfule of one cell, without valves. Seeds fèw, oblong.

Obf. The firlt perfon who ever obferved the fructufication of a Lemna appears to have been Valifneri, whofe effay on the fubject, defcribing the flowers of L. minor, is publifhed in the Ephenerides Naturs Curioforum, and in the Italian folio edition of his works, v. 2. Sr. t. It, 15. His figure of the flower is borrowed by Dillenius, in the appendix to his Plante Giffen/es, cited above. Micheli, feveral years after, publifhed excellent reprefentations of the flowers and fruit, obferved in two or three fpecies, to which he applied the generic name Lenticula; calling by that of Leniculuria fuch as he could not meet with in a flowering flate. This is a didtinction without a difference, and of the latter $L$. trifulca has fince been found in perfection by Mr. Dawfon Turner of Yarmouth, in June, 1801. Willdenow fays it has been found by Wolf. Ehrhart, in his German Beitrage, Ffic. I. 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 fpecies being now diftinctly 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 remore
the genus from Mronoecia to Diandria, as fuggefted in Fl . Brit. 958. and Prodr. Fl. Grec. v. I. 11. One Britifh fpecies (till remains, the polyrrbiza, whofe flowers appear to have been feen by one perfon 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 flowcrs allo occafionally want the complete germen, but this is accidental, and they appear to be, in no fpecies, truly monoecious, nor regularly polygamous.

1. L. trifulca. Ivy-leaved Duck-weed. Linn. Sp. P1. 1376. Engl. Bot. t. 926. (Hederula aquatica; Lob, Ic. v. 2. 36." Ger. em. 830.)-Leaves ftalked, lanceolate, proliferous.-Found throughout Europe, floating in clear ftill pools and ditches. Mr. R. Brown has obferved it in New Holland. It is a pale-green, fmooth, pellucid, annual herb, floating in frefh water, near or upon the furface, and confilts of feveral lanceolate, ribbed, entire, fometimcs waved or toothed, leaves, each, with its falk, about an inch long. Each leaf throws out from its centre underneath a folitary fimple root, defeending, to more than the length of an inch, into the water, and tipped with a membranous ’heath. 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 fcarcely perceptible but by their prominent yellowih anthers. Wolf, the author of a differtation on Lemna, publifhed at Altorf in 1801, and quoted by Willdenow, appears to have been the firit who ever found the flowers of this 追ecies.
2. L. minor. Leffer Duck-weed. Linn. Sp. Pl. 1376. Engl. Bot. t. 1095 . Michaux Boreali-Amer. v. 2. 163. (Lens paluftris; Camer. Epit. 852. Ger. em. 829.)Leaves feffile, nearly flat on both fides. Røots folitary.Common and abundant in fummer time, on the furface of flagnant pools throughout Europe. Michaux has alfo obferved it in Carolina, and Brown in New Holland. This being the common fpecies in Greece, Dr. Sibthorp juftly
 corides; not that we would fuppofe this ancient fage accurate or attentive enough to have diftinguifhed it from the two or three following, which may polibly grow likewife in the country he inveltigated. 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 denfe mafies over the whole furface of the water, being much fmaller and more crowded than in the former. They are, like that, in fome meafure 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, furnifhed with both ftamens and pittil, and their calyx is more ample, as well ats more evidently two-lobed, than in the above. The feeds when ripe doubtlefs defcend, and take root in the mud, as Valifneri obferved the young plants afcend in the form of a green foft pul?, full of air-bubbles, from the bottom to the furface, carly 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 fpecies.
3. L. gibba. Gibbous Duckoweed. Linn. Sp. Pl. $137 \%$ Engl. Bot. t. 1233. (Lenticula paluftris najor, \&c.; Mich. Gen. 15. t. 11. f. 1, not 2.) - Leaves feffile ; flightly convex above; hemifpherical beneath- Roots folitary -Lefs frequent by far than the latt, in ftill pools of various parts of Europe. Hudfon confidered this as a variety only, but it

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differs in being larger than minor, remarkably tumid, fucculent, and vafcular. Its upper furface is convex, ufually of a fine green, but often purplifh; the lower almoft hemifpherical, and paler. Roots generally folitary, fometimes in pairs. Micheli fays the calys foon difappears; and Mr. Borrer's fpecimens were too far advanced to fhew it, though the faamens and fylye were in perfection.
4. L. polyrrhiza. Greater Duck-weed. Linn. Sp. P1. 1377. (Lenticularia major polyrrhiza, infernè atro-purpurea; 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 Auguft, but though the leaves are twice or thrice the fize of the two laft, the flozvers have not been detected, except by the Danifh naturalift Grauer above-mentioned, who accounts for this by bis defcription of their fituation. He fays they are to be found at each fide 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 leaves are rounder and blunter; convex, and ufually dark purple, underneath. The roots fpring numeroufly in clufters from the centre of each.
5. L. obcordata. Heart-flhaped Duck-weed. Vahl. Symb. vo 2. 95. Willd. n. 5.-" Leaves feffile, inverfely heartfhaped. Routs cluitered."-Native of waters in the Eaft Indies. Vahl, from whom alone we have any knowledge of this, fays "the leaves are fcarcely fo long as the nail, of a bright green at the fore part of their upper fide; purplifh in the hinder part and underneath, as well as the roots. A longitudinal furrow runs along the leaf, fending off a branch to each lobe, which divides each nearly in two, to the extremity.". It dees not appear why Willdenow defnes the leaves as "proliferous at the apex."
6. L. arrbiza. Rootlefs Duck-weed. Linn. Mant. 294. (Lenticularia omnium minima, arrhiza; Mich. Gen. 16. t. 11. f. 4.)-Leaves in pairs, without roots.-Obferved by Micheli in filh-ponds near Florence. Duchefne found it in France; and we have fpecimens, both dried and in fpirits, collected at Fontainbleau by the late Mr. Stephen de Leffert. This minute fpecies is not bigger than an ordinary pin's head, and each plant confifts of one larger leaf and one fmaller, joined by their extremities; the former being elliptical, flattifh on the upper fide, very turgid below ; the other nearly globofe. No roots are difcoverable, 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 paluftriз media, pallidè virens, infernè minùs convexa, radicibus longiffimis fructu difpermo; Mich. Gen. 15. t. II. f. 2.) -Leaves feffile, obovate, convex beneath. Roots folitary, very long. Capfule with two feeds.-FFound by Micheli in a place called the Beccacivette near Florence. He delineates the leaves about half the fize of L. gibba, as well as much lefs 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 paIuftris minima atro-virens, utrinque penè convexa; Mich. Gen. 15. t. II. f.3.)-Leaves feffile, elliptic-oblong, convex on both fides. Roots folitary.-Found by the fame auther near Florence. This appears to be fmaller than L. minor, with more oblong and darker leaves, whofe upper fide is as convex as the under one.

LEMNIAN EARTH, Lemnia terra, comprehends feveral
rarietics of clay, moftly red and ferruginons, formerly prom ferved under this name, and employed in medicinc. Thefe were diftinguifhed into the white, the yellow, and the red. They were brought from the Levant, moftly in the fape of fmall cakes, bearing the impreffion of a feal, whence the name of Terra Sigillata. Several of them are to be referred to Bole; which fee. The whitifh kind, which appears to be the true Lemnian earth, and fo highly valued by the ancients, on account of the alexipharmic virtues which they afcribed to jt , is defcribed under the asticle Flller's Earth.
The red earth is dug in a hill in the ifland of Lemnos, and in no other place, fo far as is yet known; and the line and true earth only in one pit, which ufed to be opened once every year, and no oftener, with great folemnity; and the earth, fuppofed fufficient for the year's demand, was taken out and fold to the merchants; fome fealed with various figures, other quantities unfealed; but what was there bought unfealed, was generally formed into fmall maffes, and fcaled before it was offered to fale in Europe, the druggilts always expecting to find Lemnian earth fealed.
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 compofition of our own clays, and properly tinge them with ochre, and afterwards give an impreffion refembling that of the genuine.
This earth, was celebrated by the ancients as a fovereign remedy againf poifons and the bites of reptiles: the Turks and Greeks till retain that notion, for the cups out of which the grand feignior drinks are made of this red earth, fo that it is referved chiefly for the fultan's ufe. But the alexipharmic and aftringent property of this and the other boles is now in little or no efteem. (See BoLE.) It is alfo dug in the illand of Lemnos, and was ufed in the German fhops as an aftringent and fucorific, and faid to be of great efficacy in dyfenteries, hemorrhages, and malignant fevers. The ancients knew this kind, but never ufed it in medicine, efteeming the other fuperior, 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 difcovered by its ftaining the hands, and the other by a yellow clay; but this is eafily known by its want of the true florid colour, and hasing all the characters of a clay, not a bole. The genuine is found only in the ifland of Lemnos, and is the itratum next abose the red. It was formerly efteemed a fudorinic, aftringent, and rulnerary. Da Cofta's Hift. of Foffils, P. I. 14. and 2.2.

LEMNIS, in Ancient Geograpby, an ifland of Africa, in Mauritania Cxfarienfis, 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. Analy fis, fig. 1.), and P M, $y$, and the conftant line BC, a, the equation of the curve will be $a y=x \sqrt{a}-x^{2}$, or $a^{2} y y=a^{2} x^{2}-x^{2}$, which is an equation of the fourth degree: it is alfo evident that a right line which paffes through the double point $A$ will cut this curve in four points, the double point being reckoned equal to two. See Curve.

LEMNISCIA, in Botary, fo called by Schreber, from خnpuvisoos, a bandage, or fillet, in allution to the fhepe of its petals. Schreb. 358 . Willd. Sp. Pl. v. 2. 1172 . Mart.

Mill

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Mill. Dict. v. 3. (Vantanea; Aubl. Guian. vo r. 572. t. 229 : Juff. 434. Namarck. Illufte. t. 475 .) -Clafs and order, Polyandria MTonogynia. Nat. Ord, uncertain.

Gen. Ch. Cal. Perianth inferior, of one leaf, five-toothed, acute, fhort. Cor. I'etals five, lincar, long, acute, recurved, adhering to the cup-flaped, flefly, thort neetary which encompafies the germen. Stam. Filaments numerous, from feventy to cighty, capillary, longer than the corolla, inferted into the nectary; authers roundith, fmall. $P$ iff. Cermen fuperior, roundif, immerfed in the nectary ; ftyle thread-fhaped, the length of the Itamens; Atigma obtufc. Pcric. Capfule of five cells. Sechs folitary.

Eff. Ch. Calyx five-toothed. Corolla of tive petals. Nectary cup-fhaped, bearing the ftamens. Capfule fivecelled, with a feed in each cell.
I. L. foribunda. 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 Augult. The trank. of this tree rife, to the height of about tifteen or twenty feet, and is much branched. Bark brown and fmooth. Wood whitifh and compact. Leaves alternate, on fhort footftalks, fmooth, oval, pointed, the larger ones about five inches long. Flowers forming large, handfome bunches at the extremity of the branches, of a red, coral colour. Stamens fituated upon a yellow, flefhy difk, in the form of a cup, which almolt covers the germen.

Obf. The long narrow petals of this plant greatly remind us of thofe in the neighbouring genus Alangium.

LEMNIUS, or Lemaens, Lifívin, in Biography, was born at Zirickfee, in Zealand, in May, 1505. He ltudied at Louvain, and by the advice of his iriends applied both to medicine and theology. He principally diftinguifhed himfelf, however, in the former of thefe fciences, and practifed the profeffion for upwards of furty ycars, chiefly in his native place, where he fettled in 1527. He ubtaincd the full confidence of his patients by his knowledge and eloquence, and efpecially by a mild and humane exprefficn of countenance and manner, which never failed to intereft 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 Aftrologia Liber unus, \&c.: De termino vita Liber. De honelto animi et corporis oblectamento, \&c. \&c." Antwerp, 1554-一" De occultis naturx miraculis Libri duo," ibid. ${ }^{1559 .}$ "De occultis naturæ miraculis Libri quatuor," ibid. 1564 . Thefe tworks contain many obfervations relative to natural philofophy, botany, phyfiology, and medicine, and efpecially concerning gencration and monlters; but they alfo contain many fables. "De Habitu et Conltitutione corporis, quam triviales complexionem vocant, Libri duo," ibid. $156^{\circ}$, and feveral fubfequent editions. "Similitudinum et parabolarum, qux in Bibliis ex herbis atque arboribus defumuntur ditucida explicatio," ibid. 3569 ; many times reprinted and tranflated. "De Zelandis fuis Commentariolus," Leydén $\mathbf{r} 6 \mathrm{II}$. Eloy Dict. Hirt.

LEMNOS, in Ancient Geography, an ifland fituated in the E'gean fea. 'This intand 'was confecrated to Vulcan in the time of Homer, probably on account of two volcanoes, which were here costinually calting forth flames, and which were confidered as the forges of the hulband of Venus. No veltiges of thefe volcanoes now remain: but Sonnini thinks it probable that interior fires are ftill burning here; for he met with a foring of hot water, which bas been brought to
fupply bathe, and another of aluminous water. Lemmos was celebrated amonglt 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 Alia, it was althof always dependent on that province. 'The pricfte of Lemnos were reckoned famous for the cure of wounds. For this reafon the Greeks, who went to the Hege of Troy, left here Pliloctetus, after he had been wounded in the foot by one of the arrows of Hercules. The efficacy of their fisill depended, as it has beenfaid, upon the quality of that bole under the denomination of Lemilan carbl) : which fee. It is alfo faid, that Galen made a voyage to Lemnos on purpofe for afcertaining the virtues of this earth; and that he found a perfon who had avaled himfelf of it as an antidote to the bites of reptiles, and to poifon. The firlt inhabitants of this inland were the Pelafgi, who expelled the defcendants of the Argonauts, by whom it was previounly occupied, and took poffeflion of it about 1860 years before the vulgar era. This ifland retained the name of Lemnos, by which it is ever now known; but navigators have given it the name of Stalimene. The ifland is hilly, but extremely fertile : it yields corn, cotton, oil, and filk, with which a few light ituffs are manufactured. To be flourifling, fays Sonnini, Lemnos wants only to be delivered from its oppreffors. Nature has dune every thing for it, and we lament the tate of languor and wretchednefs to which its deftiny has reduced it. Its inhabitants were formerly much given to navigation, or at leafl to the carry-ing-trade ; they are fill trading mariners, becaufe this kind of indultry cfcapes more eafily the cupidity of tyrants than affluence produced only by agriculture, or by a fedentary traffic. Some of its women are extremely beautiful. The whole eaft coalt is inaccefibib, on account of a fhoal, which extends four leagues into the offing: the weft coaft affords to fhips a few places of fhelter againit northerly winds. To the north is a large road: but there are no real harbours cxcept on the fouth part, where are to be found two, at no great diftance 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 government 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 Welfh 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 Penmaenmaur!

## Lemon, in the Materia Medica.

Lemons are cooling and grateful to the ftomach, quenching thirft and increafing appetite; ufeful in fevers, as well common as malignant and peltilential ; they alfo provoke urine. The juice, which is more acid than that of the orange, poffelfes fimilar medical virtues. (See Orange.) This juice, however, is always preferred, where a ttrong vegetable acid is required. Saturated with the fixed vegetable alkali, it is in frequent extemporanecus ufe in febrile difeafes; and by promoting the fecretions, efpecially that of the furface, proves of confiderable fervice in abating the violence of pyrexia. Mixed with falt of wormwood, it is ain excellent medicine to fop vomiting, and to ftrengthen the ftomach. As an antifcorbutic, lemon juice is very generally taken on board fhips, deftined for long voyages. See Citrus, and Cirric Acid.

Whytt found the juice of lemons to allay hyfterical palpitations of the heart, when various other medicines had

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proved ineffetual; and this juice, or that of orange, taken to the quantity of four or lix 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 ufed in ftomachic tinctures and infutions, and for rendering other medicines acceptable to the palate and tomach. The lemon peel, though lefs warm than that of the orange, poffeffes fimilar qualities, and is ufed with the fame intentions. It is fometimes ordered to be candied. In diftillation it yieids an effential oil, extremely light, almolt colourlefs, frequently employed as a perfume, and brought to us from the fouthern parts of Europe, under the name of "effence of lemons." Tliis oil is an ingredient in the fpiritus ammonix compofita, or aromatic fpirit of ammonia, and in other formulx. A mixture made by faturating fix drams of the juice of lemons with about balf a dram of fixed alkaline falt, with the addition of a fmall quantity of fome grateful aromatic water or tincture, as fimple cinnamon water, is given in cafes of naufea and reachings, and generally abates, in a little time, the fevere vomitings that happen in fevers, when molt other liquors and medicines are thrown up as foon as taken. It is allo ufed as a faline aperient in iCterical, hydrepical, inflammatory, and other diforders. A fyrnp made by diffolving fifty ounces of fine fugar in a quart or two pounds and a half of the depurated juice, is mixed occafonally with draughts and juleps, as a mild antiphlogitic, and fometimes ufed in gargarifms 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 eltablifhed company called lemonadiers.

LE MONNIER, Peter Ciarles, in Biograpby, a French aftroncmer, member of the Academy of Sciences, and of the National Inftitute, was born at Paris in 1715 , and accompanied Maupertuis in his tour to the north pole, for meafuring a degree of the meridian. His principal works are: "Aftronomical Inftitutions;" " Lunar Nautical Aftronomy ;" "Tables of the Sun, and Corrections' of thofe of the Moon." He died in 1790. He had a brother, Lewis William, a very able experimental philofopher, who died in 1799. But neither of thefe is to be confounded with an abbe of that name, who tranflated Terence and Perfius into French, and was author of fables, tales, and epifles. He died in 1796.

LEMOS, in Geography, a diftrict 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 Ruffa, in the government of Penza; 72 miles W. of Penza. N. lat. $53^{\circ} 25^{\prime}$. E. long. 43 3 $34^{\prime}$.

Lemov, Verfchnei, a town of Ruffia, in the government of Penza; $3^{8}$ miles S.W. of Penza. N. lat. $53^{2}$ 16. E. long. $43{ }^{14} 4^{\circ}$.

LEMPA, á river of Mexico, which runs into the Pacific ocean, N. lat. 13 $3^{6 \prime}$.

LEMPACH, a town of Auftria; 14 miles W.S.W. of Vienna.

LEMPALA, a town of Sweden, in Tavaftand; 27 miles N.W. of 'Tavalthus.

LEMl'S, Grand, a town of France, in the department of the Ifere, and chief place of a canton, in the diftrict of La-「our-du-Pin; 18 miles N.W. of Grenoble. The place

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contains $\mathbf{~} \mathbf{6 8 0}$, and the canton $\mathrm{I}_{4}, 883$ inhabitants, on a territory of 200 kiliometres, in 17 communcs.

LEMPSTER, an inconfiderable townthip of America, in Chefhire county, New Hamphire: incorporated in 1761, and containing, in 1800, 729 inhabitents.

LEMPTA, a fea-port town of Africa, on the E. coait of the kinguom of "Tunis. It was the "Leptis parva" of the ancients; the other being in the kingdom of Tripoli. Lempta appears to have been a mile or mure in circuit ; but nething now is left but the ruins of a caftle; with a low fhelf of rocks, that probably made the northern mound of the ancient Cothon; 60 miles S . of Tunis. N. lat. $35^{\circ} 30^{\prime}$. E. long. $10^{\circ} 54^{\prime}$.

Lempta, a defert country of Africa, inhabited by a barbarous and fierce people, who plunder the caravars that pafs from Conflantina and other towns towards Nubia, fituated about N. lat. $26{ }^{\circ} 30^{\prime}$. E. long, 9 .

LEM.TCHIN, a town of Thibet; 12 miles W.N.W. of Pitchan.

LEMUI, a fmall inand in the Pacific ocean, between the ifland of Chiloe and the continent. S. lat. $44^{\circ} \mathrm{IO}$.

LEMVIG, a town of Dennark, in North Jutland, fituated on the Lime-Fiord, or Lympfurt; $8_{+}$milles N . of Ripen. N. lat. $\mathrm{g}^{6} 44^{\prime} .{ }^{\prime}$ E. long. $8^{\prime}$ 18'。 $^{\prime}$

LEMUR, in Zoology, a genus of Primates. The foreteeth in the upper jaw amount to four in number, the intermediate ones remote; thofe in the lower javs to fix, their form more elongated, extended, compreffed, parailel, and approximate : grinders many, fomewhat lobate, the foremott longer, and fharper.

The animals of the lemur genus approach the monkey tribe in the form of their feet, which in feveral of the fpecies are furnifhed with flat and broad nails, refembling thofe of the human hand, excepting generally that of the firlt finger next the thumb, which is long and incurvated; they have either two or four teats, and fome of the fpecies have the tail of confiderable length, while others have none. Notwithflanding the refemblance thefe animals bear to the monkey race, they have nothing of the mifchievous and petulant difpofition of thofe creatures; they are mild and peaceable in their manners, at lealt when domefticated, and there are few fpecies of the tribe that cannot readily be reduced to that ftate of docility by proper treatment. Some of the fpecies feed on fruits, eggs, and fmall birds, others fubfift entirely on the former. They inhabit chiefly the Indian illands, and the continent of South America.

## Species.

Tardigrades. Tail none; body fomewhat tawny afha Gmel. Lcrnur tardigradus, Erxleben. Le loris grêle, Andebert. Slozv lemur, or loris.

Under the Linmean fpecific name of tardigradus, the beite authors appear to have confounded two, if, not a greater number of diftinct fpecies. The little animal defcribed by Erxleben under that title, is remarkable for the peculiar elegance of its figure, and the fingularity of its conformation. The head is roundifh; the muzzle projecuing; the eyes extremely large and contiguous to each other; the ears large and round; inftead of a tail a tubercle is fituated in that part; and the whole body is covered with fine hair of a reddin-grey colour. The fexual organs of the female, according to the obfervations of Daubenton, prefent fome curious particulars of intereft to the comparative anatomift. This fecies inhabits Ceylon, is remarkable for its agility, is quick of hearing, and correfponds with the fquirrel.

Ecaudatus. Tail none; a dark-rufty line along the middle of the back from the rump to the forehead; orbits

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furrounded by a blackinh line. Lemur ecaudatus, Linn. Gmel. Loris tardigradus, Audebert. Parefeux pentadactyle de Bengale, Volmacr. Le loris de Bengule, Bult.

The diftinction between this and the preceding Ipecies has not been regarded with fufficient attention by all writers, and hence we fometimes find the defcription and hiftory of one applied to and blended with the other. The latter is about thirteen inches in length, the head almoft round, the muzzle very little pointed. The ears are fmall, oval, and ftraight, and almoft entirely concealed under the woolly hair. The eyes are placed in front inmediately above the nofe, and are very clofe to each other; their form perfectly orbicular, their fize remarkably large in proportion to the body, and of a brown colour. The nofe is fmall, 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 yel-lowifh-ath, inclining rather more to reddifh upon the flanks and limbs.

Indn. Taillefs, black; beneath greyifh; rump whitifh. Lemur indri, Gmel. Indri, Sonnerat. Indri macauco, Pemn.

This is a very large fpecies; the colour entirely black, except on the face and beneath, which is greyif ; 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 fhortifh and flightly tufted; the hair filky, thick, and in fome parts curly. According to Sonnerat, its firlt defcriber, the height of this animal is three feet and a half; the tufks in each jaw are eight, the fore-teeth above two, beneath four ; the feet five toed ; nails flat and acute, thofe of the great toe large; the rudiment of a tail is fenfible to the touch. It is faid to be a gentle, docile animal, capable, like the dog, of keing trained when young to the chafe, and is commonly employed in hunting by the natives of Madagafcar, the country it inhabits: its voice refembles the crying of an infant. At Madagafcar it is known by the name of indri, which fignifies the man of the wood. Geoffroy obferves, that the cutting teeth in the upper jaw are four in number, inflead of two, as mentioned by Sonnerat.

Rufus. Yellowifh-red; head at the fummit, temples, checks, and tail beneath whitifl. Lemur rufus, Audebert. Maki-roux, Defm.

This refembles the mongoz in fize, and various other refpects; it neverthelefs differs in having the ears fhorter, the tail longer, the hair in general fhorter, and the colour of the fur yellowifh-red inftead of brown-grey; upon the fummit of the head is a black line, and the tail at the extremity is brown. Whether allied to the following fpecies or not feems difficult to determine.

Laxiger. Tailed; above reddifh-yellow, beneath white; tail uniformly tawny-brown. Gmel. Alaquis à bourres, Sonn. Flocky lemur, Shaw.

A native of Madagafcar; the length twenty-one inches; hair foft, curled, about the loins reddifh-tawny; face black; ears fmall; eyes large and greenilh-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 fuppofed varieties of this Ipecies.

Potro. Sub-ferruginous; tail fame colour. Gmel. Potto, Bofman.

Inhabits Guinea. An obfcurely defcribed fpecies, concrived to differ from the indri only in the length of the tail. Bofman, who relates the fuppofed hittory of this animal, on the authority of the negroes (in his account of Guinea), attributes to it nearly the fame manners as thofe of the European 』oth.

Mongoz. Tailed, fufcous-grey, the tail of the fame colour. Linn. Erxleb. Mongooz, Edw. Maki.mongozes, Defm. Mongous, Buff. Woolly macauco, Penn. Miongoz lemur.

The mongoz is a larger fpecies than the ring-tailed lemur, the fize about that of the common or domeftic cat; the upper part of an uniform dufky-brown colour, with the breaft and belly whitifh. The fur confifts of filky curling hair. The nofe is larger than in the ring-tailed lemur, and much refembling that of Iemur macao, the colour black; the eyes are yellow, or orange, remarkably vivid, and are nearly furrounded by a circle of black placed at a fmall diftance above and beneath each eye, then uniting between them, and paffing down the middle of the fnout to the nofe; the hands and fect are naked and dufky; the nails flat, except on the interior toe of the hind feet next the thumb, which is furnifhed with a fharp claw ; and the tail, which is very long, covered with a thick fur.

No lefs than feven fuppofed varieties of this fpecies are defcribed 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 alfo fometimes 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 Madagafcar and fome other Indian inlands: it is an active animal, filthy in its difpolitions, and feeding en fruits and leaves of trees; it conftantly refides in woods : like fome other animals, which nature has furnimed with a tail of great length, it is obferved occafionally to amufe itfelf by nibbling and biting the end of the tail, and is on this account fometimes found with that part deftitute of the four or five extreme vertebra.
The individual defcribed by Buffon was neither of a gentle nor fportive difpofition, and was neceffarily confined by means of a chain to prevent its doing mifchief; fruits, fugar, and comfits it devoured with apparent eagernefs and fatisfaction, befides which it was fed on bread; it almoft inceffantly uttered a low grunting noife, or when tired of being alone, croaked in the manner of the frog, and fo loud as to be heard at a great diftance. The tongue was rough like that of the cat ; and Buffon obferves, that when permitted it would lick a perfon's hand till the $\mathbb{K k i n}$ became inflamed; its careffes, ufually concluding wiha a bite of its teeth upon withdrawing the hand from him. This individual was a male, and from its partiality to cats it was fufpected its attachment might have been productive of an liybrid offfpring; but thefe 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.
$A_{n}$ inhabitant of Madagafcar, and the adjacent iflands : its fize exceeds that of the mongoz, and in the ferocity of its manners it very far furpaffes that fpecies. Travellers defcribe it as being fcarcely lefs 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 refift their, attacks. Edwards is the only writer who fpeaks of it as an inoffenfive creature, and the individual he mentions was in a ftate of captivity; he mentions it as "a very fociable, gentle, harmlefs-natured animal, not having the cunning, mifchievoufnefs, or malice of the monkey kind." The colours of this animal vary much in different individuals, yet

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are in general diverfified with patches of black and white, though fumetimes it appears they are totally white or brown. The voice of this animal is loud and terrible, and is by fome compared with the roaring of the lion, or rather its cries refemble thofe of the howling-monkey of Brafil and Guiana; it delights in fun-fhine, and fleeps in dark places. The fur of this animal is long, the muzzle large and rather long, the ears fhort and fringed with long hairs; and the eyes of futch a deep orange as to appear of a fiery rednefs. The ruff, or cravat-like ring of long fur that furrounds the neck, is peculiarly ftriking in its appearance, and ferves principally to characterize this Ipecies; befides which it may be obferved, that the great hind-toes are almolt fubulate. It refures eggs, flefh, and fifh.

Catta. Tail aunulated with black and white. Linn. Erxleb. Moococo, Buff. MIaki-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 fimaller 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 whitifh, and the fur throughout remarkable for its luftre. The eyes are large, of a bright orange, inclining to hazel, and are furrounded by a diltinct circie of black; the muzzle is black, and the hands and feet of the fame colour; the fingers and toes furnifhed with round nails, the mails of the great toes not being longer or fubulate as in molt other fpecies. The tail, which it always carries erect in a graceful pofition, is very long; the hair upon it longer than the reft of the fur, and marked with about thirty equi-diftant or regular diftinet circles of black and white.

The manners of this fpecies are gentle and lively, in various refpects refembling thofe of the monkey, tribe, without its petulance and malice; when pleafed it purrs like a cat. In a fate of liberty thefe animals live in focieties of thirty or forty together in the woods; in afcending trees they climb with all their feet like the ape ; their food confifts of fruits, herbs, and roots, and it is alfo afferted they will eat animal food; like the fquirrel they fometimes feed fitting upright, and often extending their hands forwards, and in the fame manner, when in a Itate of captivity, take their ftation before a fire to warm themfelves. This fpecies inhabits Madagafcar.

Bicolor. Blackifh, beneath and heart-fhaped fpot on the forehead white; tail long. Lemur licolor, Gmel. Lemur albifrons, Audebert. Heart-marked maucauco, Penn. Heart-marked lemur, Shaw. Gen. Zool.

Suppofed to inhabit South America; the head is obtufe ; nails fubulate; toes white.

Pusillus. Grey ; eyes large and brown. Lemur pufillus, Audebert. Rat de Madagafcar, Buff. Maki-nain, Derm.

This fpecies inhabits Madagafcar ; its length is five inches and a half from the tip of the nofe to the bafe of the tail; the muzzle fhorter than in moft other fpecies. An individual of this kind brought from its native country was preferved alive in France for fome years. It evinced a remarkable degree of activity in its motions; its cry was feeble like that of the fquirrel; and its foed conffited of fruits and almonds. The hiftory of this curious little fpecies, as related by Buffon (under the title of rat de Madagafcar), is erroneoully placed by Mr. Pennant, in his work on quadrupeds, under the defcription of his Murine maucauco, by which means the two fpecies are confounded together. Dr. Shaw, from his adherence to this writer, has alfo fallen into the fame opinion in his General Zoology.

Murinuse Cincreous; tail tawny. Gmel. Lemur gris feus, Audebert. Grifto ATaki-gris, Defm.

This beautiful little animal is a native of Madagafcar. The whole body, except the face, feet, and hands, are covered with greyifh woolly hair; the tail is very long, and covered with fhort woolly hairs, lake the reft of the body. It much refembles the lemur catta in its general appearance; the pofterior limbs are much higher than thofe before.
Galago. Tailed; whitifh, bencath grey; tail ferruginous. Galago, Geoff. Adanion, \&c. Galazo fenegalenfis, Audebert.

One of the fmaller fpecies of the tribe, meafuring fix or feven inches from the nofe to the tail, the latter cight inches. 'The cars are very large, thin, upright, and rounded at the tip; the hind legs much longcr than the anterior ones; the nails of the hands rounded, except that of the fore-finger of each, which confitts of a tharp clave. Thefe animals, according to Adanfon, are of a peaceable difpofition; they feed on infects, and live in trees. The negroes of Galam hunt them for the fake of their flefh, the flavour of which is, however, very indifferent.
Psilodactylus. Rulty cinereous; tail extremely villofe; middle finger of the fure-feet very long and naked. Lemur pfilodacylus, Schreber Suppl. Aye-aje, Sonnerat. Aye-aye Squirrel, Penn.
This is a fpecies allied fo nearly to the fquirrel 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 alfo approaches very clofely the family of monkies. Its length is eighteen inches, the colour pale ferruginous grey, with a blackifh caft on the back and limbs; the tail entirely black, fides of the head, neck, lower jaw, and belly greyifh. The head is fhaped 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 tues of the hind feet fhort, and furnilhed with flat round nails. All the claws on the fore-feet fharp and crooked, the two middle ones in particular very long, extremely thin and naked, except at their bafe. It is a timid animal, uncommonly flow in its morements, and of a mild difpofition. M. Sonnerat obferves, that its eyes were of an ochre-colour, and refembled thofe of the owl, and like that bird the animal can fcarce fee diftinclly by day. The individuals kept by Sonnerat lived only about two months; they flept almoft continually, and were fcarcely to be awakened but by fhaking two or three times. Their nourifhment confifted of boiled rice whick they took up with their long fore-toes, in the manner that the Chinefe ufe their eating ftucks. It is a native of Madagafcar, where it is rare. Fruits and infects appear to be its ufual food.

Some indecifion prevails among naturalifs refpecting the lemur genus, and its immediate affinities; the Limnæan and Gmelinian charater is not altogether fufficiently precife, and thus embraces more than one diftinet natural genus, of which the galeopithecus (lemur volans, Linn.) is a prominent example. . Thie number of genera into which Geoffroy divides the lemures is confiderable, amounting (independently of the galeopithecii) to no lefs than five, namely, lemur, indri, loris, galago, and tarfus. This dilfribution, with fome night occafional 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 jav, beneath fix; inclining forwards; grinders tuberculated; ears flrort, or fhortifh; tail very long. Under this are retained the Linnzan lemur cata, mongoz, and macaco ; lemur rufus of Audebert; lenur
bicolos.

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bicolor (albifrons, Geoff.) and the two little fpecies, called by Geoffroy grifeus and pufillus. Indri, the fecond new genus, confilts at prefent but of two fpecies, the Linnzean lemur indri and laniger; the former of which is indri brevicaudatus of Geoffroy; and the latter indri longicaudatus of the fameauthor. Thefe have the muzzle very long; in each jaw four incilive teeth; the upper ones ftanding diltant in pairs; and grinders tuberculated; in other refpeets they retemble the lemur. In the genus Loris the head is rounded, the muzzle fhort; incifive tecth in cach jaw four, the lower ones directed forwards; eyes very open; cars moderate; noftrils fituated on the fides of the nofe; no tail, but in its place a tubercle; pectoral teats four; this confits of two fpecies, lemur tardigradus, Linn.; and lemur gracilis, Geoff. Galago, the fourth genus, is diltinguified by the rounded form of the head, fhort muzzle, two incifive teeth in the upper jaw, very remote; in the lower one fix ; grinders with pointed tubercles; noffrils placed at the fides of the nofe; ears naked, fometimes very large; anterior legs fhort, polterior ones elongated; fecond finger of the hind feet fhorter than the reft; 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 laft of thefe 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 fhorter than the incifive ones; the grinders with pointed tubercles; pofterior thanks uncommonly long; tail long and tufted; ears large and naked. This genus, which can fcarcely, perhaps with propriety, be referred to the Gmelinian lemur, althongh partially affented to by fome authors, comprifes tarfus daubentonii of Geoffroy (lemur tarlius, Pallas), and didelphis macrotarfus, Gmel. ; with two others, one lemur fpectrum of Pallas, the other tarfus Fifcherii, Nob.; a fpecies very recently defcribed, and named Fifcherii after profeffor Fifher, by whom it was firit introduced to general oblervation.

LEMURES, in Antiquity, fprites or bobroblins ; reflefs 'ghofts of departed perfons, who return to terrify and torment the living.

Thefe are the fame with larvx, which the ancients imagined to warder round the world to frighten good people, and plague the bad. For which reafon, at Rome they had Lemuria, or feaits inftituted to appeafe the manes of the defunct. Sce Lares.

Apuleius explains the ancient notion of manes thus: the fouls of men, releafed from the bands of the body, and freed from performing their bodily functions, become a kind of dæmons or genii, formerly called lemures. Of thefe lemures, thofe that were kind to their families, were called lares familiares; but thofe who, for their crimes, were condemned to 'wander continually, without meeting with any place of relt, and terrified good men, and hurt the bad, are vulgarly called larva.

An ancient commentator on Horace mentions, that the Romans wrote lemures for remures; which laft word was formed from Remus, who was killed by his brother Romulus, and who returned to earth to torment him.

But Apuleius obferves, that in the ancient Latin tongue lemures fignifies the foul of a man feparated 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 inftitution of this feaft is afcribed to Romulus, who, to rid himfelf of the phantom of his brother Remus (whom

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he had ordered to be murdered) appcaring always before him, ordained a featt, called after his name Remuria, or Lemuria.

In the Lemuria, they offered facrifices for three nights together, duringall which time all the temples of the gods were fhut up, nor were any marriages permitted. There were many ceremonies in this fealt, chiefly intended to exorcife the lemures, and prevent their appearing, or giving any difturbance to the living.

LENA, in Geography, the greateft river of Eaftern Siberia. It takes its origin on the north-weftern fide of the Baikal, in a morafs; runs at firlt wettwards, then to the diftrict of Yakuthk caftwards, and laflly towards the north, where, after having divided itfelf into five great branches at its mouth, and thereby formed four confiderable ifands, it flows into the Frozen ocean. Its courfe is computed to be 5000 verts. Its fource is in N. lat. $52^{\circ} 30^{\prime}$, its mouth in $73^{\circ}$ lat., and the eaftern arm in 153, and the weftern in $143^{\circ}$ of longitude. This river has in general a very gentle current; its botiom is moftly fandy, and the fhore only in the upper regions befet with hills and cliffs. Of the numerous rivers which it takes up in its courfe, the largeft are the Vitim, the Olekma, the Viluy, and the Aldan. Out of the Lena travellers pafs into the Aldan, from that into the Maia, from the Maia into the Yadona, and from this they have but a fhort route to make by land to Okhotk: Tooke's Ruff. Emp. vol. i.

Lena, a harbour on the W. coaft of Mindanao. N. lat: $6^{\circ} 4^{2}$. E long. $122^{\circ} 12$.

LENEA, Arvasa, in Antiquity, a fẹtival of Bacchns, furnamed Lenaus, from $\lambda$ nvo:, i. e. a wine.prefs. Befides the ufual ceremonies at feafts* facred to this god, it was remarkable for poetical contentions, and tragedies acted at this time. Putter's Archrool. lib. ii, cap. 20. tom. i.' p. 412.

LENATO, in Geography, a town of Italy, in the department of the Olona ; 5 miles S . of Milan.

Lenberan, a town of Perfian Armenia; 168 miles E. of Erivan.

LENCLOISTRE, a town of France, in the department of the Vienne, and chief place of a cantom, in the dittrict of Chateilerault; it miles N. of Poitiers. The place contains 2114 , and the canton 7350 inhabitants, on a territory of $182 \frac{1}{2}$ kiliometres, in mine communes.

LeNCLOS, AnNe, or Ninon de, in Biography, an ilIuftrious 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, fhe determined to adopt a mode of life fuited to ber inclinations. She had already derived her philofophy from the works of Charron and Montagne: The was beautiful, and by much attention became very accomplifhed, and qualified for the company of the moff cultivated perfons of her time. Amorous in her conftitution, and licentious by principle, fhe refolved to give free indulgence to the tender paffion, without the fhackles of a ferious 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 fafhion. She was complimented and confulted by the moft eminent writers of that time, and her friendifip was fought by fome of the molt refpectable of her own fex. She was intimate with madame de Maintenon, when the wife and widow of Scarron, who wihhed to engage Ninon

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to live with her, when a partner in the throne, to difpel the dreadful ennui which was the price of her clevation. Ninon preferred her liberty to the prifon of a palace, and as fhe retained her perfonal charms to a late period, and her mental attractions to the clofe of life, fhe was very long the object of admiration, and had the honour of forning more than one generation of young men of faflion. Mothers, fo licentious was the agc, were pleafed to fee their fons in her train, as fle always promoted decorum, and the air of good company ; and it was univerfally admitted that the was capable of difinterelted friendihip to thofe who confided in her. If fhe were all object of envy to bye-ftanders, the was, at the fame time, confcious of having miltaken the way to true happinefs; zior in one of her letters to St. Evremond, fie fays, "Every one tells me that I have lefs to complain of time, than any other perfon. Howerer that may be, if fuch a life, as I have fpent, had been propoled to me as my lot, I would have hanged myfelf rather than have pafted 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 Levtscuitz, in Geography, a town of the duchy of Warlaw, formerly capital of a palatinate of the fame name in Poland; furrounded with a wall and moat, and defended by a cattle 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 Warfanv. N. lat. $51^{\circ} 52^{\prime}$. E. long. $19^{\circ} 17^{\prime}$.

LENCZNA, a town of Poland, in the palatinate of Lublin; 16 miles N.E. of Lublin.

LENDAR, a town of Iftria; 19 miles E. of Capo d'Ifria.

LENDENARA, a town of Ttaly, in the Polefe di Rovigo; containing two churches and four convents; 8 miles W. of Rovigo.

LENDORA, a town of Ruffia, in the government of Olonetz; 100 miles W.N.W. of Povenetz.

LENE Lougri, a lake of Ireland, in the county of Weltmeath, near the fmall town of Fore.

LENES, a fmall ifland in the North fea, near the coalt of Norway. N. lat. $67^{\circ} 40^{\prime}$.

L'ENFANT, David, in Biography; a French Dominican friar, was born at Paris in the year 1603 . He embraced the ecclefialtical life at the age of feventeen, and manifefled a moft ardent thirft for knowledge, together with very uncommon literary induftry. He died in the year s688, at the age of eighty-five. His principal work is "A General Hiftory of all Ages," in three vols.; which was afterwards extended to fix volumes. He alfo publifhed "Sancti Bernardi Abbatis Biblia," containing a collection of all the illuftrations of texts of fcripture difperied throughout the works of that author; and fimilar works refpecting biblical illuftrations of St. Auguftiné, and St. Thomas Aquinas. Moreri.

L'Enfant; Jamies, an eloquent as well as very learned French Proteitant divine, was born at Bazoche in the year ${ }^{1661}$. He purfued his theological ftudies at Saumur, under Lewis Cappel, profeffor of Hebrew, and afterwards at Geneva. In 1683 he left Geneva, and was admitted in the following year to the exercife of the miniltry at Heidelberg, and ordained paftor of the French church in that place. Owing to his fuperior pulpit talents he was appointed chaplain to the dowager electrefs palatine. In 1688, on the in.vafion of the palatinate, he removed to Berlin, and was appoiated paftor of one of the churches. He was in a fhort

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time nominated preacher to the queen of Pruflia. In 1707 we find him in England, and nomisated 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 are of fixty-feven. His publications were numerous in divinity, eculefiaftical hinory, criticifm, and polite literature. Thofe which are held in the highelt eftimation are his "Hiftories of the Councils of Pifa, Confance, and Bafil." Thefe hifories are written with great ability and impartiality, and they abound with intereffing facts and curious refearches. "'Enfant, in conjunction with M. Beaufobre, publifhed "The New Teftament tranfated from the original Greck into French," in two volumes 4 to. with notes, and a general preface, or introduction to the reading of the holy fcriptures, u'eful for ftudents in divinity. He is known alfo by his "De Inquirenda Veritate," which is a tramflation of Malebranche"s "Scarch after Truth;" "The Hittory of Pope Joan ;" "Poggiana, or the Life, Charatter, Opinions, \&c. of Poggio, the Florentine, with the Hitory of the Republic of ${ }^{\text {Florence," and other works. Moreri. }}$

LenGa de Bazasa, in Geography, a province on the coaft of Caramania. N. lat. $36^{\circ} 33^{\prime}$. E. long. $34^{\circ} 11^{\prime}$.

LENGEFELD, a town of Saxony, in the circle of Erzgcburg; 12 miles S.E. of Chemnitz. N. lat. $50^{\circ} 40^{\prime}$. E. long. $3^{\circ} 7^{\prime}$.

Lengefeld, or Lengenfeld, a town of Saxoriy, in the Vogtland; 10 miles S.s.W. of Zwickaw. N. lat. $50^{\circ} 27^{\prime}$. E. long. $12^{\circ} 22^{\prime}$.

LENGER, a town of Perfia, in Khorafan; 162 miles N.N.W. of Herat.

Lenger Kuran, a town of Perfia, in Ghilan; 120 miles N.W. of Refhd.

LENGFURT, a town of Germany, in the county of Wertheim; 12 miles S.S.W. of Wertheim.

LENGHIER, a town of Perfia, in Khorafan; 7o miles E. of Herat.

LENGIUM, a town of Sweden, in Welt Gothland; 42 miles E . of Gothenburg.

LENGLET, du Freskox, Nicholas, in Biograpby, was born at Beauvois in 1674 . He applied himfelf particularly to the ftudy of theology, and compofed feveral works in a ftrain of freedom, which attracted the cenfure of the Sorbonne, and other eftablifhed bodies. Difgufted with the oppofition which he met with, he quitted divinity for politics, and in 1705 was fent by Torcy, minifter for foreigr affairs, to refide at the court of the elector of Cologne, as fecretary for the Greek and Latin languages. He was entrufted with the management of the foreign correfpondence with Bruffels and Holland, by means of which he became acquainted with various plots againft the French interelt. Lenglet returned to France at the conclufion of the war, and employed himfelf in many literary works. In $y^{21}$ he went to Vienna, and was appointed librarian to prince Eugene, a polt which he did not long retain, on account of fome mifconduct. Owing to this circumftance, he always remained in indigence, though he had friends that would have raifed him to a better condition. Some of his writings were compoled in fo free a fyle as to caufe the author to be imprifoned feveral times in the Baltile. He was accidentally burnt to death in the year 1755 , in his eighty-fecond year: Of his various works we may notice thofe which are moft efteemed, viz. "Méthode pour étudier l'Hiftoire, avec un Catalogue des principaux Hîtoriens," 12 vols.; "Méthode pour étudier la Géographie," with maps; "Hiftoire de la Philofophie Hermetique,", and "Tablettes Chronologiques de l'Hitoire Univerfelle," two vols. 1744. An enlarged
edition of this wark was publifbed in 1777 , by Bruyere, 10 which we have been indebted in the courfe of our inquiries. Muscri.

I, ENGO Spracimno, in Geomerosep, a town of Africa, in Congo: +5 miles S.S.WV. of Bombi.
 oon: liasts, is to make him ges round in two treads, at a walk or tro, "ppon a fpot of ground fonarow, that the horfe's homelnesbeing in the centre of the volt, bis own Iougth is much about the femidiameter of the volt; the horfe thll whank between the two bels, without putting out his croub, or going at lalt faller or flower than at lirlt

LENGIHENANG, in $\boldsymbol{N}^{*}$ aral Aicbitalure, is the onesation of feparatins a thip athwart the midhips, and adeing a certain portion to low length. It is performed by clearing all the fallenings near the butes of thofe planks as may be retaned, and the orhers are cot afmender. 'The after end is then drawn or lumehed apart to the required diflance. The kee! is then madc good, and a fuficient rymber of floors cro fed, and timbers raifed to fill up the vacaney froduced by the feparation. The keelfon is then replaced to give good thift to the fearfs of the keel. The planks on the outfide are then replaced with a proner Rhift, alfo the clamps and footwaling infide. As maty beams ats are neceffary are next placed athwart and kneed, the decks made good, and the fhip completed in all refpects as before. Sometimes fhips are fhortened in a fimilar manner.

LENGUR, in Gcograply, a town of Perfia, 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 diftrict, North Carolina, furrounded by Glafgow, Craven, Jones, and Dauphin; containing 3898 free inhabitants, and 1457 flaves. The chief town is Kingtton.

LENIS Spibites, in Profody. See Spirit:
LENITIVE, in $P b_{y} / i f$, fometimes denotes a foftening, reflutive remedy, that moittens the parts difeafed, and difilpaes any fharp humour collected there.

Levirive is more frequently ufed for laxative.
Lexitive Elftuary is more peculiarly ufed for a gentle pargincelectury. See Erectuany of Sonna.

LENKERAN, in Gcograply, a town of Perfia, in the province of Ghilan, near the Calpian fea. N. lat. $28^{\circ} 40^{\prime}$. E. long. $49^{\circ}$.

LENNAN, LA, a town of Teru, in the diocefe of La Paz; 27 miles N. óf Potedi.

LENNEP, a town of the dur hy of Berg, inhabited for the moit part by Lutherans; 20 n iles E.S.E. of Duffeldorf. N. lat. $5 I^{\prime} 9^{\prime}$ E. Iong. $7{ }^{\circ} 1 \mathrm{~S}^{\prime}$.

LENO, a harbour on the W. coaft of the inand of Mindamao.

LENNICK-SAint-MARTIN, a town of France, in the department of the $D y l e$, and chief place of a canton, in the ditrict of Bruffels. The place contains 5559, and the canton 10,606 inhabitants, on a territory of 120 kiliometres, in 12 cummunes.

LENOS, in Hippocrates, denotes an old machine for reducing fractures and diffocations.

LENOX, in B:ografly, See Ricminnd, Duke of.
Levan, in Gcografley, an ifland in the Mergui Archipelago, about five miles in circumference. N. lat. $)^{\circ} 2^{\prime}$.

Lexox, the fhire town of Berkihire county, Maffachusetts; it is a pleafant and thriving town, and has a court houfe and a ranal. The river Houfatonick traverfes the town; 145 miles $N$. of Bofton. The number of inhabitants is 1041 .

Lrwox Cafle, a polt-town of Duckingham county, North Caroliata: 390 miles from Wafhingeon.

LENS, in Diopsies, properly fignibies a fmall, roundifa ghafs, of the ligure of a lentil; but is extended to any detached portion of a tranfparent fubltance, of which the oppofite fides are regular polithed furfaces of fuch forms as may be deferibed by lines revolving round a common axis; or to any optic glafs, not very thick, which either collects the rays of light into a point, in their paflage through it, or difperfes them farther apart, according to the laws of refraction. A lens is generally fuppofed, in fimple calcuiations, 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 cllipfes, 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 fpherical 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 fpeak accurately, the former are called plano-convex, and the latter, double convex. Again, fome are plane on one fide, and concave on the other; and others are concave on both fides, which are both ufually ranked among the concave lenfes; though, when diltinguifhed, 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 sonveso-concave, or concavo-convex lenles. The figures of all thefe are fufficiently defcribed by their names (fee alfo Plate VI. Optics, fig. 5.); except that the term menifcus, which properly implies a litale moon or crefcent, is applied in general to all kentes 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 diltinguifhed by the term con-cavo-convex. See Mexiscus.

When the particular figure is not confidered, a lens that is thickeft in the middle is called a convex lens; and that which is thinnelt in the middle is called a concave lens, withon farther diltinction.

It is to be here obferved, 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 fpherical, paffes 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 thofe whofe foci are in the asis of the lens: but if one of them be plane, it falls perpendicularly upon that, and soes 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. 'Ihis is the cafe, when the lenfes are thin, as they are ufually fuppofed 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 mult pafs flraight through the lens without fuffering any refraction; but when it falls obliquely upon it, it mult emerge out of the lens in a direction inclined to its former direction. Thus, if the rays of light, which,
infuing from the luminous point A, (Plate VI. Optics, fig, 6.) fall upon the lens 1 E , the ray A C , which proceeds in the dircction of the axis of the ms, mult pafs ftraight through it ; but the ray A B, falling obliquely upon the furface of the lens, mult be refracted, or bent, and if the lens be a plano-convex, or double convex, that ray muft be bent inwardly, that is, towards the axis; confequently it mult interfect the axis in fome point, as $l$. This pent $F$ is cailed the refrafced focus of that ray, or rather of the rays A 13 , A E, Sec. which fall upon the iens at equal diftances from the axis A C, and whish all mect and crofs at the fame point F ; but the point A from which they iffue, is called the raduant point, or the focus of incid.nt rajs; and both thefe points, in reference to cach other, are cailed the conjugate foci. If a lens be concave, as in fig 7 , then the oblicque rays A B, A E, \&ce will be bent outwardly, or from the axis; in which if the refracted rays be fuppofed to be continued backwards until they meet the asis as at $F$, then the point $F$ is called the rirtual forus of the refrated rays, being in fact the centre of divergency of the rays. In this cafe the conjurgate foci are both on the fame fide of the lens; riz. the real focus of incident rays, and the virtual focus $F$ of the refracted rays $\mathrm{B} \mathrm{G}, \mathrm{D}$, ES. It is to be obferved, that all the rays which fall upen the furface of a lens, whether it be convex or concave, will not meet at one and the fame point when the lens is consex, nor have a common sirtual focus when it is concave; but thofe rays which are more dittant from the axis, after the refraction, meet fooner than thofe which are nearer to the axia; and this efficet is greater in proportion as the furfaces of the lens are farther from each other, and confit of larger fpherical fegments. Hence a glafs globe renders the above-mentioned effect very confpicuous; and hence the lenfes are made as thin as poffible: but in all cafes, a lens which contifts of fpherical furfaces, 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 alfo farthert 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 anyle with each other at the axis, or principal focus, and are calied "caultics by refraction" (fee Caustic); which are real in convex lenfes, but imaginary in thofe that are concave. When the lenfes are thin, and their fophericity not very great, thefe caultics are fo trilling 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 difortion of the object to an eye that looks through them. This aberration may be exhibited experimentally by covering one fide of a glafs globe or thick lens with a circular piece of brown paper, having a row of equidiltant pin-holes in its diameter. Let the light which paffes through thefe holes, and through the lens, fall upon a piece of whine 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 fpots of light upon it are at equal diltances from one another fucceffively; 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 fpots 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 caufes a much greater imperfection in lenfes. For an account of both, fee Abrhimios. Notwithltanding thefe
aberrations, siafs lenfes, that are not very thick, are reckoned to have a determinate focus of refracted rays, onginally iffuing from a fumgle radiant point; and the diftanco of that focus from the furfuce of the lens is called the focal diffance of thefe rays. In order to preparc the way for determining their focal diflance, 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 pafies 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 tituateri, that if two planes touch the furfaces at thefe points, they may be parallel to each other. That ray or part of a pencil of light, which ahus paffes through the lens, without benng bent, is called the axis of that percil, and this axis palth3 through the center of the lens. When rays of light falt upon the fame lens with different inclinations, it is eviderit that after the refraction, they mult have their foci at different diflances from the lens. When rays of light come parallel to each other, fuch as thofe which come from a point of the fun's furface, or from any other ditant point, and fall perpendicularly, or nearly fo, upon the furface of a lens; then the focus of thefe rays, after refraction, is called the grometrical focus, or the principal focus of that lens, and its diltance from the lens the principal focal diltance of that lens. The principal focus of a lens may be found either experimentally or by computation. In a plano-convex, dou-ble-convex, or menifcus, the principal focus is real ; in the other lenfes the focus is virtual. See the Thcory of Lenfs demonffoted under Rarractios and Dioptrics, ard the application thereof under Mícroscope, Telescore, Buks-ixg-glass, and Focus.
Some confine lenfes within the diameter of five or fix lines, and will have fuch as exceed that diameter cailed lenticular glafes.

Lenfes are diftinguifhed, with regard to the manner of their preparation, into ground and blocun.

Lexses, Blown, are little globules of glafs, melted in the fame 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 aifh , or bafon, of the diameter of the lens required. Then a piece of clear glafs is cemented, on one of its flat fides, to the end of a little maundrel, with black Spanifh wax ; and thus ground, on the fide not cemented, on a grinditone, with water, till it hath nearly acquired a convex figure. It is finithed in the lathe, by turning it in the bafon, with fine wet fand, grit-ltone, or emery. The grit mult be often repeated freh till the lens appear very round; when it is come to that point, they ceafe to take any frefh ftone, but continue to turn it in the bafon, till the remains of the fand are become fo fine as to have polifhed 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 polifh. The bafon is then covered, withinfide, with two or three folds of linen, and the polifh finifhed with putty, or tripoly of Venice fteeped in water. It is known to be perfectly polifhed, when, viewing it with a magnifier, there appear no fcratches of the fand. The cement is then broken off, and the fide polifhed cemented, to work and grind the other, as before, till the edges of the lens be become fhapp, and it be perfectly polifhed on either fide. When finifhed, it is wafhed in fpirit of wine, to take off all remains of the wax.

According to the mode now generally practifed, optical glafes are fixed on blocks by means of a cement, and ground with emery by a tool of proper convexity or con.

## LENS.

cavity; if they are fmall, a large number is fixed on the blocks at the fame time. The tool is fometimes firlt turned round its axis by maehinery, and when the lenfes are to be finihed, a compound motion is given to it by means of a crank; and in order to make it more fmooth, the wheels turn each other by brufhes inllead of cogs. The point of the lens where its two furfaces are parallel, is determined by looking through it at a minute object, while it is lixed on a wheel with a tubular axis, and fhifting it, until the object appears no longer to move; a circle is then defcribed, as it revolves, in order to mark its outline. The difhes in which lenfes are fometimes ground are of bell metal; and the emery is prepared by clutriation.

In the Philofophical Tranfactions we have the figure of a machine for grinding lenfes fpherically: It is a contrivance to turn a Sphere at one and the fame time on two axes, interfecting each other at right aingles, with an equal velocity and preffure on each. See the Tranfactions, $\mathrm{N}^{\circ} 459$. feet. I. See Grinding of Optic Glaffes.

Lenses, for conver, 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, fy. 8.), and parallel to it, ftriking on the plase furface of a plano-convex lens, directly oppolite 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 FL , that is, the diltance of the centre from the point of concourfe, or focus, will be to the diltance of the centre, from the convex furface, in the ratio of the refraction.

For the plane furface being direcly oppofed to the luminous body, the ray $\mathrm{E} G$ is perpendicular to $\mathrm{A} B$, and therefore will pafs unrefracted to H : thus it ftrikes on AHB , ftill parallel to the axis; and therefore coming out of a denfer medium into a rarer, it will meet with the axis of the lens in F: and fo as that C F will be to FL in the ratio of the fine of the refracted angle to the fine of the angle of incidence: as will be demoniftrated under the head Refraction.

And, therefore, C F - FL, or CL is to FL as the difference of thele fines is to the fine of the angle of incidence; and CF-FL, or C L is to C F as the fame difference is to the fine of the refracted angle.

If then the refraction be out of a glafs lens into air, C F: FL: : $3: 2$, or C L : FL:: $1: 2$, and CL:CF:: $1:$ 3 ; and therefore $\mathrm{FL}=2 \mathrm{CL}$; that is, parallel rays, near the axis, will concur with it at the diftance of the diameter. Moreover, if parallel rays pafs out of air into glafs, it will be CF:FL::2:3, and CL:FL:: $1: 3$, and C L: CF:: I:2. It is evident from hence, that if C L be diminifhed, without any variation in the refracting power, FL would alfo be diminifhed. 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 $\mathrm{FL}=3 \mathrm{C} \mathrm{L}$; i.e. parallel rays, near the axis, will concur with it at the diftance of a diameter and a half. It is eafy 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, diftant from the furface 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, Atrike on its convex furface A HB, after a double refra ion, it will meet the axis in F ; fo as that H G will be to G C, and $G \mathrm{D}$ to FD , in the ratio of the refraction.

For the ray K I, parallel to the axis E G, by virtue of
the firft refraction in I, will tend to the point G, fo that G H will be to GC in the ratio of the fine of the angle of incidence to the fine of the roracted angle : therefore, by virtue of the fecond refraction in L, it will concur with the axis in F; fo that GD will be to FD in the ratio of the fine of the refracted angle, to the fine of the angle of incidence. Sce Remiaction.

So that the femidiameter, and thicknefs of the planoconvex lens, with the ratio of refraction, being given, we Thall have a method of determining the focus of parallel rays ftriking on the convex furface. For, if the ratio of refraction be expreffed by $n: m, \mathrm{H} G: \mathrm{GC}:: n: m$; therefore $n-n: n:: \mathrm{HC}: \mathrm{HG}$; and $\mathrm{HG}=\frac{n}{n-m}$ $\times \mathrm{HC}$ : from which fubtracting the thicknefs of the lens, DH , and $\mathrm{GD}=\frac{n}{n-m} \times \mathrm{HC}-\mathrm{HD}$. Then fince the ratio of GD to FD is the given ratio of refinction, $\mathrm{FD}=\frac{n}{n-m} \mathrm{CH}-\frac{m}{n} \mathrm{HD}=$ (rejecting the quantity $\frac{m}{n} \mathrm{HD}$ as very fmall) $\frac{m}{n-m} \mathrm{CH}$.

Hence, if the lens be glafs, FD $=2 \mathrm{CH}-\frac{2}{3} \mathrm{HD}$. So that if two thirds of the thicknefs of the lens be inconfiderable, (as in practice it ufuaily happens,) paraliel rays meet with the axis at the diftance of the diameter from the lens, even when they itrike at a convex furface.

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 fpace, if the convex furface, than if the plane one, be turned towards the fun.

If the lens were full of water, $\mathrm{FD}=3 \mathrm{CH}-\frac{3}{4} \mathrm{HD}$, and therefore, if $\frac{3}{4} \mathrm{HD}$ be inconfiderable, $\mathrm{FD}={ }_{3} \mathrm{CH}$, or if $\frac{1}{4} \mathrm{HD}$ be inconfiderable, $\mathrm{FH}=3 \mathrm{CH}$. Parallel, and near rays, therefore, are united at the diftance of a diameter and a half, if the refraction be in water, even when the convex furface is oppofed to the luminous body.
3. Hence, alfo, arilies a method of determining the focus of parallel rays ftriking on a lens convex on both fides, the two femidiameters, and the thicknefs of the lens, being given.

For if the ray H I, (Plate VI. Optrics, fis. 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 GE:GC and DK:D O have the ratio of refraction. And GD will be to GK as GO to GF. Since EG: GC in the ratio of refraction, the ray HI will tend to the point G ; and if DK be to DO in the ratio of refraction, after the fecond refraction at its egrefs, it will meet the axis in $F$, and GD:GK :: GO:GF. See Refraction.
And therefore, GD: DK :: GO:FO. Let the ratio of refraction be that of $n: m$, then $\mathrm{GE}: \mathrm{GC}:: n: m$, and D K: DO:: $n: m$; and, therefore, $n-m: n:: \mathrm{CE}:$ GE , and $n-m: n:: \mathrm{KO}: \mathrm{D} \mathrm{K}$; wherefore if the ratio of refraction and the femidiameters CE and KO are given, GE and DK may be found: and fince $\mathrm{GD}=\mathrm{DK}+\mathrm{EG}$ -EK , and $\mathrm{GK}=\mathrm{GE}-\mathrm{EK}$, and $\mathrm{GO}=\mathrm{GE}+$ KO-EK, and GD:GK::GO:GF; GF may be found: moreover $\mathrm{GE}-\mathrm{GF}=\mathrm{EF}$. If EK be rejected as very fmall, $\mathrm{GD}=\mathrm{DK}+E \mathrm{G}, \mathrm{GK}=\mathrm{GE}$, and $\mathrm{GO}=\mathrm{GE}+\mathrm{KO}$; and therefore, $\mathrm{DK}+\mathrm{EG:GE}$ $:: G E+K O: G F$.

## L E N S.

Hence, if the lens be ghafs, fince $G E=3 C E$, and $\mathrm{DK}=3 \mathrm{KO}, 3 \mathrm{KO}+3 \mathrm{CE}: 3 \mathrm{CE}:: 3 \mathrm{CE}+\mathrm{KO}:$ GF ; confequently $\mathrm{KO}+\mathrm{CE}: \mathrm{CE}::{ }_{3} \mathrm{CE}+\mathrm{KO}$ : G F. And fubltituting for $\mathrm{K} \mathrm{O}, a, \mathrm{CE}, b$, and $\mathrm{GF}, x$, $x=\frac{3 b b+a b}{a+b}$, and FE or FK, (rejecting E K) $=3 b$ $-\frac{3 b b+a b}{a+b}=\frac{3 a b+3 b b-3 b b-a b}{a+b}=\frac{2 a b}{a+b}:$
therefore the fum of the femidiameters $\mathrm{KO}+\mathrm{CE}$ is to the double of one of them, or 2 CE , as the other KO is to F IK the ditance of the focus from the lens.

If the glafs lens were equally convex on both fides, then $\mathrm{KO}=\mathrm{CE}$, and $2 \mathrm{CE}: C \mathrm{E}: \downarrow^{4 C E}: G \mathrm{~F}$, and there-
fore, $\mathrm{GF}=2 \mathrm{CE}$; and $\mathrm{FK}=\frac{2 a^{2}}{2 a}=a=\mathrm{EC}$; i.e. the diftance of the focus from the lens is equal to the radius of convexity.

If the lens were full of water, fince $G E=4 C E$, and $\mathrm{DK}=4 \mathrm{KO}, 4 \mathrm{KO}+4 \mathrm{CE}: 4 \mathrm{CE}:: 4 \mathrm{CE}+\mathrm{KO}$ : GF; confequently $\mathrm{KO}+\mathrm{CE}: \mathrm{CE}: \mathrm{I}_{4} \mathrm{CE}+\mathrm{KO}$ : G F. Wherefore fubftituting as before $x=\frac{4 b b+a b}{a+b}$, and FE or FK $=4 b-\frac{\overline{4 b b+a b}}{a+b}=\frac{3 a b}{a+b}$ : confequently the fum of the femidiameters $\mathrm{KO}+\mathrm{CE}$ is to the triple of either, 3 C E, as the other KO is to FK , the diftance of the focus from the lens.

If this lens were equally convex on both fides, we fhould 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 diflance 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 thicknefs of the lens in the middle and at the edge, and alfo its breadth; then it will be, as the difference of the above thickneffes is to half the breadth, fo is half the breadth to the focal length required. The following mathod 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 diftance 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 alfo found by the following methods : darken a room, fo that no light fhall enter into it except through a tube in one of the window-fhutters; then, placing the lens againt and clofe to this hole, move a white paper behind it, till the picture of a particular object, directly facing the lens, appears moft diftinct, and there fix the paper; then meafuring the diftances betwixt the paper and the object from the lens refpectively, there wiil be fufficient data for finding the focal length required. Let $Q P$ (ffor. in.) be the object without doors, A the lers in the window-hhutter, $q p$ the place of the paper where the image of $Q P$ is moft diftinct, and $\mathrm{Q} \mathrm{A}_{q}$ the axis of the lens. Having meafured the diftances $Q A, q A$, it will be, $Q q$ : $Q A: Q A:$ $Q F ;$ and $Q A-Q F=A F$ the focal length required.

The focal length of any lens, it is ohferved, is in ftrictnefs the diftance from its principal focus to the refpective focal centre: and in the example above given, the diftances brtwixt the focal centres of the lens fhould have been fubtracted from $Q q$, and for $Q A$ we foould have taken the diftance from $Q$ to the nearelt focal centre. But in experiments of this kind, thefe niceties would be fuperhous. Moreover, in the above experinent, 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 fenfe will be equally diftinct. Having found nearly the place of $q$, move the paper from thence both ways along the axis, till an indiftinctenefs begins to be per. ceptible in a particular fimall 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 diltance off, that the image of the window-fafh may be dif. tinct upon the oppofite wainfcot : then computing as above, the window-fafh being now the object. And for common purpofes, when the focal length of a lens is but fhort, this length may be reckoned the diftance from the lens to the place where the image of a remote object appears moft dif. tinct. For if the object be diftant from the lens 100 or 1000 times the focal length, the image will be beyond the principal focus only the ioodth or 1000dth 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 molt diflinct, the lens be exactly in the middle betwixt the other two; then half the dittance 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 meafured the refpective diftances, the focal length may be found in the manner already ftated. Or, if a fmall hole, of about one-fourth or one-eighth of an inch broad, be made in the window-fhutter of a darkened room, and a lens and a paper be held behind this hole at proper diftances ; the place where the image of the hole is moft diltinct may be determined very accurately, and fo the focal length of the lens may be found as above. Again, place the lens fo that its axis may point as nearly as polfible towards the fun; then holding a paper behind it, the burning point, or that in which the fun's image is fmalleft, and when its limb appears moft diltinct, is the focus of the lens. See thefe various methods illuftrated more at large in Harris's Optics, book ii. $\$ 4$.

On the principles above illuftrated is founded the fructure of refracting burning-glaf ${ }_{e s}$, the fun's light and heat being exccedingly 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 compafs; fo that it is no wonder they burn fome bodies, melt others, and produce other extraordinary phenomena. See Burning Glafs.
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 cafe the refracted rays become the incident rays, and vice verfâ; and confequently the refracted are parallel. Hence, by means of a convex lens, or a little glás bubble full of water, a very intenfe light may be projected to a valt diftance.

And this furnifhes us with the ftructure of a lamp, ois lantern, to project an intenfe light to an immenfe diftance;
for a lens, convex on both fides, being placed oppofite to a concave mirror, if in the common focus of both be placed a lighted candle, or wick, the rays reflected back from the mirror to the lens will be parallel to cach other; and after refraction will converge, till they concur at the ditance of the fern-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 intenfe light mecting with another cumally intenfe, at the diltance of the diameter from the lens, the light will be furprifing; and though it aftervards decreafe, yet the parallel and diverging rays guing a lons way together, it will be very great at a very great diflance. Lamterns of this kind are of confiderab'e fervice in the night-time to difcover remote objects, and are ufed with luccefs, by fowlers and fifhermen, to gather their prey together, in order to take them.

If it be required to have the light, at the fame time, tranfmitted to feveral places, as through feveral ftreets, \&c. the number of lenfes and mirrors is to be increaled.

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 conftitute feveral trains, or parcels of rays, parallel to each other.
5. The images of objects, oppofed in any manner to a convex lens, are exhibited, invertedly, in its focus.

Hence, if a paper be applied to a convex lens (efpecially in a dark room) at the diftance of its focus, the images of oobjects fhining upon it will be reprefented dittinctly, 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 eclipfes, the fun's image, eclipfed as it is, may be burnt by a large lens on a board, \&c., and exhibit a very entertaining phenomenon.

Hence, alfo, if a conrex lens, of any kind, be expofed both to nearer and remoter objects, and a paper at the fame time be applied, fo as to receive the images of objects diltinetly, the diftance of the focus from the lens, and thence the diameter of the convesity, may be determined, See the above.
6. If a concave mirror be fo placed, as that an inverted 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 to appear erect in the firit cafe beyond the centre; and in the latter, between the centre and the focus. On thefe principles is conitructed the camera obfoura, which fee.
7. The diameter of the image of an object delineated beyond a convex lens, is to the object itfelf in the ratio of the diftance of the image to that of the object.

Since then the image of a remoter object is lefs diftant from the lens than that of the nearer, the image of the more remote will be lefs than that of the warer. And becaufe the diftance of the image from the lens is greater, if the lens be a fegment of a greater fphere than of a lefs; 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 bittle hole upon a wall, at the fame diflance from the hole at which the focus is from the lens. When an object is lefs diltant from a lens than the focus of parallel rays, the diftance of the image is greater than that of the wbject; otherwife the diftance of the image is lefs than that of the object ; in the former cafe, therefore, the image is greater than the object ; in the latter leifs.

If the images be made greater than the objects, they will not appear ditinctly; becaure in that cafe there are fewer
rays which meet after refraction in the fame point; whence it happens, that rays proceeding from different points of an object terminate in the fame point of an imare, which is the caufe of confufion. Hence it appears, that the fame aperture of a lens may be admitted in every cafe, if we would keep off the rays which produce confufion. However, though the image is then more dittinct when no rays are admittel but thofe near the axis, yet for want of rays the image is apt to be dim.
8. 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 diftance of the object from the eyc, to that of the eye from the lens, if it be near; but infinitely, if remore.

The theory of real images may be thus illuftrated by at experiment. Upon a long table draw the line BDD (Plate VIII. Optics, fis. 1.) and over fome point there as A, place the consex lens $O$, whofe principal focules are $F, f$, fo that the axis $\mathrm{F} f$ of the lens be parallel to BD. In the line $B D$, take AF, Af, each equal to OF or Of in the axis $Q q$. On one lide of $A$ divide the line $A B$ into the parts $1,2,3,4,8 \mathrm{cc}$, each equal to $\mathrm{A} F$; and on the other fide take $f$ a cqual to $A f$ or A F , and divide it into $f_{\frac{1}{2}, f \frac{z}{3} \text {, }}^{\text {, }}$ $f \frac{1}{3}$, sic. fo that thefe parts be refpectively equal to $\frac{1}{2}, \frac{1}{3}, \frac{1}{3}$, $\mathbb{S} c$. of $f 1$ or A $f$. Then if the room be darkened, and a lighted candle be placed over any one of the divifions in the line $A$ ID, as at 2 ; the image of the candle will be feen diftinct but inverted, upon a paper held over the correfponding fiaction on the other fide, as at $\frac{\mathrm{J}}{2}$. If the candle be placed at the point 3 or 4, sc. the paper for receiving the image mult be held over $\frac{1}{3}$ or $\frac{2}{4}$, Sic. So that if the candle be moved from 2 to an infinite diftance, the whole motion of the image will be from $\frac{x}{2}$ to $f$. If the candle be placed at 1 , the image will be at $I$, at the fame ditance 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 formed.

Since an object placed at any diftance, and its image, fubtend equal angles at the focal centres $s, v$, of any lens; the angle under which any remote object appears being given, it will be cafy to find the diameter of its image : let $q$ (ffr.2.) be the principal focus of the convex lens O , and let the angle Ps R $(=p \not v r)$ be that under which the fun (or any other very remote object) appears to the naked eye : bifect the angle $p v r$ with the line ov $q$; then in the rightangled triangle $v q p$ or $v q r$, we fhall lave the fide $v q$ and all the angles; whence it will be eafy to find $q p$ or $q r$, the femi-diameter of the image. See Image and Refracrios.
Lesaes, for concave, their laws are as fellow.-1. If parallel rays ftrike on a plano-convex lens $K L$, and $F C$ be to FB in the ratio of refraction, the rays will diverge from the axis; and the point of divergency, or difperfion, called the virtual focus, will be F. See Plate VII. Optics, fig. 3. See Tocus.

For the ray H I, parallel to the axis, is perpendicular to K L , and will therefore pafs unrefracted to E . Wherefore FC being to FB in the ratio of refraction, F will be the virtual focus.
If then the lens be glafs, $\mathrm{FB}=2 \mathrm{BC}$; i. $e$. the virtual focus F will be diftant from the lens $\mathrm{K} L$ by the fpace of the diameter $=\mathrm{BC}$.

If the refraction be in water, $\mathrm{FB}=3 \mathrm{BC}$; ;. e e the virtual focus $F$ will be diftant from the lens $K L$ a diameter and a half 3 BC .
3. If

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2. If the ray $A \mathrm{E}$, parallel to the axis TP , frike on a lens concave on both likes: and both FC be to F B, and II to PH in the ratio of refraction; and FP: P $\mathrm{H}:$ : I: $B: B C$; $G$ will b: the point of difperfion, or the virtual foens. See Plate VII. Opties, fig - 4.

If, therefore, the ratio of the refraction be $=n: m, \mathrm{CB}$ $=a$, and $\mathrm{I} \mathrm{I}=b ; \mathrm{FB}=\frac{n a}{n-m}$, and $\mathrm{PI}=\frac{n b}{n-m} ;$ confequently, diffegarding the thicknefs of the lens, FI $=\mathrm{FB}+\mathrm{IP}-\frac{n!+n b}{n-m}$, and PII $=\mathrm{PI}-\mathrm{IH}=\frac{n b}{n-m}-b$
 $a+b: \frac{m b}{n-m}:: a: \mathrm{B} \mathrm{G}$, or $\overline{n-m} \times \overline{a+b}: m b:: a: \mathrm{B} \mathrm{G}$; i.e. $\overline{n-m} \times \overline{\mathrm{CB}+1} \bar{H}: m \mathrm{IH}: \mathrm{CB}: B \mathrm{G}$.

If, therefore, the refraction be in a glafe lens, fo that $m=2, n=3$, and $\overline{a+b}: 2 b:: a: \bar{B}$; the fum of the femidiameters C B and H I will be to the diameter of the concavity of either, 2 HI, as the femidiameter of the other CB , to the diftance of the virtual focus from the lens, B G.

But if the femidiameters H I and C B are equal, or $a=b$, $\mathrm{BG}=\frac{2 a^{2}}{2 a}=a$; or BG , the diftance of the virtual focus from the lens, is equal to the femidiametcr CB or H I . If the refraction be made in water, $n=3$ and $n=4$, and, therefore, $a+b: 3 b:: a: \mathrm{B} \mathrm{G} ; i, e$. the fum of the femidiameters CB and HI will be to a diameter and a half of either concavity, 3 HI , as the femidiameter of the other $C B$ to $B G$, the diffance of the virtual focus from the lens : in this cafe, if $a=b$, or $\mathrm{HI}=\mathrm{CB}, \mathrm{BG}=\frac{3 a^{2}}{2 a}=\frac{3}{2} a$ $=\frac{3}{2} \mathrm{CB}$, i.e. the ditance of the virtwal focus from the lens BG , is to the femidiameter BC in a fefquilateral ratio.

Hence, the fun's rays ftriking on a concave lens, their light, after refraction, will be confiderably weakened; fo that the effect of concave lenfes is oppolite 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 $\mathrm{O}, v$ (Plate VII. Optics, fig. 5.) ; and on the paper for recciving the light, defcribe two fimall circles as $a, b$, whofe centres are placed at twice the diftance apart of the centres of $\mathrm{O}, v$, and it will be beft if their diameters are alfo double thofe of $O, v$. Thus, moving the paper to or fro, till the middle of the fun's light coming through the holes $\mathrm{O}, v$, falls exactly on the middle of the circles $a, b$; that diftance of the paper from the lens will be the focal length required. For it is evident, that $a b: \mathrm{O} v:: a \mathrm{~F}: \mathrm{OF}$; or, whatever is the diftance of $a, b$, it will be, $a b-0 v$ : a $\mathrm{O}:: \mathrm{Ov}: \mathrm{OF}$, the focal length of the lens. Inftead of the paper with the holes, fmall patches may be ftuck on the lens.

The focus may be alfo found by candle-light, thus: let $Q$ be the place of the flame; $c, d$, the bright fpots upon the paper, and the point where the lines $v d, \mathrm{O} c$, produced, backwards, would interfect. To find the point $q$, it will becd-Ov:Ov:: $\mathrm{O} c: \mathrm{O} q$. Then $Q q: Q \mathrm{O}::$ QO:Q $a$, and $\mathrm{O} a$ 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 fhotter 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 $\Lambda$. Having meafured the diltances $Q q, q O$, for finding the focal lenith of the concave lens, it will be (as before) $Q$ 生: $Q O:$ $Q O: Q F$; then $Q F-Q O=O E$.
3. An object viewed through a concarc lens appears erect, and diminifled in a ratio compounded of the ratios of the fpace in the axis between the point of incidence, and the point to which an oblique ray would pafs without refraction"; to the fpace of the axis between the eye, and middle of the object; and the fpace in the fame axis between the eye and the point of incidence, to the fpace between the midele of the object, and the point the obligue ray would pafs 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 calily 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: a'l which alterations are more fenfible in oblique rays than in perpendicular ones, becaufe the angles of incidence in that cafe 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 firt.

For the further illuftration of this part of the fubject of the article before us, we fhall here fubjoin two or three propofitions; firt premifing, that all pencils of rays (fee Pexcil), refrected by a lens, excepting that whofe axis is perpendicular to both the furfaces, are faid to be oblique, and are called "oblique pencils."

If "In every oblique pencil of rays, refracted by any lens, there is one ray whofe incident and emergent parts are parallel ; anc this ray is the axis of that pencil, or that ray of it which undergoes the leait refraction." In Plate VII. Optics, fir. 7 to $:=$, let R, $r$, be the centres of the fpherical fides $\mathrm{A}, a$; and in fris. 7,8 , let $r$ be the centre of the fpherical fide $a$. In the flatteft fide of any lens whatfoever affume any point $B$, at which let a ray of light be refracted, either at its entrance into the lens, or at its emerfion out of it; draw R B perpendicular to that fide, and parall. 1 to it draw alfo $r \cdot b$ perpendicular to the other fide $a$; join $\mathrm{B} b$, then will $\mathrm{B} b$ be a ray, whofe parts $\mathrm{P} \mathrm{B}, p b$, without the lens, will be parallel. For the ray B $b$, drawn between the two parallels $\mathrm{R} \cdot \mathrm{B}, r^{b}$, is equally incined to them both, and confequently PB, $l_{p}$ are alfo equally inclined to $R \mathrm{~B}$, $r b$, (by the law of refraction,) and therefore parallel to one another. After the fame manner, whercver the phint $B$ is affumed, we can find a ray $\mathrm{B} b$, that fhall be equally inclined to both the furfacés; and therefore in cvery oblique pencil of rays there is one ray whofe incident and emergent rays are parallel. It is evident alfo, that every other ray pafting through B will be more refracted than the ray $\mathrm{B} b$; for a plane touching the lens in any other point befides 6 will be inclined to a plane touching it in 13 ; and, therefore, a ray paffing through B , and any other point belides $b$, will be bent out of its courfe, more or lefs, according as thefe pianes are more or lefs inclined. Whence the propofition is exident.
$Q q$ is the axis of an oblique pencil on the contrary fide

## LENS.

of the axis of the lens. Hence it appears, that the axis of any oblique pencil whatfoever is equally inclined to each fide of the lens, and the lefs oblique is the pencil, the nearer the point $B$ will be to the vertex $A$; and the lefs will be the dittance between the parallel rays P $\mathrm{B}, b$ o
2. In every oblique pencil of rays (figs. 7 to 12 ), the part $\mathrm{B} b$ 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 $\mathrm{AO}: a \mathrm{O}:: \mathrm{R}: r$; that is, I . 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 fhorteft part being next that fide which has the greatelt curvity. 3. The line $\mathrm{B} b$ muft be produced without a concavo convex lens (figs. II 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 greateft curvity; and its diftance from the fides is as the radii of thefe fides refpectively."

Let the radius of the flatteft fide $A$ be called $R$, and the radius of the other fide, $r$; and becaufe the axis $B b$ of any oblique pencil is equally inclined to both the fides of the lens (as we have above fhewn), it neceflarily follows: Cafe 1. In a plano-convex and plano-concave lens (figs. 7 and 8), the axis $B b$ of any oblique pencil paffes through the vertex $a$, and therefore the point O is alfo 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, becaufe $R$ in this cafe is infinite, and O coincides with $a$; it will be R:r:: AO: $a \mathrm{O}$. Cafes 2 and 3. Becaufe the radii R B, $r b$ are parallel (by hyp. ), the triangles R B O, rbo are fimilar; and, therefore, R B:rb: R R : rO. Alfo RB $\pm r b: R B$ or $r b:: \mathrm{RO} \pm r \mathrm{O}: \mathrm{RO}$ or $r \mathrm{O}$. But the three firtt terms being invariable quantities, the $4^{\text {th }}$ is fo likewife; that is, in the fame lens the point $O$ is invariable. And from the pofition of the parallel radii $\mathrm{RB}, r b$, it is plain that the point O muft be within the double convex and double concave lens, and without the concavo-convex. Again, becaufe R O:RA (R B) :: $r \mathrm{O}: r a(r b)$; we fhall have $\mathrm{AO}(\mathrm{RO} \sim \mathrm{R} A): \mathrm{RA}:: a \mathrm{O}(r \mathrm{O}$ on $r a): r a$; that is, AO:a $O:: \mathrm{R}: r$; whence another part of the propofition is manifelt.

Hence it follows; that the point $O$ is in the middle of a double convex and double concave, whofe fides are fegments of the fame fphere: and in every lens whatfoever, 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 greateft 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 fuch a manner, that $\mathrm{AO}: \mathrm{A} s:: m: n::$ $a \mathrm{O}$ : $a v$ nearly." The angles, $\mathrm{R} \mathrm{B}, \mathrm{s}, \mathrm{RBO}$, or their fupplements, are the angles of incidence and refraction at the firtt fide A; and therefore their fines are as $m$ to $n$. In figs. 7 and 8 , the angle $\mathrm{RB} s=\mathrm{AsB}$; and $\mathrm{RBO}=$ A O B. And in figs. 9 and 10 , the difference between the angles, $\mathrm{RB} s, \mathrm{RBO}$, or their fupplements, and the refpective angles $A s B, A O B$, is equal to the angle $A R B$, as will appear by drawing $d \mathrm{~B}$ parallel to the axis $\mathrm{R} A$. And therefore the fines of thefe refpective angles are pretty nearly in the fame ratio; that is, fine $<A$ s $B$ : fine $<$ A O B $: 5: s: a$ nearly. But the fines of the angles, As $B$,

A O B , are as the fides $B O, B s$; and when the point $B$ is not very remote from $\mathrm{A}, \mathrm{BO}$ and $\mathrm{B} s$ will be as $\mathrm{A} O$ and $A s$ nearly; and therefore when the point $B$ is the ncareft of all to A , it will be $\mathrm{AO}: \mathrm{A} s: m: n$. 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, $a \mathrm{O}: a v:: m: n$. Hence the further the point $B$ is from $A$, and $b$ from $a$, the greater will be $O s$ and $O v$. Let $s$ and $v$ be points belonging to pencils that have the leall obliquity to the axis of the lens; then will $\mathrm{A} s=\frac{n}{m} \mathrm{AO}$; and $a v=\frac{n}{m} a \mathrm{O} . \quad$ Let the thicknefs, $A$ a of any lens be called $t$; then in a plano. convex and plano-concave lens, $A s=\frac{n}{m} t$. And in a double convex and double concave, whofe fides are fegments of the fame fphere, $\mathrm{A} s=a v=\frac{n}{2 m} t$. Hence again, in a plano-conver and plano-concave glafs, $\mathrm{A}_{s}=\frac{2}{3} t$; and in a double convex glafs of equal convexities, and in a double concave glars of equal concavities, As=av引 $\frac{1}{3}$ t. It appears, moreover, that the focal length of any lens is to be reckoned from the point $v$, if the flattelt fide is expofed to parallel rays; and from the point $s$, if the parallel rays are incident upon the moft convex or concave fide; the point $v$, in all cafes, being the moft remote from the flattelt fide, A, of the lens. The points, $s$ and $v$, may occafionally be called the "focal centres" of the lens. Hence it follows, that the fccal length of a convex lens is, properly, the diftance 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 fartheft focal centre. As the axes of the feveral pencils that are not very oblique, are refracted from the fame point $s$ or $v$ nearly; fo the refraction of thefe axes caufes no fenfible confufion in the image. Moreover, becaufe As=$\frac{n}{m_{2}} \mathrm{AO}$, and $a v=$ $\frac{n}{m} a \mathrm{O}$, and becaufe $\mathrm{R}: r: \mathrm{AO}: a \mathrm{O}$; it will be, $\mathrm{R} \pm r: \frac{\mathrm{R}}{r}:: t(\mathrm{AO} \pm a \mathrm{O}): \frac{\mathrm{AO}}{a \mathrm{O}}$; therefore AO $=\frac{\mathrm{R} t}{\mathrm{R} \pm r} ;$ and $a \mathrm{O}=\frac{r t}{\mathrm{R} \pm r} ;$ wherefore, $\mathrm{A} s=\frac{n}{m}$ $\times \frac{\mathrm{Rt}}{\mathrm{R} \pm r} ;$ and $a v=\frac{n}{m} \times \frac{r t}{\mathrm{R}_{\mathrm{t}}{ }^{\circ}} ;$ and multiplying one fide of each equation by $m \times \overline{\mathrm{R} \pm r}$, it will be $\mathrm{A}_{s}$ : $\pi v:=n \mathrm{R} t: n ヶ t$.
4. "The foci of both direct and oblique pencils of parallel rays are nearly at the fame diftance from the focal centre (sor $v$, as the cafe is) of any lens.". Let ArQ (Plate VIII. Optics, fig. 1 to 6.) be the axis of the lens, $r$ the centre of the firft furface $a b, Q$ the principal focus of that furface, and F the focus of the lens. Let $p b \mathrm{~B}$ P be the axis of any oblique pencil ; and let the emergent part, BP, produced backwards cut the axis of the lens in so Of all the rays parallel to the axis $p b \mathrm{BP}$, there fhall be one as $\mathrm{D} d$ which will fall perpendicular upon the firft furface $a d$; and therefore if the medium was continued, this ray (produced backwards from a concave lens, but continued through

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through a convex lens) would pafs through the eentre $r$, and the geometrical focus of rays parallel to it would be at $q$, fo that $r q=r Q$. This is plain, becaufe $d r q$ is perpendicular to the furface $a$, as well as ar $Q$. Again, of all the rays parallel to the axis $p b$, there fhall be one as $\mathrm{E} e$ (if the lens is broad enough) which flall be refracted into eG, perpendicular to the fecond furface A. B; and therefore the focus of this ray fhall be in $s \mathrm{P}$ produced, and in $e \mathrm{G}$ produced; that is, in the point of interfection $f$. Neglecting the aberration of the firft furface $a b, e \mathrm{G}$ avould unite with the axis $d r q$ in $q$. Hence we are to thew that $s f=s \mathrm{~F}$ nearly.

Cafe 1. When one fide of the lens is plain. (Figs. 1, 2.) Becaufe $s r, f q$, and $s f, r q$ are parallel ; $s f=r q=r Q$ $=s \mathrm{~F}$.

Cafe 2. When both fides of the lens are fpherical. (Fig. 3-6.) Let R be the centre of the fecond furface A B , and becaufe e G is perpendicular to this furface, it will pals through the centre R. And becaufe rq is parallel to $s f$, it will be $\mathrm{Rr}: \mathrm{R} s:: r q: s f$. The two firlt terms, $\mathrm{R} r, \mathrm{R}_{s}$, being invariable quantities, and $r q$ being allowed to remain invariable, $s f$ will alfo be invariable; that is, $s \mathrm{~F}$ will defcribe the fector $s \mathrm{~F} f$, and $s f=$ $s$ F. But becaufe of the aberration by the firlt furface $d e$, no ray, as $\mathrm{E}_{e}$, parallel to and remote from the axis $\mathrm{D} r q$, can be refracted to the focus $q$; but it will cut the axis $r q$ in fome point $y$ between $q$ and $r$ ( $f$, I it 6. ); and therefore 3 ray parallel to $p b$, that fhall be refracted perpendicularly to the fecond furface $A \mathrm{~B}$, muft be fome ray $b k$ between $E \varepsilon$ and the axis $p b$, if the centres, $\mathrm{R}, r$, are on different fides (figs. 3 and 4.) ; otherwife $b k$ will be farther from the axis than $\mathrm{E} e$ (figs. 5 and 6.); and confequently this ray will cut the axis s $f$ in fome point $x$, between $f$ and s. But it has been already fhewn, that if the lens had no aberration, $f$ would be the focus of all the rays parallel to the axis $p b \mathrm{Bf}$; and as the aberrations at the different furfaces are contrary, it is fufficiently evident that the focus of thofe rays which are neareft to the axis $p b \mathrm{~B} f$, 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, $s g$ will be lefs than $s f$ or $s$. Becaufe if there was no aberration at either furface of the lens, $s g$ would be equal to $s \mathrm{~F}$ or $s f$; and therefore it muft follow, that if the aberrations at each furface were equal, they would deftroy each other. (Figs. 3, 4.) Let rays of light be within the lens, on each fide of the axis $b \mathrm{~B}$, and let their inclination to that axis be fuch, as that they would emerge at the fide $b$, parallel to $b p$. It is plain, that a ray parallel to the oblique axis $p b B P$, and between the faid axis and the perpendicular $d r$, will be more oblique to the emergent fide $A$ than to the incident fide $a$; and therefore, in this cafe, the aberration at the fide A is the greatelt, and this excefs 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 greateft aberration will be on the incident fide $a$; and in the prefent cafe likewife, this excefs 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 $f g$ : whence the propolition is manifent.
5. "The focus of incident rays, either diverging or con. verging upon any lens, being given: to find the focus of the emergent rays." Let Ff (Plate VIII. Optics, fig. 7 to 12.) be the axis of any lens B $b$, whofe 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 $Q B$, or converging as $M B$; and let $f$ be the geoVol. XX.
metrical focus of thofe rays parallel to the axis of the lens, whofe incidence is on the fame fide with the ray QB, or M B. To find the focus of the emergent rays, fay QF : $\mathrm{F} s:: \nu f\left(\mathrm{~F}_{s}\right): f q$; 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 $v$ defcribe the arc $f d$, and draw $v d$ parallel to the incident ray $Q B$, or $M B$; then will $d$ be the point where the emergent ray interfects the axis $v d$; and therefore the point $q$, where the emergent ray $b d$ (or $\mathrm{N} b$ ) produced, interfects the axis of the lens, is the focus required. Again, draw $s$ D parallel to $q$ B; then will the triangles, $\mathrm{Q} \mathrm{D} s, v d q$, be equiangular, and therefore QD: $\mathrm{D}_{s}::$ vd: $d q$. But D is a point where the incident ray $q b$, or $N b$, after refraction by the lens, will interfect the axis $s \mathrm{D}$, fo that $s \mathrm{D}=s \mathrm{~F}$ nearly; and when the triangles, QD D, vd $q$, are vanifhing, the point D will coincide with F , and $d$ with $f$; wherefore $Q \mathrm{~F}: \mathrm{F}_{s}::$ $v f: f q$. Hence it follows, I. Becaufe $\mathrm{F} s=v f, \mathrm{Fs}$ or $v f$ is a mean proportional between $Q F$ and $f q$; that is, QF:Fs: Fs:fq. 2. QF:Fs:: (vf:fq::) Qs $\left(Q F_{\sim}^{+} F s\right): v q\left(v f_{\sim}^{+} f q\right) \cdot 3 \cdot Q F: Q s::\left(F_{s}:\right.$ $v q$ ::) $\mathrm{Qs}(\mathrm{QF}+\mathrm{Fs}): Q s+v q$. Obf. When the lens is not very thick in proportion to its focal length, the focal diffances, $\mathrm{SF}, v f$, may, without fenfible error, be reckoned from the point $O$, which bifects vs; and then the preceding proportions will be convertible into the following: viz. $Q \mathrm{~F}: \mathrm{FO}:: \mathrm{FO}(=\mathrm{O} f): f q$; and $Q F: F O:: Q O: O q ;$ and $Q F: Q O: Q O: Q q$. 4. If $q$ be the focus of incident rays, $Q$ will be the focus of the emergent rays. 5. The focufes, $Q$, $q$, move both the fame way, and always lie contrary to $\bar{F}$ and $f_{0}$. And the diftances, $\mathrm{FQ}, f q$, vary reciprocally; that is, as one increafes, the other decreafes, but with a different velocity, according as they are differently fituated. When $Q$ coincides with $\mathrm{F}, q$ will be at an infinite diftance; that is, the refracted rays will emerge parallel to the axis. And in figs. 7,8 , when $Q O=20 \mathrm{~F}, \mathrm{O} q$ will be $=O Q:$ whence the difference of the focal diftances of the refracted rays, when $Q O=2 O F$, and when $O Q$ is infinite, is only equal to $O f$. When the focus $Q$ of rays diverging upon a convex lens (fig.9.) lies between $F$ and the lens, the refracted rays ( $b \mathrm{~N}$ inftead of croffing the axis) will diverge from the focus $q$. And if incident rays upon a concave lens converge towards the point that is neater to it than F (as in fig. 10.), the lens in this cafe will have a real focus; that is, the refracted rays will crofs the axis in $q$. And univerfally, 7. When the focufes, $Q, q$, lie both on the fame fide of the lens; if the incident rays diverge from Q (fg. 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 ail thefe cafes, the nearer $Q$ is to $O$, the nearer alfo will $q$ be to O ; and if one of thefe focufes be in O , the other alfo will coincide with it. And the contrary happens, when $Q$ and $q$ are on different fides of the lens; that is, rays diverging from $Q$ (fg. 7.) will converge towards $q$; and rays converging towards $Q$ (fig. 8.) will diverge from $q$.

We have hitherto taken notice of the progrefs of a fingle pencil of rays, or fuch as come from a fingle point, through a lens; but it is eafy to apply the fame kind of reafoning to the various points of an object. Let DE (Plate VIII. Optics fig. 113 .) be an object, A B a double convex lens, whofe centre is $\mathbf{C}$; and let us examine the pencils of rays which come from three points only of the object, lince the

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fituation of the intermediate pencils, is evidently comprehended between thofe three. Of all the rays which proceed from each of thefe points, that which paffes through the centre C of the lens mult proceed, if the lens is not remarkably thick, in a ftraight line, fo that DCI, FCH, and ECG, are ftraight lines; fecondly, the focus of the rays D B A, after refraction, mult be fomewhere in the axis or Atraight line DCI; alfo that of the middle pencil, FBA, mult be fomewhere in FCH, and the focus of the third pencil muft be in E C G. Thirdly, the refractéd focus of each pencil muft be on the contrary fide of the asis of the lens, to what its incident or radiant focus is ; for inflance, the refracted focus $I$ is below the axis of the lens, whillt its incident or radiant focus D is above it; and the refracted focus G is above the axis, whilt its radiant point E is below it : the confequence 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 D E will be formed upon it, but in an inverted pofition. If the opaque body be removed, then no image will be feen by a fpectator fituated on one fide; for the rays of light, though they meet at their refpective foci in I H G, yet they proceed divergingly beyond that place through the air or other tranfparent body, and none come to the lateral fpectator. If the paper be fituated 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, becaufe the rays of the refpective pencils do not meet at any other place.

From what has been faid above with refpect to the conjugate foci of the fame peacil, it will be clearly deduced, that if the object DE be brought nearer to the lens, the refracted foci, or the image G H I, will be formed farther from the lens, and vice verfâ. And from this it follows, that (fince the angles DCE, GCI, formed at the centre of the lens by the axes of the two extreme pencils, are equal) when the ditance 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 diftance is lefs than that of the latter, then the image is larger than the object ; and when the former diftance is longer than the latter, then the image is fmaller than the object,

With refpect to the brightnefs of that image it mult be confidered, that of the innumerable rays which are inceffantly emitted in every direction from each point, for infance $D$, 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 mult be more or lefs bright in proportion as the furface of the lens is larger or fmaller. Hence alfo a very remarkable property of thofe lenfes is eafily comprehended, which is, that when an image G H I is thus formed, if you cover part of the lens, be it the middlemoft or fome 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 lefs bright than before; for if we confider each indefinte part of the lens, we may eafily perceive that rays of light from every point of the object mult pafs through that part, and mult meet at the refpective foci in GHI.

The above explanation of the progrefs of various pencils through a convex lens, may, mutatis mutandis, without much difficulty beadapted to explain the action of concave lenfes. .Newton's Optics. . Smith's Optics. Harris's Optics. Cavallo's Philofophy, vol. iii.

Lens, or Lenticula, was the name of a kind of weight

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among the Romans; being the hundred and eighth part of a drachm; equal to a grain and a half.

Levs, in Anatomy, a tranfparent body, nearly fpherical in figure, placed in a depreffion in front of the vitreous humour of the eyc. It is generally mentioned with the epithet cryftalline. See Eye.

Levs, in Botany, the Lentil, Ervum Lens of Linnæus, but in reality a feecies of Cicer; fee Sm. Fl. Brit. 776, and our article Ervum. The Latin word lens is faid to have originated from lenis, mild, becaufe thofe who fed on this fort of pulfe were fuppofed to become mild and gentle in difpofition.

Lens, Palufiris. See Duck's Meat.
Lens, in Geography, a town of France, in the department of Jemmape, and chief place of a canton, in the diftrict of Mons. The place contains 1229, and the canton 13,784 inhabitants, on a territory of $237 \frac{1}{2}$ kiliometres, in 19 communes. - Alfo, a town of France, in the department of the Atraits of Calais, and chief place of a canton, in the diftriat of Bethune ; feven miles N.W. of Douay. The place contains 2325 , and the canton 13,246 inhabitants, on a territory of $152 \frac{x}{2}$ kiliometres, in 21 communes.

LENSWYCK, a town of Norway; 20 miles W.N.W. of Drontheim.

LENT, Quadragesma, a time of mortification, during the fpace of forty days, wherein Chriftians are enjoined to falt, in commemoration of our Saviour's miraculous falting 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 till to take up with the ancient thirty-fix.

According to St. Jerom, St. Leo, St. Auguftine, and others, Lent muft have been inflituted by the apofles. Their way of reafoning is thus: whatever is generally received throughout the whole church, and whofe inftitution we do not find in any council, muft be efteemed to have been eftablifhed by the apoftles. Now fuch, they fay, is the faft of Lent. Its inftitution is not fpoken of in any council ; but many of the ancient councils, particularly that of Nice, that of Laodicea, \&cc. and fome of the oldelt fathers, particularly Tertullian, fpeak of it as a thing of fome itanding.

The refurmed, generally, hold Lent to be a fupertitious inflitution, fet on foot by fome vain enthufiafts, who durft undertake to ape the miracles of Jefus Chrift; as, in effect, it appears to have been from a paffage of Irenæus quoted by Eufebius.

Some will have it to have been firft inftituted by pope Telefphorus, in the fecond century : others, who own that there was a kind of abftinence obferved in the ancient church before Eafter, 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 firft obferved in England by our Saxon anceltors in the year 640. Anderfon's Hift. of Commerce, vol. i. p. 25 :

Political Lents have been often enjoined by ftatute and royal proclamation. See Abstinence.

King James I. iflued a proclamation againft eating fefh in Lent in 1619, and another in 1625. A fimilar proclamation was alio iffued by Charles I. in 162.7, and another in 1631.

There was fome difference between the practice of the Greek

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Greek and Latin churches, as to the bufinefs of Lent ; the Greeks beginning it a week fooner, but at the fame time allowing more days of intermiffion than the Latins: thofe who held it feven weeks did not falt on Saturdays, as thofe who obferved but fix did.

The ancient Latin monks had three Lents: the grand Lent before Eafter, another before Chriftmas, called the Lent of St. Martin ; and a third after Whitfunday, called the Lent of St. John Baptift ; each of which confifted of forty days.

The Greeks, befides that before Eafter, obferved four others; that of the Apofles, of the Affumption, of Chriftmas, and of the Transfiguration; but they reduced each of them to the fpace of feven 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 perfon, without evident neceflity, eat flefh in Lent, they fhall be deprived the ufe of it all the relt of the year."

By the fifth chapter of the fourteenth feffion of the council of Trent, confeffion is enjoined as peculiarly fit and acceptable at this feafon. Hard. Conc. tom. x. p. 93.

The forty days in Lent, fay fome, are obferved 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 ftripes by which malefactors were to be corrected ; or, the forty days during which Mofes fafted at the receiving of the law; or the forty days falt of Elias; or finally, the forty days faft of our Saviour.

LENTAGO, in Botany, a name adopted by Cæfalpinus, (de Plantis, 76,) for the Lauruftinus, Viburnum Tinus of Linnæus, and faid to be of Tufcan origin. Linnæus has applied it to an American fpecies of Viburnum.

LENTELLA, in Geography, a town of Naples, in Abruzzo Citra; 18 miles N.E. of Civita Borella.

LENTEMENT, $F_{r}$. in Mufic. This word is equivalent to largo in Ital., and implies a flow movement. Its fuperlative, treflentement, very flow, is the floweft of all movements.

LENTEN, in Geography, a town of Norway; 20 miles N . of Berga.

LENTES Lapidere, foffile lentils, in Natural Hifory, the name given by many writers to a very remarkable foffile fubftance, ufually found immerfed in hard ftones, and of a roundifh but flattened fhape, refembling not unaptly a pea or lentil flattened by preffure. They generally lie in great quantities in the fame mafs of ftone; 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 fuppofed to be lentils petrified and bedded in ftone, and as their fides come in view in fome parts of the maffes, they are not perceived to be a part of the fame fubftance, but are called the remains of feeds of other plants, and the whole fone is ufually nanaed lapis frumentarius.

We are not to fuppofe, that fo foft a body as the lentil feed, or a common pea, could be eafily petrified and preferved in its own form in flone; fince if thefe foft fubftances were readily capable of fuch a change, they are fo very common in their recent fate, that they muft be expected to be found in this foffile condition very frequently alfo, and in great variety. This, however, is not the cafe. But this improbability is not all the reafon we have to conjecture, that thefe are not what they are vulgarly fuppofed to be,
that is, foffile feeds; for a fricter examination of the things themfelves proves this to be, impoffiblc. Seeds, and other fuch things, are of fome determinate growth; the fize of which we know, and are well acquainted with their internal ftructure, which is only a farinaceous matter contained in a thick fuperficial ikin or covering.
On the contrary, thefe foffils, when examined, prove to be of various fizes, from the minuteft fpeck vifible to the eye, to near an inch in diameter, a fize that no lentil could be fuppofed 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 firft are thickeft in the middle, and gradually leffen in thicknefs all round, till they terminate in a thin edge; the others are jult like the halves of thefe when fplit horizontally. Thofe which are convex on both fides, have ufually feveral crooked lines, rifing from the umbilicus on each fide, and tending towards the circumference; and the flat ones have ufually on the flatted fide a number of concentric circles furrounding the umbilicus, and one another to the edge. When thefe are broken, they are found to confilt of a number of cafes, or coats, one within another, all of the fame frape with the outer one; and fome of them are ftriated, or made up of tranfverfe fibres. They are plainly of animal origin, though they differ from all the parts of animals hitherto known. Woodward's Cat. of Feffils. vol. ii.
Dr. Woodward, in onc place, fuppofes them to have been the loofe bones which are found in the heads of fome feafifhes, and are fuppofed to ferve for hearing; but that they belong to fome fifh at prefent 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 fhell-fifhes, of the nature of the umbilicus Veneris, of which the fifhes we know afford us a great variety; and the many others we are yet unacquainted with, may furnifh numbers of other kinds very different from all we do know.

Thefe bodies are found in a hard greyifh ftone, and fome of the large ones, which are flattened on one fide, give great reafon to judge that they are of this origin, as fome of the large ones have on the flat fide a reddifh line, beginning at the centre, and thence continuing in a firal form for eleven or twelve turns, till it reaches the edge of the ftone. This is exactly the formation and lineation of the common umbilicus Veneris, only that it has fewer fpires. The ftone, called by authors lapis numi/malis, is generally allowed to be of the nature of thefe opercula, and this differs very little from thefe large lentes lapidea, as they are called.

LENTHALL, William, in Biography, an Englifh lawyer, and famous as a fpeaker in the Long Parliament, was born at Henley on Thames, in Oxfordhire, in 1591, and educated at Alban-hall, Oxford, from whence he removed to Lincoln's Inn, where he was called to the bar. In 1639 he was elected into parliament for Wooditock, and in $164{ }^{\circ}$ was chofen fpeaker, in which capacity he was faid to have made a confiderable fortune by joining the ruling party. He was alfo mafter of the rolls, a commiffioner of the great feal, and chancellor of the duchy of Lancafter. 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 refloration he was exempted from the act of indemnity, but obtained a pardon from the king. He died, it has been afferted, exprefling 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

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little round leaves, which refembles that of the Lens, or Lentil feed. See Limna.

Lenticula. See Petechia.
LENTICULAR Scalpel, from lenticulaire, doubly convex, in Surgery, denotes an inftrument ufually placed among thofe which are confidered neceflary in the operation of the trepan. Its particular ufe is to cut off the irregularities which often prefent themfelves at the edge of the perforation made with the trephine, and which might, if unremoved, caufe irritation and injury of the dura mater. The fhape of the inftrument can hardly be conceived without ocular examination, or, at leaft, a reference to an engraving. (See the Plate of Trepanning. Infruments.) We can only ftate, that one fide of its blade is convex, the other concave, and one of its edges Aharp. On the end of the blade is fixed a little fallow cup, with its concavity towards the handle of the initrument: This fmall cup-like part ferves the purpofes 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 inArument all round with fteadinefs and fecurity. Dict. of Practical Surgery.

Lenticulare, Ganglion, in Anatomy, a fmall ganglion in the orbit, from which the nerves of the jris are produced. See Nerve.

Lenticulare Os, is a fmall round bone of the carpus, oftener defcribed under the term pifforme. See Extremities.

Lenticularia, in Botany. See Leman.
Lentigo. See Freckles.
Lentigo is alfo ufed by Dr. Quincy for a brown, fcaly, or fcurfy eruption upon the fkin; fuch, efpecially, as is common to women in the time of child-bearing.

LENTIL, Less, in Botany, a fpecies of Ervum; which fee.

Lentils are the beft as well as cheapelt food for pigeons.
The feeds of lentils are frequently the common food of the poor in fome of the illands 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 Cafpar Bauhine; and being twice the fize of the common lentil, is by fo much the better worth cultivating. This is called tills in many parts of England. Miller's Gard. Dict.

The anclents affirm, that lentils, eaten with their kins on, bind the body, and ftop a loofenefs; and yet at the fame time, that the liquor they are boiled in loofens the belly. They are but rately ufed in phyfic, though the flour of them may be ufed outwardly in cataplafms, for the fame purpofes as bean-flour.

Leytil, in Agriculture, the name of a plant of the vetch or tare kind, which is cultivated in fome places as fodder for cattle. Lentils grow a foot and a half in height, with ftalks and leaves like thofe of tares, but fmaller ; and, like them, they bear their feeds generally three or four in little pods. Thefe feeds are round, hard, fmooth, 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 moilt ground, April is a better feafon. The ufual quantity of feed allowed to an acre of land is from one bufhel and a half to two bufhels. If thefe are fowu in drills in the fame manner as peafe; they are faid by fome to fucceed better than when they are fown broad-caft. The drills fhould 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 fupported.

This is a crop not uncommon about Chefterford, in Effex, where they fow a bufhel an acre on one ploughing in the beginning or middle of March. "It is there the cuftom," Mr. Young fays, "to make hay of them, or feed them, for cutting into chaff for trough-meat for theep and horfes, 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 fhould be paid not to water horfes foon after eating this fort of food, as they are apt to hove them. They are likewife afferted to be cultivated for the fame purpofe in Oxfordfhire, and probably in other diftricts.

Lentilius. See Linsenbahrt.
LENTINI, in Geography, anciently Leontini or Leontium, which was a fpacious, rich, and celebrated city of $\mathrm{Si}-$ cily, and the rival of Syracufe, is now reduced to a population of 4000 perfons, who occupy a very inconfiderable 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 ceuntry, which abounds in marfhes, is fo infalubrious, that it prevents the increafe of inhabitants, notwithltanding the fertility of the foil and the variety of its productions. Three miles from Lentini is a large lake, eftimated at about 20 miles in compafs, called "Bivieri," or the lake of Lentini, belonging to the prince de Butera, which produces $1500 \%$ a-year; for the leafe of the fifhery, confifting of eels, tench, and cefalu, or a fort of barbel, that feeds in either frefh or falt water. The sicinity alfo yields great plenty and variety of game ; 19 miles N.N.W. of Syracufe, N. lat. $37^{\circ} 18^{\prime}$ E. long. $15^{\circ}$.

LENTISCASA, a town of Naples, in Principato Citra; nine miles S.W. of Policaftro.

LENTISCUS, in Botany, the Maftic tree, fuppofed to have derived its name from lentus, and lentefio, alluding to the pliability and tenacity of its gum or refin. See Pistacia.

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 inland of Corfica; 11 miles S. of Oletta.
LENTON, John, in Biography, a mufician in the band of king Witliam and queen Mary, whofe inftrument was the common flute. He compofed and publifhed, in conjunction with Tollet, a work entitled "A Conforte of Mufick, in three parts," probably two flutes and a bale-viol or archlute. At the beginning of the laft 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 compofition printed in "The Pleafant Mufical Companion."
LENTOR in Medicine, a term employed by Boerhaave and his followers, to denote a fuppofed glutinous or vifcid condition of the fluids of the living body, to which they afcribed the origin of many difeafes.
It is fcarcely neceffary to enter at any length into the detail or refutation of an hypothefis, which was founded at the beft upon a gratuitous and miftaken view of the operations of the animal economy, and which a better pathology has long ago exploded. Boerhaave, in his obfervations on difeafes arifing from a fpontaneous gluten, (fee his Aphorifms, §69, et feq. and the commentary upon them in his "Praxis Me-

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dica,") confiders the direct effect of it to be an obftruction to the free circulation of the blood, efpecially 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." (.? ph. § 73.) Under this head, then, he readily includes not only inflammations, tumours, and concretions, but almoft every fpecies of chronic difeafe, efpecially 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 fpecies of fwell. ing. But in all thefe inftances, the afferted prefence 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 exits, is found out of the courfe 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 abfeefs, following a phlegmonous inflammation, (as in a common boil,) it is clear that there is no fuch thing as a purulent lentor in the mafs 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-exifting matter. The argument, deduced from the appearance of the buffy cruft on blood, drawn during the exiftence of inflammatory fever, is altogether fallacious; as this buff is but the ordinary coagulable lymph of the blood, fome what more feparated from the red globules. See Blood, and Humoral Pathology.

LENTZ, in Geography, a town of Pruffia, in the territory of Ermeland; tight miles N.E. of Elbing.

LENTZBURG, an extenfive 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, \&cc.; 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. $53^{\circ} 9^{\prime \prime}$. E. long. $11^{\circ} 36^{\prime}$.

LENZA, a fmall ifland in the Adriatic. N. lat. $44^{\circ} 5^{\prime}$. E. long. 15 3 $\mathbf{I}^{\prime}$.

LEO, LIox, in Afronomy, the fifth of the twelve figns of the zodiac.
The flars in the conttellation Leo in Ptolemy's Catalogue are 27, befides the informes, which are eight; in Tycho's 30, in the Britannic Catalogue 95. See Constellation.

Leo I., in Biography, emperor of the Eaft, fucceeded Mar: cian, in the year 457 , through the favour and interelt 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 \{teward of Afpar's houfhold. He received the imperial crown from the hands of the patriarch of Conftantinople, which is the firft inftance of an ecclefaaltic being employed in that ceremonial. Under Genferic the Vandals planted thenfelves in Africa, and Afpar favoured their caufe. Leo became jealous of the influence and power of Afpar, and in the end caufed him and his fon to be put to death without the form of a trial, upon the mere charge of a confíracy. The remaining parts of his family and friends attempted to revenge this treachery, and the Goths, attached to them, committed great diforders in Conftantinople, which were fuppreffed by Zeno. The Arians, having loft their patron, were treated

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with great rigour by Leo. From the Goths he was obliged to purchafe a peace, which he did not long furvive. He died in January 474, after a reign of nearly feventeen ycars. His moderation and love of juttice have been praifed, and feveral of his laws remain in the code of Juft nian.

Leo III., furnamed the Ifaurian, from Ifauria, the place of his birth, was born of low and obfcure parents. He entered the army, and became a guard to Juftinian II. He attained the rank of general under Anaftafius II. who took him in 717 as a coadjutor in the empire. The Saracens having ravaged Thrace, laid fiege to Conftantinople, which was bravely defended by Leo, who compelled them to retire. His reign was marked with aets of atrocious tyranny ; he drove the patriarch Germanus from his place, and gave it to Anaftafius. In the fifth year of his reign, he caufed his fon Conftantine, furnamed Copronymus, to be folemnly crowned. In 726 he made his famous attack on image worfhip, which has rendered his reign memorable in ecclefiaitical hiftory. The deftruction of objects long fo much venerated, and efpecially of a ftatue of Jefus Chrift placed over one of the gates of the city, fruck the people with fo much horror, that a ferious infurrection was the confequence. Leo had authority fufficient to enforce his reform in the eaftern empire, but in the Weft it cncountered a more formidable oppofition. Pope Gregory II. declared with great warmth agdinit the imperial edict, and the people of Italy openly revolted. Leo fent a fleet to chaftife the revolters, which was wrecked in the Adriatic, a circumftance that was interpreted as a divine interpofition. The emperor, irritated by his want of fuccefs, inflicted great cruelties on the oppofite party; the Saracens took advantage of thefe diffentions to make incurfions 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 Conftantine Copronymus, fucceeded his father in 775 , at the age of 25 . The firll object of his reign was to fecure the fucceffion of his fon Conftantine, whom he had by Irene, an Athenian lady of great accomplifhments. He caufed the youth to be folemnly crowned, and declared a partrer 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 "iconoclafts." He obtained fome advantages over the Saracens, and initiated into the Chriltian religion a king of the Bulgarians, who, in the preceding reign, had inficted 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 fludded with jewels, that he had facrilegioufly taken from the great church of Conftantinople.
Leo V., the Armenian, fon of a patrician, commanded an army againtt the Saracens in the reign of Michael I. His fuccefs, contrafted with the difgrace incurred by the emperur himfelf, caufed a revolt of the army, and Michael himfelf quitted the throne, to which Leo fucceeded, without oppotition, in the year 813 . He had been educated in the camp, and was ignorant of laws and letters; his adminiftration, therefore, partook of feverity and military difcipline. In religion he followed the fteps of the iconoclafts, and drew upon himfelf an excommunisation from pope Pafchal I. He attempted a reformaticm in the abufes of government, by which he made himfelf many enemies. At the head of thefe was Michael, forr , erly his fellow commander in the army, and a principal intrument of his elevation. Though he had been ensiched and promoted by Leo, he was diflatisfied with his rr avard, and formed a con-

Spiracy againft him. This was deteeted, and Michael was arrefted, and condemned to die on Chritmas day, but the holinefs of the feafon caufed a refpite of the exccution. In the interval, the friends of Michael affembled, and mingling with thofe who came to perform divine fervice in the imperial chapel, concealed themfelves till the entrance of Leo. A fignal was given, and an attack was made, by miftake, on the prieft who led the devotions; perceiving their crror, they inftantly turned their fury upon the emperor, who had retired to the altar, and difregarding the crofs which he held, they cruelly affafinated him. This cvent took place in $\mathrm{S}_{2}$, after Leo had reigned with reputation feven years and a half.

Leo VI., the philofopher, was the fon and fucceffor of Bafil, the Macedonian, who had caufed him to be crowned as his partner in the empire in 870 . By the treachery of a monk he had nearly loft his eyes and his inheritance, but his friends zealoufly exerted themfelves to procure his releafe, and refloration to favour. On the death of Bafil in 886, Leo fucceeded to the imperial throne, having a nominal partner in his brother Alexander, but he himfelf poffeffed the fovereign power. The Bulgarians, in this reign, renewed their ufual hoftilities againit the eaftern empire; and the ill fuccefs of the generals of the emperor, obliged him to fubmit to fuch terms of peace as they were pleafed to impofe. With the Saracens likewife feveral actions were fought by fea and land with various fuccefs. But he was chiefly haraffed by confpiracies at home, and had more than once nearly loft his life. By his literary reputation he acquired the title of "philofopher," but his private conduct difplayed an indolent and voluptuous character. He had in his theological zeal prohibited third marriages, whereas having himfelf loft three wives, he entered into the holy flate a fourth time, which led to his excommunication. It has been urged, in excufe of his conduct, that he had no remaining iffue by the firlt three marriages. He was, during his whole reign, much under the dominion of favourites; he was fuperfitious, and made pretenfions to the art of foretelling future events by divination. A defeat of his fleet by the Saracens preceded his death, which happened in 9ri, after he had been on the throne twenty-five years. He bequeathed the empire to his brother Alexander, as a trult for his fon. Leo had been educated under the learned Photius, from whom he derived an attachment to various kinds of erudition. He was fuppofed by fome to have been the author of a collection of fermons or homilies; of a letter to the caliph Omar on the truth of the Chriftian religion; of a paftoral letter to his fubjects; of a treatife on military difcipline, and a collection of laws begun by his father. For farther partioulars relating to the foregoing emperors, fee Gibbon's Hift. and Univer. Hift.

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 Celeftine. He occupied the fame poft under Sixtus III. and acquired a very high reputation for piety, orthodoxy, eloquence, and prudence, in the management of bufinefs. He was employed to negotiate certain differences which had arifen in Gaul, between Aetius and Albinus, and fucceeded in the object of his miffion. While he was in Gaul, Sixtus III. died in $44^{\circ}$, upon which the univerfal voice of the Romans proclaimed Leo his fucceffor, and upon his return he was received with the greatelt demonftrations of joy. He commenced his pontificate with the moft zealous exertions of a Chriftian bifhop, and he was particularly anxious for the advancement and grandeur of
the papal fec. In the year 442, he extended the law of celibacy to the archdeacons, who neverthelefs were not to abandon the wives whom they had married, while in inferior ftations, but were in future to live with them as fifters. In the year 445, he quarrelled with Hilary, bifhop of Arles, for oppofing 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 thofe appeals to Rome which gradually fubjeeted all the weftern churches to the jurifdiction of the pretended fuc: ceffors of St. Peter. About this time many of the Manichæeans flying from Africa, after the conqueft of Carthage by Genferic, king of the Vandals, had repaired to Rome as a place of fafety. The zeal of Leo would not fuffer them long to enjoy tranquillity, but caufed great numbers of them to be feized and imprifoned. Thofe who abjured their diftinguifhing tenets were admitted into communion, but thofe who fteadily adhered to their principles were condemned to perpetual banifhment. The pope found that many of the Manichæans had made their efcape from Rome; he accordingly fent a circular letter to all bihops, exhorting them to be upon their guard againft the faid heretics, and when difcovered, to profecute them without mercy. His holinefs was not contented with what he could do by the power with which he himfelf was armed, but he applied to the emperor Valentinian, for a law to exclude fuch perfons from all civil and military employments, and to declare them incapable of giving or receiving any property by will or teftament, or of making any contract. Leo was equally violent againt the Priccillians, who pretended to high degrees of purity of life and manners, who practifed great mortifications, and whofe opinions were a compound of Gnoflicifm and Unitarianifm. For propagating them, their leader, Prifcillian, had been put to death, and was accordingly regarded as a faint and martyr. Leo now condemned the doctrines and practice of his followers as impious and deteftable, and declared all thofe who tolerated heretics, no lefs guilty than thofe who embraced their opinions. The doctrine of Eutyches, which maintained that there was but one nature in Chrift, roufed the zeal of Leo, and after much difcuffion, concerning which our limits do not allow us to enlarge, he caufed the heretic to be condemned, fent into banifhment, and deprived of his facerdotal dignity; and a decree was paffed, that " in Chrift there were two diftinet natures united in one perfon, and that without any change, mixture, or confufion." During the pontificate of Leo the fourth general council was held, in which the famous canoa was enacted, which rendered the fee of Conftantinople equal to the fee of Rome in all refpects, except precedency. This canon was evidently intended to check the growing power, and to oppofe the daily encroachments of the bifhop of Rome. When Leo was made acquainted with the determination of the council, he was filled with the utmof rage, and refolved to oppofe it with all his might. He faw his rival but one ftep behind him, and was apprehenfive he might foon get before him; he was, therefore, determined to difpute his power in every flage. Wihing, however, that he might be thought to be acting upon Chriftian 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 bimfelf with the fpoils of the metropolis. At this time the city was not in a condition to bear a fiege, and the emperor fent a folemn embafly

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embaffy to Attila, with fuch propofals as might be acceptable to him and his army. Leo himfelf went at the head of the embaffy, in which he was joined by two men of the firft 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 ecclefialtical writers afcribe to the fame of Leo's extraordinary fanctity. The terms which they propofed were readily agreed to by Attila, and a treaty of peace was foon concluded between him and Valentinian, in confequence of which he repaffed the Alps, and retired beyond the Danube. In the year 453, Leo's zeal was directed towards the converfion of the monks of Paleftine and Egypt, who denounced war againft all the abettors of the council of Chalcedon, and maffacred, without mercy, fuch of the clergy and laity, as had the courage to profefs a belief in the two natures in Chrif. In 455, Leo's attention was drawn off from the affairs of the Ealt, by the calamities produced in Italy, in confequence of the daath of Valentinian. That prince was murdered by Maximus, who not only ufurped his throne, but obliged Eudoxia, the emperor's widow, to marry him. Determined to revenge the death of one whom the had loved with the greateft tendernefs, and to deliver herfelf from the tyrant, fhe applied to Genferic, king of the Vandals, in Africa, who fhe well knew would be glad of any favourable opportunity of invading and plundering Italy. To him fhe difpatched a confidential meffenger, conjuring him to come without delay and refcue her out of the hands of Maximus, afluring him that he wonld meet with no oppofition, and promifing to affilt him to the utmoft of her power. Genferic gladly feized the opportunity, and appeared in a fhort time with a very powerful army in the neighbourhood of Rome. His appearance ftruck the.Romans with difmay, and inftead of preparing for defence, they threw open their gates, and furrendered at difcretion. In this extremity of diftrefs, 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 fpending fourteen days in ranfacking the houfes, churches, and public buildings, and ftripping them of all their wealth, and valuable monuments, the Vandals re-embarked, and returned to Africa with an immenfe booty, and as many captives as they could carry on board the fleet. Thefe troubles, and the mifchiefs which they occafioned, engroffed 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 fmall number of Eutychian bifhops, in which he openly anathematized the council of Chalcedon, pope Lco, and the Catholic bifhops. In virtue of this fentence, he excommunicated, depofed, and drove from their fees, all the bifhops of the patriarchate of Alexandria, who refufed to abjure the faith of Chalcedon, and in their room took care to place fuch as had diftinguifhed themfelves by their zeal for the Eutychian doetrine. In the year $45^{8}$, the emperor invited Leo to Conftantinople, that he might converfe with him, in perfon, on the fubjects of the decree of Chalcedon, and the intrufion of 在lurus. To this invitation his holinefs replied in two letters; one containing his excufes for not undertaking fuch a journey, and the other intended to explain and confirm, with the teltimony of the fathers, the doctrine of the two natures. The lalt named letter became very famous with the orthodox, and was often
quoted by the writcrs of that and fuceceding ages. After this Elurus gave the pope a public challenge to debate the points in difcuffion. But Leo refufed to comply with the propofal, alleging that it was dangerous and unnecelfary to examine anew, or to queftion 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 caufe, and omitted no opportunity of endeavouring to imprefs the emperor's mind with a fenfe of the heinoufnefs and enormity of 不lurus' crime. In 460 , the bifhops of the Eaft united in the fame caufe with fo 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 bifhop to the fee of Alexandria, and the refloration of thofe prelates who had been difplaced for their adherence to the council of Chalcedon. The news of this important change afforded the highef fatisfaction to Leo, but the pleafure was of fhort 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 paffion for aggrandizing his fee, or, in other words, for extending his own power and authority. His works confift of 141 letters, and 96 fermons. The beft edition of them was publifhed at Paris in 1675, in two vols. 4 to. which was reprinted in folio at Lyons, in the year 1700. The ftyle of Leo's writings is energetic and elegant, though fometimes, in the purfuit of elegance, he renders his difcourfes too highly polifhed.

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 Conftantinople, 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 alfo fent letters to the metropolitans of the different provinces of the Weft, acquainting them with the proceedings of this council, and requiring them to receive it, as well as to caufe it to be received by the bifhops in their refpective jurifdictions. By this conduct he acquired fo much intereft 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 1II., pope, born at Rome, was in due time appointed to the office of prefoyter in the church; and upon the death of Adrian, in 795, he was unanimoully 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 ftandard of the city of Rome, with other prefents, and requefting him to fend fome fit perfon to receive the oath of allegiance from the Roman people. The anfwer of the king was conceived in equally civil and complimentary terms, and it was accompanied with immenfe treafures to be employed by Leo in repairing and adorning the churches of Rome, efpecially that of St. Peter. In the year 796, he reftored the fee of Canterbury to that jurifdiction over all the churches of England, which had been taken away by Offa. Towards the beginning of the year 799, Leo affembled a council at Rome, in which Felix, bifhop of Urgella, and Eliphand, archbifhop of Toledo, were condemned. During

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the fame year, a confiriacy was formed againft Leo, by two nephews of pope Adrian, who had been raifed by him to high employnents in the church, and governed all things at Rome, during his pontificate, with an abfolute fway. To them, indeces, Leo had been greatly indebted for his election, and they fuppofed that gratitude would have led lim to furrender all power into their hands. Leo, willing to fhew his own authority, checked them in their defigns, and in turn they refolved to puthim to death. The attempt was made on the feltival of St. Mark, when the pope was proceeding from the Lateran palace to join in an annual proceflion. The delign did not fucceed, though he was expofed to the moft imminent danger, and was in fact thrown into a dungeon covered with wounds. From his prifon 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 lad met with, and foon after fet out on a vifit to that prince, to folicit protection againft his enemies. Charlemagne received him with the greateft marks of refpect and friendfhip, and after affuring him of his protection, fent him back to Rome, attended with feveral bifhops, and a force fufficient to protect him againft any farther attempt of his enemies. He entered the city amidft the loud acclamations of the people, and took poffeffion once more of the Lateran palace, where the nobles and bifhops who had accompanied him affembled, and to which all were fummoned who had any caufe of complaint againft Leo, thefe being commiffioned by the king to hear them and do them juftice, if in any refpect they had been injured by the pope or his minifters. Some did appear, and among thefe the nephews of Adrian, who accufed him of feveral crimes; but not being able to fubitantiate the charge, they were fent to prifon, tried, and fentenced to death for the confpiracy, in which they had been the principal actors. At the earnelt folicitation of Leo their lives were fpared, and their fentence exchanged to banifhment. About this period, the title of emperor of the Romans was revived in the perfon of Charlemagne, who, on the propofition of the pope, was faluted Auguftus by all claffes 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 expreffed his wifh to celebrate the nativity of Chrilt, 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 elteem and friendfhip. From Rheims they proceeded to Quiercy, where they kept their Chriftmas, and then repaired to Aix-la-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 809, the difpute was revived in' France on the queftion concerning the proceffion of the-Holy Ghoft : by the firft council of Conftantinople, an addition was made to the fymbol of Nice, declaring that "The Holy Ghoft proceeded from the Father." In the fifth and fixth centuries, the churches of Spain added to the fymbol of Nice and Conftantinople the word filioque, "and from the fon," and their example was followed by moft of the Gallican churches. The queftion now under difcuffion was, whether the expreffion " filioque" ought to be added or omitted. Leo was for the omiffion, though he adhered to the doctrine attached to it ; becaufe he faid if it were received by the churches, it would be a fair plea for the addition of many other articles of equal importance. To thew more decidedly that he did not approve it, he caufed two tables of filver to be fet up at the tomb of St. Peter, and the fymbol to be engraved in Greek
onone, and on the other in Latin, without the words "and from the fon," which, however, were afferwards added to the creed by his fucceffors. Leo paffed 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 depofing and murdering him. The plot he difcovered in 815, fome 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 difpleafure of the new emperor Lewis, who commanded his nephew Bernard, king of Italy, to proceed immediately. to Rome, and to take cognizance of the whole affair on the fpot. The emperor was faid to be perfectly fatisfied with the pope's juftification of his conduct, but the people, who felt for themfelves and for their friends, who had been the victims of his cruelty, were not fo eafily appeafed : they defroyed every thing belonging to his holinefs that they could get at, and would have excited an infurrection, had they not been fuppreffed and difperfed 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 molt coftly 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 monaftery of St. Martin, ordained fub-deacon by Gregory IV., and preflyter of the Roman church by Sergius II. Upon the death of the latter, he was unanimounly elected to the pontifical throne. The firft object of his care was to rellore to their former fplendour, at an immenfe expence, the churches of St. Peter and St. Paul, which had been defpoiled of their ornaments by the Saracens, and likewife to fecure them againft the future attempts of fuch plunderers. With this view he refolved to build a new city upon the Vatican, and to enclofe it, as well as the church of St. Peter, by a ftrong wall. This refolution met with the approbation of the emperor, who not only contributed himfelf to the work, but engaged contributions from his brothers in fupport of the fame caufe. With this encouragement Leo fet about the undertaking with the utmoft diligence and ardour, performing in his own perfon 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 fhore, and almoft all the fhips dafhed in pieces, and thofe on board perifted. Of the veffels that efcaped the fury of the waves, fome fell into the hands of the Romans, of which the greater part of the crews were hanged, and left on gibbets to ftrike terror into the minds of their countrymen, and the reft 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 fhare the empire with his father. This was in 850 , and in 852 Leo faw 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 purpofe of reltoring difcipline, and banifhing abufes that had crept into the church: among other things which they did, was the depofition of Anallafius, cardinal prefbyter of the church, for abfenting himfelf from his fee five years. In the fame year, the illuftrious Alfred was fent
by his father to Rome, to be educated under the care and direction of the pope. The Saracens continued ftill to infelt the court, notwithflanding their late defeat and confequent difafters: he accordingly fortified the cities on the coalt to guard his people from there depredations, and he built a new city which he called Leopolis. Scarcely had he finifhed 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 fcon 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 accufed of having folicited 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 accufer was delivered up to be difpofed of at pleafure. His life was, however, fpared at the folicitation of the emperor. Leo died in 855 , after a pontificate of cight years and upwards. He was, according to Anaftafius, poffeffed of aH the moral and Chriftian virtues, without the alloy of a fingle vice. He left behind him two letters, and a difcourfe, defigned for the inftruction 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 fcarcely had he attained to this diftinguifhed honour, before he was depofed by one of his own priefts, and thrown into prifon, where he fhortly died of grief.

Leo VI., pope, a Roman, was elected to the papal dignity on the death of pope Jobn X., in the year 928. He held the high office but about fix months, when he was depofed and imprifoned.

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 reltore ecclefialtical difcipline, to reform the monaltic orders, and to correct the abufes 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, inferted in the Collect. Concil.

Leo VIII., pope, though by others Ayled antipope, was born at Reme, and was chief fecretary of the Roman church, an office in which he fucceeded his father. Upon the depofition of John XII., in 963 , Leo, on account of his excellent character, was elected to the pontifical dignnty, with the approbation, if not by the influence, of the emperor Otho. He enjoyed his fituation but a fhort time; the people, inftigated by John, drove him from his elevated flation, and Benedict-was placed there in his itead, the partizans of whom bound themfelves by the fanction of an oath, never to fubmit to Leo, whom they called the emperor's pope. Leo was, however, in a fhort time reftoreci to his holy office, and died after a pontificate of fifteen months.

Leo IX., pope, was born at Toul, in Lorrain, in the year 1002, and being educated for the church, he was ordained deacon in 1025, and promoted to the bifhopric of his native place in the following year. By his conduct in that fee he acquired fo high a reputation for learning, prudence, and piety, that on the death of pope Damafus II. in 1048, he was chofen as the moft fit perfon to be his fucceffor. He went from Toul in the habit of a pilgrim, and was received by the people at Rome with fongs of joy and loud acclamations. An affembly of the clergy and people was convened, at which he informed them of his having been

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nominated to the apoftolic fee by the emperor, but that he did not confuder his election valid unlefs made by them, and that, therefore, they were at full liberty to choofe or reject hira; and that, if he were not unanimoufly chofen by them, he would return to his bifhopric as willingly as he had unwillingly left it. This addrefs was received with every demoniltration of refpect and fatsfaction, 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 bifhops. By this council all fimoniacal bargains were prohibited on pain of excommunication, and fo:ne bifhops convieted of crimes were depofed from their high rank. When the council was broken up, Leo took a journey into Saxony to vifit the emperor, with whom he celebrated the feftival of St. Peter and St. Paul at Cologne, and having fummoned the Gallican bihops 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 choofing 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 clofe of the year 1049; and in the following fpring he vifited feveral Italian cities, reftoring every where the decayed difcipline of the church. Soon after this he held a council at Rome, which is chiefly memorable for the unjuft fentence of condemnation which it pafted 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 adminittering the eucharit with leavened bread, which was one of the principal fubjects of a letter addreffed by him at this time to Michael Cerularius, patriarch of Conftantinople. In the mean time Leo had conceived a jealoufy of the Normans, who had made a conquelt of Apulia, which they divided into twelve counties. He was Atrongly prejudiced again!t them by the Apulians, who reprefented 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 latt journey into Germany, but the emperor was too much engaged in his own affairs to afford any material affiftance in his project. Upon Leo's return he refolved to undertake the tafk himfelf. Having therefore affembled a numerous army, he marched with all poffible expedition to the borders of A pulia, but before he could gain any decifive advantages, the Normans had put themfelves into a pofture of defence, and in the end they prepared for offenfive meafures; and put themfelves under the command of Umfred, count of Apulia, Richard, count of Averfa, and the brave Robert Guifcard: Thefe experienced warriors fell upon the pope's army with incredible fury, and after a bloody action entirely routed it with immenfe flaughter. The pope was now glad to fly, but was obliged in a fhort time to furrender at difcretion. Leo now anticipated the moft cruel treatment from thofe whom he had been accuftomed to think, and to treat as barbarous enemies. His apprehenfions were foon relieved: Umfred accofted him with all the refpect 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 fo greatly pleafed, that he abfolved them from all the cenfures which they had incurred, and even approved of the conquefts which they had made, and likewife encouraged them to add the reduction of Ca -
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labria to that of Apulia. The pope now received a letter from the emperor, in which he expreffed a great delire to fee the ancient union rettored between the fees of Conitantinople and Rone, and offered to contribute whatever lay in his power towards fo grod a work. Before any thing could be done to effect this, the pope was feized with a fevere and fatal illnefs, which put an end to his life in the year 10j", at the age of fifty-two, after having governed the Roman church live ycars and two months. He was zealous in reforming abufes, and is highly commended for his prudence, his gencrolity, and lris peety. For his attempts to aggrandize the holy fee he has been honoured with a place amorg the faints in the Roman calendar. He was the firt pope who made ufe of the Chriltian era in the date of his bulls, his predeceflors having followed that of the Indictions. Nineteen of his letters are preferved in the ninth vol. of the Collect. Concil: and feveral of his humilies or fermons were publifhed at Louvain in $156 \%$.

Lro X., pope, born at Florence in December 1475, the fecond fon of Lorenzo de Medici the Magnificent, bore the baptifmal name of Giopanni, or John, was originally dettined by his father for the church, and received the tonfure at the age of feven years. Being then declared capable of receiving ecelefraltical preferment, Lorenzo obtained two rich abbacics; 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 interelt of his family, and of the fcandalous corruption of the church. It was the great object of his father's ambition to decorate his houfe with the popedom, and upon the acceffion 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 difpolition of the youth, which was grave and folid beyond his years, contributed to the fuccefs of his initructors. When he was nominated to the cardinalate, it was made a condition that he fhould fpend three years at the univerfity of Pifa in profeffional ftudies, before he was invefted 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 eldeft fon Piero. The young cardinal's oppofition to the election of pope Alexander V I. rendered it expedient for him to withdraw to Florence, from whence, at the invafion of Italy by Charles VIII. he and the whote 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 renainder of Alexander's ponzificate, and likewifs in the early part of that of Julius II. cultivating polite literaturc, and the pleafures of elegant fociety, and indulging his tafte for the fine arts, for mufic, and the chafe, to which latter amufement he was much addicted. The deprefiion of his houfe occafioned frequent embarraffments in his finances, but his cheerful temper fupported 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 intereft of the pope, the cardinal acquired the molt unlimited conlidenec of his hulinefs, and was entrufted with the fupreme direction of the papal army in the Holy League againit the French in 1511, with the title of legate of Bologna. At the bloody battle of Raveuna, in 1512, he was made prifoner, and was conveyed to Milan, where the facrednefs of his function caufed him to be treated with great refpect. The French in their retreat carricd the cardinal with them,
but on his arrival at the banks of the Po he effected his efcape. About this time the family of the Medici was reftored to its fcrmer condition at Fiorence, and the popular conltitution of that republic was overthrown. The cardinal contributed to this event, and remained at Florence, till the death of Julius II. called bin fuduenly to Rone. At the fcrutiny 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 Italiaus and forcigners, than moft of his predeceflors had enjoyed. One of his firtt aets was to interpofe in favour of forne confpirators againft the houfe of Medici, at Florence, and he treated wath great kindnefs the family of Sodoreni, which had long been at the head of the oppolite party in that republic. He exhibited his talte for literature by the appointment of two of the molt elegant fcholars of the age, Bembo and Sadoleti, to the office of papal fecretaries. With regard to foreign politics, he purfued the fyitem of his predeceffor, in attempting to free Italy from the domision of foreign powers : and in order to counteract the antipapal council of Pifa, which was aflembled at Lyons, he renewed the meetings of the council of Lateran, which Julius II. had begun, and be had the good fortune to terminate a divifion which threatened a fchifm in the church. Lewis XII. who had incurred ecclefiattical cenfure, made a formal fubmiffion, and received abfolution. Having fecured external tranquillity, Leo did not delay to confult the interelts of Jiterature by an ample patronage of learned đudies. He reftored to its former fplendour the Roman gymnafium or univerfity, which he effected by new grants of its revenues and privileges, and by filling its profeflorfhips with eminent men invited from all quarters. The ftudy of the Greek language was a very particular object of his encouragement. Under the direction of Lafcaris a college of noble Grecian youths was founded at Rome for the purpofe of editing Greek authors; and a Greek prefs was eftablifhed in that city. Public notice was circulated throughout Europe, that all perfons who poffefled MSS. of ancient authors would be liberally rewarded on bringing or fending them to the pope. Leo founded the firt profefforfhip 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 fron the cver-bearing influence of any foreign potentate; and the aggrandizement of the houfe of Medici. When Francis I. fucceeded to the throne of France, it was foon apparent that there would neceflarily be a new war in the north of Italy. Leo attempted to remain neuter, which being found to beimpracticable, he joined the emperor, the Swifs, and other fovereigns againit the French king and the ftate of Venice. The rapid fucceffes of the Freach arms foon brought him to befitate, and even to ftand aloof, and after the Swifs army had been defeated, the pope thought it expedient to detach his caufe from that of his allies, and to form an union with the king of France. Thefe two fovereigns, in the clofe of the year 1515 , had an interview at Bologna, when the famous Pragratic Sandion (which fee), was abolithed, and a concordat eftablifhed in its ftead. 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 ftrongly as any one of his predeceffors. Under the influence of this paffion, he found a pretext, in 1516 , for iffuing a monitory againit the duke of Urbino, and upon his non-appearance, Leo iffued an excommunication againgt him, and feized

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his whole territory, with which, together with the ducal title, he invelted his nephew. In the fame year a general pacification took place, though all the efforts of the pope were made 20 prevent it. In 1517 , the expelled duke of Urbino collected an army, and, by rapid movements, completely regained his capital and dominions. Leo, exceffively chayrrined at this event, would gladly have engaged a crufade of all Chrillian princes againit him. By an application, which nothing could juntify, of the treafures of the church, he raifed a conriderable army, under the command of his nephew, and compelled the duke to refign bis domirion, upon what were ealied 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 hin to reseal his malter's fecrets, imprints on the memory of Leo X. an indelible ftain. In the fame year his life was endangered by a confpiracy formed againlt him, ini which the chief actor was cardinal letrucci. The plan failed, and the cardinal, being decoyed to Roine, from whence he had efcaped, was put to death; and his agents, as many as were difcovered, were executed with horrid tortures. The conduct of Leo on this occafion was little honourable to his fortitude or clemency, and it was believed that feveral perfons fuffered as guilty who were wholly innocent of the crimes laid to their charge. To fecure himfelf for the future, the pope, by a great fretch 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 perfons alfo who, from their talents and virtues, were well worthy of his choice. He beftowed upon them rich benefices and preferments, as well in the remote parts of Chritendom, as in Italy, and thus formed a numerous and fplendid court attached to his perfon, and adding to the pomp and grandeur of the capital. During the pontificate of Leo X. arofe the daring Luther, whofe life will be given farther on; neverthelefs, in this place, we muft notice certain facts with which Leo and the reformation are clofely connected. The unbounded profution of this pope, in every object of expence attached to a talte for luxurious magnificence, had rendered it neceffary to devife means for replenifhing his exhaufted treafury ; and one of thofe which occurred was the fale of thofe indulgences which the church claimed a right of difpenfing from the itore of her fpiritual wealth. The commiffaries appointed for this traffic in Germany, exaggerated the efficacy of their wares in fnch very extravagant terms, as gave great offence to the pious and thoughtful. Luther, a public preacher at Wittemberg, warmly protelted againtt this abufe in his difcourfes, and in a Lotter addreffed to the eleator of Mentz. He likewife publifhed a fet of propofitions, in which he called in queltion the authority of the pope to remit ins, and made fome very warm ftrictures on this method of railing money. His remonftrances produced corfiderable effect, and feveral of his cloth undertook to refnte 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 neceffary, he was inclined to lenient meafures. At length, at the exprefs defire of the emperor Maximilian, he fummoned Luther to appear before the court of Rome. Permifion was, however, granted for the cardinal of Gxta to hear his deferce at Augßourg. Nothing fatisfactory was determined, and the pope, in 1518 , publifhed 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 wih a Aremgth little calculated upon by the court of Rome. The fentiments of the Chiriftian world were not at all favourable to that court. "The fcandal," fays the biographer, " incurred by the infatny of Alexander VI., and the violence of Julius II., was not much alleviated in the reign of a pontiff who was characterized by an inordinate love of pomp and pleafure, and whofe claffical tafte even cauferd him to be regarded by many as more of a heathen than a Chriltian."
The warlike difpolition of Selim, the reigning Turkifh emperor, excited great alarms in Europe, and gave occafion to Leo to attempt a revival of the ancient crufades, by means of an alliance between all Chriftian princes; be probably hoped, by this thow of zeal for the Chriftian caufe, that he fhould recover fome of his loft credit as head of the church. He had, likewife, another object in view, viz, that of recruiting his finances, by the contributions which his emiffarics levied upon the devotees in different countries. By the death of Maximilian ia 1519 , a competition for the imperial crown between Charles V. and Francis 1. took place. Leo was decidedly againft the claims of both the rival candidates, and attempted to raife a competitor in one of the German princes, but he was unable to refitt the fortune of Charles. At this period he incurred a very fevere domettic 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, wihl its dependencies, to the Roman fee, and to the appointrment of Giulio, Leo s coufin, to the fupreme direction of the ftate of Florence. (See Clement VII.) The rapid progrefs of the Reformation forcibly recalled the attention of the papal court, and Leo, anxious for an amicable negotiation, employed a Saxon nobleman to treat in perfon 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 fubmifion to the decrees of the Catholic church. The Reformer was perfuaded to addrefs a letter to his holinefs ; but, inftead of expreffions of humiliation, it contained much bitter invective againft the court of Rome. It was, therefore, determined to condemn him and his doctrines; and a bull to that purpofe was iffued, June 15 th, 1520, which occafioned a total feparation between the papal fee 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 conftitutions, and the bull itfelf. Leo was not fatisfied 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 perfon, what Luther had to fay in his own juftification, and a mandate was iffued for his appearance at Worms. (See Luther.) We may obferve here, that Leo conferred on Henty 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 ftate of Italy, at this period, allowed the pope to indulge his tafte for magniticence in hows and fpectacles, and in the employment of thofe great artilts who have reflected fo much luitre on his pontificate. His private hours were chiefly devoted to indolence, or to amufenents, frequently of a kind little fuited to the dignity of his high ftation. He was not, however, fo much abforbed in them as to neglect the aggrandizement of his family and fee. Several cities and diltricts 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 fummoned to his court to anfwer for their conduct ; and in default of an exculpation of their crimes, he caufed them to be put to death. His holinefs next laid a plan to get into his poffeffion the city aud territory of Ferrara. He had fet his heart upon this object, and being unable to attain it by open means, he had recourfe 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 readinefs; but bic 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 expulfion of the French from Italy. In 1521 , he formed a treaty with the emperor for the re-eftablifhment 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 meafures, made much progrefs againtt the French, and drove their troops before them; but in the midift of thefe fucceffes, and while public rejoicings, were making in Rome on account of them, the pope was feized with an illnefs, which at firlt was confidered as a flight cold only, but which put an end to his life in a few days. This event happened on the ift of Dec. 1521 ; when Leo was in the 46 th year of his age, and the ninth of his pontificate. The people at large expreffed much concern at his death, but the honours rendered to his memory were not fuch as might have been expected. An exhaulted treafury was the pretext for an economical funeral, and amidt all the eminent fcholars of his court, an illiterate chamberlain was appointed to pronounce his funeral oration. Leo was himfelf but moderately furnifhed with folit erudition: he afforded liberal encouragement to ufeful and reputable fudies, but he alfo lavihed his patronage upon productions and perfons of an oppofite character. The merit of a fovereign in promoting thofe ornamental arts by which alone he can difplay a magnificence fuperior 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 rifen to fame under his predeceflor, Julius II., who had planned and made a commencement of the ftupendous edifice of St. Peter's : the Vatican palace had likewife received fome of its nobleft ornaments in his and the former pontificates. But the reader who wifhes to obtain an accurate view of the thate 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 fee! each mufe, in Leo's golden days, Starts from her trance; and trims her wither'd bays;
Rome's ancient Genius, o'er its ruins fpread,
Shakes off the dut, and rears his rev'rend head.
Then fculpture and her fifter arts revive:
Stones leap to form, and rocks begin to live ;
With fweeter notes each rifing temple rung,
A Raphael painted, and a Vida fung.
Leo XI., pope, the fon of Octavian de Medici, coufin of Cofmo, duke of Tufcany, was born in the year 1535. He was made archdeacion of. Florence, and filled the poft of ambaffador 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 adjufting the
terms of peace between Philip 11., king of Spain, and the French monarch, and for his good offices he received from the latter a noble prefent. 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 dilfinguifhed talents and virtues, and becaufe they knew that to his zeal for the interefts of the church, he united a liberal fpirit, a love of learning and learned men, and, as it were, an hereditary tafte for the polite arts. On the day of the proceffion, when the pope commences his office with great pomp and form, the feveral orders of the city endeavoured to furpafs each other in their demonitrations of joy on the occation. Their fatisfaction, however, was of very fhort continuance, and was fpeedily changed into grief and mourning, on account of his death, which happened on the 25 th day after his election, in the joth year of his age. Bower's Lives of the Popes. Bayle. Moreri. Lardner.

Leo Allatius. See Allatius.
Leo, the Grammarian, of whofe perfonal hiftory 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 Eaft, from the year 813 to 1013. It is annexed to Combefis's edition of the chronicle, printed at Paris in 1655. Moreri.

Leo, Јонл, named Africanus, a traveller and geographer, was a native of Granada of Moorih extraction. When that city was taken by Ferdinand and Ifabella, in 1492, he retired into Africa, and on that account obtained his furname. He ftudied the Arabic at Fez, was employed by the king as ambaffador, and took feveral journeys into Europe, Leffer Afia, and Africa, of which he wrote a narrative in the Arabic language. He once fell into the hands of fome pirates, and was fold as a flave to a mafter, who prefented him to Leo X. The pontiff highly efteemed him on account of his learning and knowledge, and having perfuaded him to renounce Mahometanifm, gave him his own names of John and Leo at the time of his baptifm. He now applied hinvelf to the attainment of the Italian language, and tranflated into it his defcription of Africa. This work is reckoned one of the moft curious of the early. voyages and travels. The author defcribes what he had himfelf feen, chiefly on the northern and weftern coafts of that peninfula, and it fupplies deficiencies from the relation of others; but as a geographical work it has various imperfections and defects. It has been tranflated into Latin and French. Leo probably died foon after he had rendered his work into the Italian language in 1526. He was author likewife of a treatife " De vitis Philofophorum;" printed at Zurich in 1664 . Moreri.

Leo of Orvieto, born in the territory of Orvieto, in Tufcany, became a monk of the Dominican or Francifcan order, who flourifhed towards the commencement of the fourteenth century. He was author of tyo "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 publifhed them in his "Deliciz Eruditorum, feu Veterum Anecdoton Opufculorum Cillectanea," printed at Florence. Both the chronicles were publifhed in 1737 , in two volumes 8 vo., with notes and illuftrations. The fecond volume contains a Nketch of the hiftory of France, written by John de l'Ife, fuppofed to have been a monk of the abbey of St. Dennis, in the $15^{\text {th }}$ century, entitled "de Geftis et Faetis memorabilibus Francorum." Moreri.

Leo ne Modens, a learned rabbi, whofe Jewifh name

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was R. Jehudah Arie, was born at Modena, and fourifhed in the feventeenth century. He was for a confiderable time chief of the fynagogue, and efteemed a good poet both in Hebrew and Italian. He was author of a valuable work on the ceremonies and cultoms of the Jews, which is held in eflimation by the learned of all nations. It is entitled " Ittoria de Riti Hebraïci, vita et Offervanze de gli Hebreï di quefti Tempi;" the beft edition of this work was printed at Venice in 1638 . It was tranflated into the French language in 1674 , by Richard Simon, with fupplements relating to the fects of the Karaites and Samaritans. Leo meant to have given an Italian tranflation of the Old Teftament, but he wis prohibited from purfuing it by the Inquifition. He compiled a Hebrew and Italian dictionar ${ }_{j}$, entitled "The Mouth of the Lion." This work was publifhed 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 Freüh monk, born at Rennes in the year 1600 . Before he entered into the religious profeffion, his name was John Macè. He was nominated to all the honourable and confidential pofts of his order, and acquired the efteem 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 car. dinal Richelieu, by whom he was patronized. He died in 1671, leaving behind him numerous works, the principal of which is entitled "Studium Sapientix Univerfalis"" in three volumes folio. His "Hitory of the Carmelites;" "Lives of different Romifh Saints;" and "Journal of what took place during the laft Sicknefs, and at the Death of Car. dinal Richelieu,' are well known and frequently referred to.

Leo, in Botany, a name ufed by fome authors for the columbine, or aquilegia. Columella, befides 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 fpecies 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 alfo, like that, an animal, yet in an imperfect ftate, 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 ufually bred among the herds of the pulices, which he devours moft unmercifully. He is a worm of the hexapode, or fix-legged kind, and very foon arrives at the time of his change; after which be becomes a green fly with four wings. Another animal of this kind, and not lefs deftructive of this fmall race of animals, is a fix-legged worm of a whitifh colour, and fmaller than the former, which finally becomes a round-bodied beetle. Another fpecies of thefe devourers this author calls wermis byffrix, the porcupineworm, from the valt number of ficulx, or tender prickles, with which he is armed. This alfo finally becomes a round and fmall beetle. Reaumur, Hift. Inlect. tom. i. See Lion puicron.

LEOBEN, or Leuben, in Geography, a town of the duchy of Stiria, on the Muehr; 68 miles S.W. of Vienna. At this town the preliminaries of peace between the emperor and the French republic, were fettled on the zoth of April 1797. N. lat $47^{\prime \prime} 22^{\prime}$. E. long. $14^{\circ} 55^{\prime}$.

LEOBSCHUTZ, or Lubschutz, a town of Siléfia, and capital of a circle, in the principality of Ingerndorf; 16 miles N. of Ratibor. N. lat. $50^{\circ} 5^{\prime}$. E. long. $17^{\circ} 44^{\prime}$.

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LEOCROCO'TTA, in Natural Hifory, a name given by the ancients to an animal faid to be the fwifteft of all creatures in the world. It is defcribed as a mongrel or baftard animal, unable to propagate its own fpecies, being begotten upon the lionefs by the male hyzna of fome of the larger kinds: but is one of thofe animals, the exiftence of which is much to be doubted. The Latin authors have made fome confufion between this creature and the mantichora, attributing the things that have been faid of one to the other.

LEOGANE, in Geography, a fea-port sown of the ifland of Hifpaniola, or St. Domirgo, on the N. coaft. It was once the feat of the French government. Although its fituation is not good, the air is Calubrious, and the foil of the adjacent territory is fertile. In 1796, it was taken by the Britifh. It is a place of confiderable trade, N. lat. $18^{\circ}$ $30^{\prime}$. W. long. $73^{\circ} 25^{\prime \prime}$. See St. Domingo.

Leogane, Bay or Bight of, called alfo Cul de Sac of Leogane, lics at the W. end of the ifland 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 iflands Gonave, and on the $N$. fide of the $S$. peninfula the ifles Reffif and Caymite. The town of Lengane is fituated on the N . fide of the neck of the S. peninfula, in the bay of Leogane, at the head of a finall bay which fets up E. from the bay of Grand Goave, four leagues N.E. of the town of that name. See Sr. Domingo.

LEOMINSTER, or LEMSTER, a borough and markettown in the hundred of Wolphy, and county of Hereford, Ensland, is fituated in a very rich and fertile vale abounding with orchards, hop-yards, fine meadows, and arable lands. Its immediate fcite is, as Leland defcribes, "fumwhat lowe, and all the ground very neere about it is farre lower." The river Lugg flows on its north and eaft fides; two fmaller ftreams run through the town, and three other confiderable rivulets pafs it within half a mile. Its extent from nort $\mathrm{H}_{1}$ to fouth is nearly a mile ; and from eaft to weft about half a mile. "The towne of Leonmintter," Leland fays, "is metely large, and hath good buildinges of tymbre. The towne, by reafon of their principall wool, ufe great drapinge of clothe, and thereby it flourihhed. Syns of latter days it chanced that the cittyes of Hereford and Worcelter complained of the frequency of people that came to Lemfter, in prejudice of bothe their marketts; whereupon the Saturday markett was removed from Lemilter, and a :narkett on Friday newly affigned to it; fyns that time the towne of Lemiter hath decayed. The antiquity of the towne is moft famous by a monaftery of nunnes, that Merwaldus, kinge of the Marches, built and endowed."-" There is but one paroche church in Leonminfter; 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 conqueft. The common fame of the people about Lemfter is, that king Merewald, and fome of his fucceffors, had a caftle, or palace, on an hill fide by the towne of Leonminfter, half a mile off by eaft." In the year 1055, Leominfter was feized upon by the Wellh chieftains, who Itrengthened it by fortifications, the remains of which may be traced even at the prefent period. The town appears to have been a place of fome confequence at the time of the Domefday furvey: as that regifter records that the manor, with its appurtenances, confifting of fixteen dependent eftates, had been affigned by Edward the Confeffor to his queen Editha; and that it was governed by eight bailiffs, eight

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eight beadles, and eight free temants. When the furvey was made, the manor belonged to the king; great part of the cullomary rent was paid as compofition for falt, fifh, and eels. Here was alfo a wood fix miles in length, and three broad; but part of it was even then begun to be "a aflarted," and cleared for tillage; "an aerie of hawks" is alfo mentioned in the fame record. About the time of William Rufus, the fortifications of Leominfter were Atrengthened and enlarged, the better to fecure it againtt the incurfions of the Welfh. In the reign of king John, William de Braofe, lord of Brecknack, a turbutent and high-fpirited baron, plundered this cuwn, and burned great part of it, together with the priory and church. In Henry IV.'s reign, Leomintter was for fome time in the poffeffion of Owen Glendour, after he bad defeated the earl of March. In the next century, the inhabitants of this town took a deciive part towards the eltablifmenent of queen Mary on the throne; for which fervice fle granted them the firit regular charter of incorporation, with many vaiuable' privileges. An annual fair had been granted ia 1170 , by Henry II.; two additional fairs, cach of fix days continuance, were granted by Edwaré I.

The church of Leominfter, having been partly deftroyed by live March 18, 1700, was re-edified at the expence of nearly 17:0001.; the whole of that part ufed for divine fervice being entirely new. The church in its-prefent fate is itregular, both in its form and architecture. The mont ancient parts are the eaft wall, the north fide, the tower which itands at the north-welt angle, the weft end, and the wall and windows of the fouth fide. In the interior the chief part is modera, excepting what is called the back aifle, which, as well as the lower part of the tower, is principally of Saxon workmanhip. The exterior of the ealt end has three large buttreffes, a high pointed window with interfecting mullions, and two fmaller windows. On the north fide is a very ftrong femi-circular arched door-way, with a finaller one within it. The upper part of the tower is in the pointed ityle and embattled; the lower part: is Saxon; it difplays a fingularly rich entrance door-way on the welt, having a receffed arch, with three pillars on each fide, the capitals of which are ornamented with fculptures of foliage, a couchant man, a tyger, fnakes entwined round branches, and birds. The mouldings fupported by thefe pillars are flightly pointed, but are embelliihed with lozenges and zigzag work. On the north fide of the church is the nave and north fide of the ancient Aructure, which are feparated 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 worfhip in the town, for the refpective denominations of Baptifts, Prefbyterians, Moravians, and Quakers. During the time of rebuilding the church, divine dervice was performed in a contiguous buildug, anciently called the Chapelle in the Forbury, erected by Peckham, archbifhop of Canterbury, about the end of the thirteenth century. It was afterisards appropriated to the purpofe of tuition, and theace called the fchool-houfe; but has lately been converted into a regular theatre ; it is a plain building, with pointed windows. The priory was fituated to the north-eait of the church, on the little river Pinfley; fome of the buildingo are yet ftanding, among which is the prioryhoufe, which has undergone various alterations fince the diliflution. The town-hall, or butter-clofe, as it is communly termed, is a fingular bulding, conitructed of timber and platter about the year 1633. The archutect was the selebrated John Abel, who built the Shire-hall at Hereford,
in the year 1645. This fabric flands on twelve oak pillars, fuftained on ftone pedeftals; the brackets and fpandrils above the arches, and the upper parts of the building, difo play much carving. A new gaol was crected in the year 1750 ; and a market-houfe in 1803 . Several improvements have been recently made in the town; the trade is flourihhing, and many of the fhops are refpectable. 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 alfo, and the hops, are held in high eltimation.

The corporation confifts of a bailiff, chief fteward, recorder, twenty four capital burgeffes, a chamberlain, and two ferjeants at mace. Two reprefentatives in parliament are chofen by the corporation and inhabitants paying fcot and lot ; the number of voters being about 500 ; the earlict return was in the twenty-third of Edward I.

Leominfter is 137 miles diftant from London ; the population, as returned under the act of 1800 , amounted to 3019 ; the number of houfes to 736. The fcite of the caltle or palace mentioned by Leland as belonging to Merwald, is fuppofed to be the mount to the ealtward which overlooks the Hay lane.

Berringion, about four miles to the north-eaft, was the feat of the late Right Hon. Thomas Harley, About a mile to the fouth-ealt 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 Leominfter, is Ivinton camp, a ftrong fortification divided into two parts by an entrenchment more modern than the outer works. This is fuppofed, with great probability, to be the camp occupied by Owen Glendour. Price's Hiftory of Leominfter, 8vo. Beauties of England and $W$ ales, vol. vi.

Leominster, a pofl-town of America, in Worcefter county and ftate of Maffachufetts; 46 miles W. of Bofton. It has a printing office and fevaral neat buildings. This townfhip was taken from Lancalter, incorporated in 1740, and contains 1486 inhabitants. On the ftreams that pafs through this town are feveral mills of different kinds. About 200,000 bricks are annually made here. The manufacture of combs is alfo carried on in great perfection and with confiderable profit.

LEON, in Ancicnt Geograthby, a promontory of Greece, in the inle of Eubca.-Alfo, a promontory of the ille of Crete.-Alfo, a river of Pheenicia. Ptolemy.

Leon, in Geography, a province of Spain, called a kingdom, fituated towards the N.W., and inclofed between Ef. tramadura, Old Caltile, Galicia, and Portugal. Its form is a kiad of irregular long rectangular figure. Its mean length from N. to S . is elfimated at about $5^{2}$ leagues, and its mean breadth from E. to W. about 30 leagues. This is the country which was furmerly inhabited by the Vettones, mentioned by Strabo. It is bounded on the E. by Old Cafile; on the S.E and S. by Eltramadura; on the W. by the provinces of Beira, Tra-los-Montes in Portugal, and Galicia; and on the N . by the Afturias. 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 Cattile in 1069; but without lofing the title of kingdom. Its territory is mountainous; neverthelefs 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 fmall 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 fupe-

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rior kind, and it furnithes a good number of fheep. The river Ducro almolt bifeets the country. The kingdom of Leon contains fix bifhoprics, viz. thofe of Leon, Salamanca, Palencia, Zamora, Altorga, and Ciudad Rodrigo; fix cathedral chapters, nine collegiate chapters, 2460 parifhes, as well rectories as vicarages; 396 convents, 23 hofpitals, five afylums, two military governments, four intendencies of provinces, a celebrated univerfity, four fuperior colleges, 25 colleges of all claffes, fix cities, 539 towns or boroughs, 3005 villages or fettlements, of which 76 , formerly inhabited, are now deferted. Its mountains that are particularly diftinguifhed are thofe 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 Caltile: 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. Amonglt 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, almolt all of which rife in Leon or near its confines ; the Duero, the Carrion, the Erefma, 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 difperfed to Galicia, Afturias, Lower Bifcay, 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 poffeffion of Oviedo, of which he was acknowledged king. Having regulated this little ftate, and gained new fubjects, he again attacked the Moors, and retook from them the town of Leon, and fome others. Thus was raid the foundation of this new kingdom, although Pelagius and his fucceffors only took the title of kings of Oviedo or the Alturias, till Ordagno II. who in 915 affumed the title of king of Leon. The kingdom of Leon paffed, 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 priets, 2064 monks, 1570 nulis, 196 convents, 2460 parifh churches, 2695 villages, 31,540 nobles, 25,218 fervants, and near 600,000 other inhabitants of all profefions; which gives a total of about 665,000 perfons. The agriculture of this country might be much improved, if the inhabitants availed themfelves of the water which their rivers fupply in the irrigation of the land. They are alfo negligent in the culture of fruit trees, and though they have fine rich paftures, their flocks are, removed from one part of the country to another. The commerce of this province confilts chiefly of importation, and it fcarcely furnilhes any thing to the neighbouring provinces. It Cends to Galicia part of the ferges and baize manufactured at Rio Seco; but this is very trifling compared with the goods which it is obliged to import. It traffics in fome wines, fome 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 flill a manufactory for hats: and they make fome houfhold cloths in the country. The Englinh, 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 fprings of cold mineral waters. niz. at Amufco, about $3 \frac{\pi}{2}$ leagues from Palencia, at Buron, at Bavila-Fuente, four leagues E. of Salamanca, and Afludillo, nine leagues from Palencia. There are alfo four thermal fprings, viz. near Almeyda, at Ledefma, at Bonar or Bonah, fix leagues from Leon, and at Barnos, near the fronticrs of E . tramadura and Caftile. The inhabitants of this province are very grave, and addicted to taciturnity ; thofe who retain remains of the national manners of Span, and who live in the mountains in the Mauregatos, near Aftorga, wear pyramidal hats, a kind of ruff round the neck, a jacket or flirt, and clofe coat, wide breeches and fpatterdafhes. The women of Mauregatos wear large ear-tings, a kind of white turban, flat and widened like a hat, and their hair parted on the forelead. They have a chemife clofed over the chell, and a brown corfet buttoned, with large fleeves opening behind. Their petticoats and veils are alfo brown. Over all they wear immenfe coral necklaces, defcending from the neck to the knee; twifting them feveral times round the neck, paffing them over the fhoulders, where a row is faltened that forms a kind of bandage over the bofom; another row is fufpended lower than this ; and alfo a third and even a fourth row at fome diflance from each other. The lalt falls over the knec, with a large crofs on the right fide. Thefe necklaces or chaplets are ornamented with many filver medals, fhaped with the figures of faints. Thefe ornaments are chiefly worn on feftivals. On the dajys of religious folemnities, particularly the Affumption, the fronts of the churches are illuminated, bonfires are made before them, mulicians attend, and the people dance all night; the women play the caltanets, and are accompanied by an inftrument called "Pandero," which is a kind of tambour de bafque. De Laborde's View of Spain, vol. ii.

Leos, 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 Atationed 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 molt famous and molt ancient epifcopal fees in Spain, and poffeffed, in the time of the Gothic kings, the privilege of appealing immediately to Rome. The bifhop is fuffragan to the archbithop of Compoftella, without being in any refrect dependent on its jurifdiction; this bihopric poffefles a revenue of 22,000 ducats. Its diocefe contains 823 villages, 883 parifhes, 26 convents of monks, 11 of nuns, collegiates, and hofpitals. When the kings refided here, till the $3^{\text {th }}$ century, its population was confiderable; but it is now much reduced. According to the flatement of 1788 , there were within the juridiction of the intendant of Leon $250,13+$ inhabitants. A great part of its walls confilts of green marble. It contains 13 parih churches, one collegiate church, four convents of monks, five of nuns, and a number of hofpitals and hermitages. Here are the royal ho: fes of San-Ifidoro and San-Marios of the order of St. James; and a chapter of noble canoneffes, not cloiltered, but who take the vows. This town was the firl of any importance which the Cluiftians retook from the Mcors. Pelagius made himfelf matter of it in 722 , fortified it, and built a good caftle, to defend the approaches to it.

It had the honour of being the capital of the firlt Catholic kingdom of Spain, and of being, for three centuries after the invafion of the Arabs, the relidence of the kings. The palace which the duke of Alphonfo built here at the end of the 12 th century is fill to be feen. Among its moit iplendid edifices we may reckon the cathedral church, which in beauty furpalies the molt admired in Spain, and is one of the mott attractive
attractive monuments of Gothic architecture. The hotel of the counts of Luna is alfo large and handfome. The town-houfe has a good appearance, with a tolerably regular front. The palace of the Guzmam is magnificent, ornamented with a fuperb portal, and fecured by very ftrong walls. Among the gates of the town one was formerly a famous prifon; and at the bottom is the ftatuc of king Don Pelagius, with an infcription. The Place Mayor has a beautiful appearance. There is a number of other fquares and handfome fountains. Notwithtanding 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 embellifhed; it has beautiful promenades. as well as broad and noble avenues of handfome trees. In the environs of the town the corn harvelfs are not abundant ; but this deficiency is fupplied by many excellent vegetables, fruits, flax, and verdant meadows, which furnith good paltures. At Leon there are feveral manufactories for different woollen articles; ftockings, hofiery, leather, gloves, \&c. are alfo made here. Leon is 159 miles N.W. of Madrid. N. lat. $42^{\circ} 3^{6}$. W.long. $5^{\circ} 37^{\prime}$.

Leon, a town of Spain, jn Catalonia; 43 miles N.W of Urgel.

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 Andalufia, formed by a canal which furrcunds it, ten miles long, and 24 feet deep in high water, and capable of admitting the larget fhips. This illand was entirely deferted in the feventeenth century, and there was fcarcely a houfe upon it. At prefent the principal freet of the town is two miles long, with rows of fhops on each fide, and containing upwards of 2000 inhabitants. . Provifions are here abundant, and the place exhibits a moving fcene. The ifland has an alcade-mayor for the adminittration of juftice ; a municipality compofed of a number of regidors, and a manufacture of ftained 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 extenfive province of Nicaragua, fituated on a large lake of frefh water, abounding with fifh. It is a bifhopric, but a town of little importance. It has about 1200 houfes, four churches, and feveral convents. Its fituation near a mountain, in which is a volcano, renders it fubject 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. <br> Leon de Guanuco. See Guanuco.

Leon, New, one of the feven domains, called kingdoms, into which the Spanif dominions in North America are diftributed. This name is reftricted by the maps to a fmall province round the town of Monterey, which muft 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 diftrict ridiculoufly 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, befides New Leon proper, are Sootander and Coaguila, or New Eftramadura.

LEONAN, a fmall illand in the Eaft Indian fea, near
the N.E. coait or Borneo. N. lat. $6^{\circ} 39^{\circ}$. E. long. $117^{*}$ 48'.

LEONARD of Pifa, in Biography, an Italian mathematician, who flourifhed at the commencement of the thirteenth century, was the firft perfon who brought into Europe the knowledge of the Arabic cyphers and algebra. He gives an account of the fact himfelf, and fays, that being at Bugia, a town in Africa, he was inftructed in the Arabic method of keeping accounts, and that, finding it more corvenient, and preferable to the European method, he had draws up a treatife for the purpofe 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 organilt of the chapel royal at Naples, was not only admired and refpected by his contemporaries, but his memory ftill continues to be held in reverence by every profeffor that is acquainted with his works. The firft opera of his compofition that we were able to find, is "Sofonifba," which was performed in Naples in 1718 , and the laft," Siface," in Bologna, 1737. Between thefe he produced three operas for Venice, and four for Rome. Leo likewife fet the "Olimpiade", of Metaftafio, in which the duo, "Ne i giorni tuoi felice," and the air, "Non fo donde viene," are admirahle; as is "Per quel paterno ampleffo," in Artaferfe, 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 laft century, in England, where it was fure to be heard at every mufical performance, both public and private. Leo likewife fet Metaftafio"s oratorio of "St. Elena al Calvario," of which we have feen fome very fine airs. His celebrated "Miferere," in eight real parts, though imperfecly performed in London at the Pantheon, for Anfani's benefit, $17^{81}$, convinced real judges that it was of the higheft clafs of choral compofitions.

The purity of his harmony, and elegant fimplicity of his melody, are no lefs remarkable in fuch of thefe dramas as we have been able to examine, than the judicious arrangement of the parts. But the maffes and motets, which are carefully preferved by the curious, and ftill performed in the churches at Naples, have all the choral learning of the fixteenth century. There are likewife extant, trios, for two violins and a bafe, fuperior in correctnefs of counterpoint and elegance of defign to any fimilar productions of the fame period. This complete mufician is equally celebrated as an inftructor and compofer ; and the "Solfeggi," which he compofed for the ufe of the vocal fludents, in the confervatorio over which he prefided at Naples, are ftill eagerly fought and ftudied, not only in Italy, but in every part of Europe, where finging is regularly taight.

This great mufician died about the year 1742, at the age of fifty-three. His death was unhappily precipitated by an accident which at firft was thought trivial ; for having a tumour, commonly called a bur, on his right cheek, which growing, in procefs of time, to a confiderable magnitude, he was advifed to have it taken off; but whether from the unfkilfulnefs of the operator, or a bad habit of body, a mortification enfued, which colt him his life. After expreffing the reverence which we have always had from our earlieft youth, for the productions of this admirable compofer, we thall tranfcribe a character of him from "L'Effai fur la Mufique," drawn up with elegance, force, and feeling, which does not feem to flow from an exclufive admirer of Rameau, under the guidance of the intolerant preacher of the triple progreffion.
" Leonardo

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"Leonardo Leo, a Neapolitan, the firft mafter, and mott fublime genius for mufic of his time; who is never mentioned but with refpect and admiration by every intelligent pro. feffor. They all aver that no compofer has given to mufic that interefting elevation, that impreffive dignity, which are the principal characteriltiss of the Ayle of Leo. A noble pathos always reigns in his compolitions; his ferious and feeling character has inttinctively guided his pen. This has made him partial to the chromatic, which he has fo ahly treated. In Spite of the difficulty of compofing in this genus, he joins all the grace and fweetnefs which are fo delightful, even in the moit natural mulic. His tafte and expreflion will be always celebrated; as all thefe natural gifts were under the guidance of the moft profound knowledge of his art. In hort, this wonderful man cannot be too highly praifed. His mame and works are known to all Enrope. He moit delighted in dramatic mufic, which, however, did not prevent him from enriching the church and chamber with innumerable productions of the mott finifhed kind. The following are fome of his operas ; in 1720 , Cajo Gracco; in 1722, Tamerlane and B3jazet; in 1723. Timocrate; 1728, Argene; in 1729, Catone and Utica; in 1735, La Clemenza di Tito ; and in ${ }_{1737}$, Siface. This truly great mufician died about the year 1742 , at the age of $53^{\circ}$
LEONARDSTOWN, in Gcography, a poft-town of America, in the ttate of Maryland, and capital of St. Mary's counts, fituated on the E.fide of Brition's brook, where it falis into Britton's bay, five miles from its mouth in the Patownac ; and containing about 50 houfes, a courthoufe and gaol; 217 miles S. WW. of Philadelphia. N. lat. $3^{82} 18^{\prime}$.
LEONBERG, or Leonsberg, a town of Wurtemberg, on the Glems; 6 miles W. of Stuttgart. N. lat. $4851^{\prime}$. E. long. $9^{\circ} 7^{\prime}$.

LEONE, one of the Navigator's inles, about five miles in circumference, E. of Fanfoué, from which it is feparated by a channel.

LEONES, a fmall inand in the Atlantic, near the coaft of Patagonia. S. lat. $50^{\circ} 2^{\prime}$.

LEONESSA, a town of Naples, in Abruzzo Ultra: 19 miles N.IV. of Aquila.

LEONFORTE, one of the largett and handfomeft 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 Priucipato Ultra; 12 miles W. of Conza.

LEONICENUS, Nicholas, in Biograpby, an eminent Italian phyfician, was born in one of the Venetian ftates in the year 1428. He was profeffor of medicine at Ferraraduring upwards of fixty years, and was the firlt perfon who undertook to tranflate the works of Galen into Latin. In $f_{a}$ ct he was fo ftrongly attached to literary purfuits, and to the duties of his profefforhip, that he gave up little time to the practice of lis profefiion : and when his negligence in this refpect was condemned, he faid, "I do more fervice to the public, than if I vifited the fick, by inftructing thofe who are to cure them." He extended bis attention allo to the belles lettres, which he confidered as clofely connected with the proper fludy of philofophy and medicine; he wrote fome refpectable poetry, and tranflated into Italian the hitory of Dion Caflius, and the dialogues of Lucian. Until the age of thirty, Leonicenus was tormented with fre$q^{n}$ nent attacks of epilepfy, which reduced him at times to melancholy and defpair. This difeafe, however, afterwards left him, and, by means of great reçularity and temperance, Vol. XX.

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he attained the age of ninety-fix years, and died in 1524 . poffefled of all his farulties. To one who inquired, with aftonihment, by what fecret he had preferved this entire pollefion 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 monmment to his memory. He left feveral works, moft of which have been feveral times reprinted. "De Plinii et aliorum Medicorum in Medicina crroritus, \&c." Ferrari, 1492. In a poilhumous edition, printed at Bane, in 1532, fome other opufcula were added, particularly "De Herbis, Fructicibus, $\Lambda$ nimalibus, Metallis, Serpentibus, Tiro fou Viperâ,"-" Liber de Epidemia quam Itali Morbum Galli. cum vocant, Galli verò Neapolitanum," Venice, 1497. It feveral fubfequent editions, the title "De Morbo Gallico" was adoptel.- "f Prefationes in Libros Galeni a fe tranflatos,", ibid. 1508, folio, with fome other treatifes. "Opus de tribus doctrinis ordinatis fecundum Galeni fen. tentiam," ibid. 1508, fol. "Libri c̊uo Galeni de curandi ratione ad Glauconem Latinè verfi," Paris, 1514, 4to. " Hippocratis Aphorifinorum Libri VIl., Grrece et Latine,", ibid. 1526, 8.0. "Converfio et explanatio primi Libri A riftotelis de partibus Animalium," Bafle, 1541 , Svo. "Galeni Ars Medica," Venice, 1606. Eloy Diez. Hitt. de Med.
LEONICO, Tomeo, Nicholas, was born in Venice, of an Albanian family, in the year 1456 . He ftudied Greek at Florence, and made fuch progrefs, that he became able to explain Ariftotle in the original language. For this purpofe he was invited to Padua in 1497. He was brought up to the church, and taught the learned languages at V enice, but in 1520 he returned to Padua, where he gave inftructions to cardinal Pole. Pe was much attached to the Platonic philofophy, and paffed his time remote from worldy purfuits, and folely intent upon his ftudies. Bembo, Giovio, and others, fpeak of him with great efteem, and Erafmus mentions him with honour, as a man equally refpectable 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 tranfated feveral of the works of Arittotle, Proclus's Commentary on the Timxus of Plato, and other treatifes of the ancient philofophers. He wrote ten dialogues on fubjects philofophical and moral, a work, "De Varia Hiftoria," and fome Italian poems.
L.EONIDAS I., king of Sparta, fucceeded to the throne in the year 491, B.C. When Xerxes, king of Pcrfia, invaded Greece, Leonidas was appointed by the Lacedxmonians to the chief cormand of their forces to oppofe him. He marched at the head of 4000 men, to take poffeffion of the itraits of Thermopyle. Aware of the great danger of the enterprize, he confidered himfelf as one devoted to the fafety of the country. He pofted his fmall army fo inilfully, that the Perfians, on arriving at the ftraits, found that it would be difficult to force them, and Xerxes endeavoured to bribe the commander to his interelt, hy 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 Perlians were repulfed with great lofs; and when a treacherous Greek had led a chofen body of 10,000 Perfians by a fecret paffage 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 ftraits, where Leonidas advanced to meet him. The efforts of valour, heighten. 32

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ed by defpair, were terrible, and the Spartan king fell amidit a heap of naughtered enemies. His friends defended his body, till the appearance of the foe in the rear caufed the furvivors to collect into one clofe band, facing every way. All thefe, overpowered by numbers, were left on the field of battle, having amply revenged their fall. The Perlian tyrant, enraged at his lofs, caufed the body of the hero to be nailed to a crofs; but the memory of his valour and patriotifin could not be obliterated, and the defence of Thermopylx is confecrated among the noblef actions of antiquity. The gratitude of his country raifed a fplendid monument upon the fpot to the fallen, and a funeral oration was for a long time annually pronounced amidit the celebration of martial games, over their tombs.

LEONINE, in Poetry, is applied to a kind of verfes which rhyme at every hemiltich, the middle always chiming to the end.

In this kind of verfe we find feveral ancient hymns, epigrams, prophecies, \&c. For inttance; Muretus, fpeaking of the poetry of Lorenzo Gambara of Brefle, fays,
"Brixia veftrates, qux condunt carmina vates Non funt noltrates tergere digna nates."
The following one is from the fchool of Salernum:
"Ut vites panam, de potibus incipe canam."
The origin of the word is fomewhat obfcure: Pafquier derives it from one Leoninus, or Leonius, who excelled in this way, and dedicated feveral pieces to pope Alexander III. ; others derive it from pope Leo; and others, from the beaft called lion, becaufe it is the loftielt of all verfes.
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, fo called from $\lambda$ say, a lion, and ous, woos, the ear. Lion's-ear. Brown Prodr. Nov. Holl. v. 1. 504, Ait. Hort. Kew. ed. 2. v. 3.409. (Leonurus; Tourn. t. 87.) - Clafs and order, Diclynamia Gymanopermia. Nat. Ord. Verticillate, Lirn. Labiata, Julf. 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 thian the calyx; upper lip elongated, flightly concave, bearded, undivided; tower much fmailer, in three neariy equal fegments. Stam. Filaments four, concealed by the upper lip, two of them longer than the relt; anthers of two oblong divaricated lobes. Pijf. Germen fuperior, four-lobed; ityle the length and pofition of the ftamens; Itigma cloven, acute, its upper fegment fhorteft. Peric, none, except the permanert calyx. Secds 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 ftigma fhorteft.

1. L. nepetifolia. Catmint-leaved Lion's-ear. (Phlomis nepetifolia; Linn. Sp. Pl. 820. Cardiaca americana annua, nepetz folio, floribus brevibus phoniceis villofis; Herm. Lugd. Bat. 115. t. 117.)-Leaves heart-fhaped, pointed. Calyx with eight fpinous teeth; the upper ore largeit. Stem herbaccous.-Native of the Eaft Indies, from whence fir Jofeph Banks procured it for Kew garden in 17.78. It is a tender annual, kept in the flove, and flowering in September and October. Hermann received the feeds from Suri-

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nam; Linnzus from the Eaft Indies, and it flowered in the Upfal garden. The whole plant is hoary, with extremely foft minute pubefcence. Stem four or five feet high, quadrangular, with oppofite £preading branches. Leaves oppofite, two or three inches long, and one or two broad, heartfhaped, veiny, deeply crenate or ferrated, pointed, on falks of their own length. Flowers in denfe whorls, with linear fpinous brateas, and ftrongly fpinous calyx-tecth. Corolla aboat an inch long, moft elegantly clothed with denfe fcarlet hairs, paler at the edges.
2. L. Leonurus. Narrow-leaved Lion'sear, Lion's-tail. (Phlomis Leonurus; Linn. Sp. Pl. 820 . Curt. Mag. t. 478. Leonurus capitis bonæ fpei ; Breyn. Cent. t. 86.)-Leaves lanceolate. Calyx with ten regular teeth, five fmaller than the reft. - Native of the Cape of Good Hope, from whence it was brought into the European gardens, for the fake of its beauty, carly in the lalt century, and is ftill kept in greenhoufes, being propagated by cuttings, and flowering abundantly in autumn. The fem is fhrubby, feven or eight feet high. Leaves lanceolate, rather narrow, bluntly ferrated, about two inches long, of a dull green, roughifh, tapering down into fhort foottalks. Flowers large, in denfe bracteated whorls. Calyx downy, its teeth regular, very fmall, and fcarcely fpinous; the five alternate ones fmaller than the reft. Corolla two inches long, flender, incurved, downy, of a fine tawny orange, or fomewhat fcarlet 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 bonx fpei; Mill. Ic. t. 162. f. 1.)-Leaves ovate, blunt, crenate. Calyx with eight awned teeth; the upper one largeft. Stem fliubby. -Native of the Cape of Good Hope, from whence it was brought early in the laft century, but is lefs frequent in our greenlouves than the foregoing; from which it differs in its fmaller fize, roundifh long-ftalked fmall leaves, and rather fhorter more obtufe corolla, befides the effential ditinctions of the caly.x.

LEONTARI, in Geography, a town of the Morea; 20 miles N.W. of Mifitra.

LEONTESERES, in the Natural Hifory of the Ancients, the name of a Ipecies of agate, famous in early times for its imaginary virtues in taming the rage of wild beafts, and not a little efteemed among us for its beauty. It is the molt 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 thefe colours, but more frequently it is very beautifully variegated with them in form of clouds and veins; the black and green particularly are ufually difpofed in concentric circles round one or more points. It is found only in the Eaft 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 elephantiafis, improperly called the Arabian leprofy, from a fuppofed refemblance of the tuberculated countenance of the patient, in fome inftances, to the vifage 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, becaufe 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 Atruggled with him, in vain, to difengage himfelf.

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The critics are extremely divided about this fealt : fome 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 inftances where the period was not above 220 days.

The ceremony was fometimes alfo called Mithrisica; Mithras being the name of the fun among the ancient Perfians.

There was always a man facrificed at thefe fealts, till the time of Hadrian, who prohibited it by a law. Commodus introduced the cuftom afrefh, after whofe time it was again exploded.

LEONTICE, in Botany, a name adopted by Linnæus from Pliny, as a fublitute for Lcontopetalon of T'ournefort. (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. Grec. Sibth. v. I. 234. Juff. 287. Lamarck. Ylluftr. t. 254. -Clafs and order, Hexandria Monogynia. Nat. Ord. Corydales, Linn. Berberides, Juft.

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, ftalked fcales, inferted into the bafe of the petals. Starn. Filaments fix, thread-flaped, very fhort, oppolite to the petals; anthers erect, of two cells, and two valves, burfting from the bafe upwards. $P_{j} /$ t. Germen fuperior, oblong-ovate; ityle fhort, nearly cylindrical, inferted obliquely upon the germen; ftigma fimple. Peric. Berry hollow, inflated, globofe with a point, of one cell, but flightly fucculent. Seeds few, globofe.

Eff. Ch. Corolla of fix petals. Nectary of fix fpreading italked leaves, attached to the bafe of the petals. Calyx of fix leaves, deciduous. Berry inflated, of one cell. Seeds few, globofe.

1. L. Chryfogonum. 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 Diofcoride; Pon. Bald. 14I.)Leares radical, pinnated, deeply cut--Native of corn-fields in Greece. Dr. Sibthorp gathered this \{pecies near Abydos. It is much to be regretted that fo curious a plant, though cultivated by Miller, is now a ftranger to our gardens, and that even dried fpecimens are fo very rare. Whether it be really the $\chi_{i}$ visorisoy of Diofcorides, his flort defcription muft 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 delcribes his as very red within. 'Authors reprefent our's as having a perennial, flefhy, fomewhat conical root, producing feveral upright italked leaves; thefe are about a fpan long, imooth, rather glaucous, limply pinnate; the leaflets not quite oppofite, about nine or ten pair, feffile, oblong or roundifh, either wedge-fhaped or in fome degree heart-fhaped at the bafe, entire at the fides, but more or lefs deeply cut towards the top. In our fpecimens they are by no means fo deeply divided as in the figures above quoted, which have led profeffor Willdenow to fuppofe them whorled. Flosver-ftalks one or two, radical, a little taller than the leaves, manyflowered, branched, corymbofe, round, imootb, leafleis. Brateas elliptical, coloured, folitary at the bafe of each branch. Flowers yellow, fomewhat like thofe of Celandine. Anthers ovate before they burft.
2. L. Leontopetalum. Common Lion's-leaf. Linn. Sp. Pl. 448. (Leontopetalon; Camer. Epit. 565. Ger. am. 236. Barrel. Ic. t. 1029, 1030. Moris. v. 2, fect. 3. t. 15.

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f. 6.)-Radical leaves twice or thrice ternate ; flem-leaves ternate.-A bundant in corn-fields in the Levant, flowering early in the fpring, and ripening fruit in May. Gerarde fays, lord Zoach in his time brought a plant from Italy, but, as far as he knew, it perifhed. Miller, however, appears to have raifed both this and the preceding from feed, but could not preferve them, on account of the unfayourable fpring fo ufual herc. Root tuberous, perennial. Stems folitary, ereet, 12 or 18 inches high, branched, fmonth, leafy. Radical leaves fomewhat like thofe of a Columbine, on long ftalks, twice or thrice ternate, the leaflets rounded or obovate, entire, confluent or decurrent, veiny; thofe of the ftem much finaller, and fearcely mure than fimply ternate. Flower-flalks corymbofe, foon racemefe, with ovate concave bractuas. Flowers ycllow, copious, much like the laft. Fruit an inch long, more of lefs ovate, foon beecming a dry, membranous, curioufy reticulated bag, in the bottom of which are three or four large round feds. The Leantice incerta of P.llas, in his Travels, v. 3. 726.t. V.f. 3 , which Willdenow has allopted by the name of $L$. veficaria, feems a mere variety, differing a little, as is perhaps ufual, in the fhape of the fruit, but otherwife agreeing exactly with the Leontopetalum. Pallas was in doubt refpecting 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. I-3. Willd. Lamarck. f. 2. - Radical leaves twice compound ; them-leaves fingrered, oblong.-Difcovered by Pallas on expofed parts of the Altay mountains. We have never feen this fpecies, but Willdenow, who examined a dry โpecimen, fays, "the radical leaves have their ftalk firit three-cleft, and that each divifion bears five elliptic-lanceolate, entire leaflets at its fummit; the ftem-leaves are in like manner quinate, generally three together in a whorl. Brataas eliiptical, obtufe." This latter part of the defcription accords with Lamarck's figure, copied, we prefume, from Pallas.
4. L. thaliitroides. Columbine-leaved Lion's-leaf. Linn. Sp. P1. 44. (Canlophyllum thalictroides; Michaux Bo-reali-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 Collinfon before $175 \%$, and is till preferved in fome curious gardens, flowering in May. Root perennial. Stm a foot, high or more, erect, fimple, bearing one thrice compoud leaf, and another, clofe to the flowers, twice compound, both feffile, but with long partial italks; leafiets dark green above, glaucous beneath, rounded at the bafe, 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. Flowers green, in a fmall, fightly compound, flender, ftalked clufter, with little ovate acute brakeas. The whole plant is fmooth. Michaux detcribes the fruit as more pulpy than in the above fpecies, and fingle-feeded, like the drupa of the floe, but this is hardly fufficient perhaps to eitablif, as he does, a new genus. We find the berry hollow, and apparently fomewhat inflated, though far lefs than in the fecond fpecies. American botanitts mutt folve this difficulty.
5. L. tri, byilla. Three-leaved Lion's leaf.-Leares radical, ternate, bluntly toothed. Stalk radical, fimple. Flowers fpiked. - Gathered by Mr. Archibald Menzies, on the weft coaft of North America. The root is perennial, fomewhat creeping. Leaves folitary, on a dender, fimple, upright, fmooth foot Ralk, about ten or twelve inches high, with a few imbricated, elliptical, concave, ribbed fcales at its bafe; leaflets three, feffile, two inches wide, fmooth, pale green, beautifully reticulated with innumerable veins; ra-

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ther sedge-flaped at their bafe, the fide-ones dilated laterally; the outer margin of all wavy or bluntly toothed. Flows:-Ralk folitary, from the fame bud with the leaf, but a little taller, fimple, nender, naked. Spike terminal, about an inch long, of numerous, feffile, white flozvers, of whofe caly:x or corolla we can find no traces, but the famens agree fo well with thofe of $L$. Leontopetalum, in their very peculiar flructure, that we venture to refer our plant to this genus. The filunents are extremely fiender at their bafe; the germen is ovate, with a thick, nearly feflile, oblique figma.

Leostice is alfo a plant mentioned by the ancient Greeks, and called by them catalia.
Dinfcorides tells us it had thefe names in common, and that it was of great virtue in curing difeafes of the a/pera arteria, or wind-pipe.

This medicinal plant of the Greeks was very different from that we now call cacalia. Some have defcribed it to have flowers like the oak, others like the olive-tree, but the old manufcripts of Diofcorides all fay, the flowers were like thofe of bryony. Hence it could by no means be the cacalia of the moderns; nor is it eafy to fay, from fuch thort and uncertain accounts, what it was. See the preeeding article.
LEONTINI, or Leontium, in Ancient Geogratby, a town of Sicily, called alfo, as Diodorus informs us, Xuthia, a name given probably to the fmall diftrict 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 "Lifus," now Liffo, and the other to the N. "Terias," called St. Leonard's ftream. The town was built, at the fame time with Catania, by the Chalcidians, under the conduct of Theocles, the Athenian, in the it year of the $13^{\text {th }}$ Olympiad, as we are informed by Thucydides; in whofe time it was defended by two ftrong citadels, one called the citadel of Phocea, the other the citadel of Bricinnia. The adjacent territory was fo 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 molt delicious of the whole ifland, but the inhabitants perverted the benefit into an occafion of intemperance, fo that it became a proverbial faying, "the people of Leontini are always at their cups." Leortium had its tyrants as well as Syracufe, and between thefe two cities there fubfifted a conftant rivalhip and enmity. This was the birthplace of the celebrated rhetorician Gorgias, whofe eloquence aftonified even the Athenians, and who perfuaded them to zundertake the unfortunate expeditoon under Nicias. Leontium at length fell under the power of Syracufe, Dionyfus the tyrant having removed the inhabitants thither. The fituation of the caltle, and the fertility of the country, rendered Leontium at all times a place of importance to the different nations which poffeffed Sicily. The earthquake of 1693 completed its deftruction, and reduced it to its prefent itate of wretchednefs. The ancient city, built on four hills, prefents to the obferver nothing but a fpot of ground torn by focr ravines, which lay open a few wretched grottos, the fole remains of its former greatnefs. The caftle ftood on a dstached rock, oppolite to the city, which was originally hewn out of it, and has been fucceflively built and rebuilt according to the Ityle of different ages, and the prevailing modes of behieging and defending places. The rich connery 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 Lestrigons, divided and bathed by the "Simacthus," the largett river in Sicily, which rolls along in ist Aream a quautity of bleck
and ycllow amber, which is fought for where it difgorges itfelf into the fea, and is wafhed up at Catania.

LEONTIUM, in Biograplyy, an Athenian courtezan, at one time noted for the licentioufnefs of her life, and afterwards diftinguifhed by her application to the ftudy of the Epicurean philofophy. It has been afferted, that the did not defilt from her intrigues after the was an attendant on Epicurus, but proltituted herfelf to the difciples of his fchool, and ever to the philofopher himfelf. She became the wife of Metrodorus, one of the principal difciples of Epicurus, and had a fon by him, whom Epicurus commended to the notice and regapd of his executors. Leoutium applied with great diligence to the ftudy of philofophy, and wrote, in defence of the Epicurean doctrines, againlt Theophraltus, one of the principal of the Peripatetic fect. The book is acknowledged by Cicero to have been written in a polite and ekegant tyll: Bayle. Moreri.

LEONTIUS, furnamed the Scholafic, who flourihed in the fixth century, was a native of Conftantinople, was educated an advocate and afterwards became a mouk. He lived till about the clofe of the century. The principal work of Leontius is "A Treatife on the Sects of Heretics," divided into ten difcourfes. It was publified in Greek and Latin at Bafil, in ${ }_{157} 7$. He was alio author of various. treatifes againft the Eutychians, Neftorians, and Appollinarilts; a difcourfe on the fettival celebrated between Eafter and Whitfunday; and there are "Orations" and "Homilies" afcribed to him in the Bodeeian and Vienna libraries. Moreri.

LEONTODERON, in Natural Hifory, a name given by feveral authors to a fpecies of agate, of a plain yellowifh colour, without variegations.

LEONTODON, in Botany, derived from $\lambda_{\text {ev }} \lambda_{\text {, }}$ scrios, a lion, and bov:, a tooth, and io called from a fimilarity in the thape of its jagged leaves to the teeth of a lion. Linnxus beltowed this name upon the genus in juft preference to the compound one of Dens Leonis given by Tournefort. The Englifh name Dandelion, which is a corruption of Dent de Lion, is expreffive of the fame idea, and might poffibly have given rife to its botanical appellation. Dr. Smith has deferibed the leaves of Leontodon Taraaacm, in his Introduction to Botany, P. 157, as runcinate or lion-toothed, cut into feveral taanverfe, acute fegments, pointing backwards. A flriking character of this fort, which, at firft fight, fuggefts a name, borrowed from fome familiar or popular refemblance, is always defirable, and is fufficiently apparent in this genus.- Linn. Gen. 402. Schreb. 529. Willd. Sp. Pl. v. 3.15 4. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. vo 2. 822. Ait. Hort. Kew. v. 3. 120. Gærtn. t. 158. (Dens Leonis; Tournef. t. 366. Taraxacum; Jufi. 169. Lamarck. Illuitr. t. 653.)-Clafs and order, Syngenefa Polygannia Risualis. Nat. Ord. Compofita Semiflofculofis, Linn.' Cichoracee, Julf.

Gen. Ch. Common caly, imbricated, oblong; its interior fcales lirear, parallel, equal; outer fcales fewer in number, often reflexed at the bafe. Cor. compound, imbricated, uniform ; the florets hermaphrodite, numerous, equal, eachy of one petal, ligulate, linear, abrupt, with five teeth. Stam. Filaments five, capillary, very thort, anthers united into a cylindrical tube. Pif. Germen nearly ovate; ftyle thireadflaped, as long as the florets; Itigmas two, revolute. Periz. none, except the oblong, ftraight, at length refiexed, calyx. Seeds folitary, oblong, rough; down capillary, titpitate. Recept. naked, dutted.

Eif. Ch. Receptecle naked. Calyx double, imbricated with rather lax fcales. Down thalked, hairy.

1. L. Zarasacum. Common Dandelion. Linn. Sp. Pls

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2122. Engl. Bot. t. 510 . Curt. Lond, fafc. 1. t. 58. -Outer fcales of the calyx reflexed. Leaves lion-toothed, fmooth. Perhaps the molt common of all plants, in meadows, paftures, on rubbih and on all cultivated land, flowering from April to July. This troublefome though handfome sweed, has a deep and branching perennial root. Leaves radical, runcinate, toothod, of a bright green cclour, fmooth. Flower-flalks fimple, longer than the leaves, hollow, brittle, milky and fingle-flowered. Flower terminal, large, golden-coloured, cloling in the evening. Styles hairy. Seeds obovate, furrowed, bearing on a long footitalk a tuft of fimple, radiated down. The diuretic qualities of this plant, which caufed it to be called Pifinlit in French, procured it a fimilarly expreflive 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 fpecies in their falads. It is efpecially ufed by the poorer fort of people, becaufe it is fo common and to eafily prepared.
2123. L. palufris. Marfh Dandelion. Sm. Fl. Brit. 823. Lyons Fafc. 48. Engl. Bot. t. 553. (L. lividus; Willd. n. 3.) -Outer fcales of the calyx fhorter, upright, ovate. Leaves finuated and toothed, nearly fmooth. Founid generally on moors and marhes. At Hinton Moor, in Cambridgefhire, by the Rev. Mr. Relhan, and at Heydon, Norfolk, by the Rev. Mr. Bryant. It flowers in June and July. Root perennial, fpindle-fhaped. Leaves not quite fo diltinctly lion-toothed as in Tarazacum, fometimes inclined to be hairy. Flower-falks about as long as the leaves, fometimes decumbent. Caly.x imbricated on all fides; its fcales graduall5- fmaller outwards, ovate, acute, all erect. Florcts golden-coloured, the outer ones purplifh at their back. Seeds and Dozun very fimilar to the former fepecies. Indeed this was confidered merely as a variety of that, till Dr. Smith eftablifhed the prefent plant in his Englifh Botany. The whole herbage is more delicate and flender than that of the commen Dandelion.
2124. L. ferotinus. Late-flowering Dandelion. Waldit. and Kitaib. Pl. Rar. Hung. v. 2. 119. t. I14. Willd Outer calyx fpreading. Stalk tingle-flowered. Leaves runcinate rough, their teeth rounded and notched. A native of hills in Hungary.-Flower-falk generally fmooth, fometimes downy. The fpecies is fufficiently marked as being diftinet from L.Taraxacum, to which it is nearly allied in habit, from having the fcales of its caly.x ${ }^{\text {. }}$ preading and fticking out in all directions; its leaves are allo rough, their lobes rounded and toothed.
2125. L. lavigatus. Smooth Dandelion. Willd. n. 4.-Outer calyx erect, clofe-preffed; fcales ovate. Stalk fingle-flowered. Leaves deeply runcinate, toothed, fmooth. A native of Spain. Radical leaves deeply runcinate, almoft pinnatifid, very fmonth and thin; teeth triangular, notched. Flower-ftalks fmooth, afcending. Scales of the outer calyx: ovate, clofely-preffed. It differs abundantly from L. paluftris in having its leaves more flender, and deeply cut, with triangular notches.
2126. L. oboratus. Obovate Dandelion. Willd. n. 5.Outer calyx fpreading ; fcales ovate. Stalks fingle-flowered. Leaves obovate, rather obtufe, toothed. Found, like the laft, in Spain. Leaves obovate, generally very obtufe, fometimies rather acute, toothed at the margin, fmoth; their foottalks and mid-rib fometimes fringed. Calyx furnihed with external; acute, fpreading fcales. This is decidedly diltinguiked from all the other fpecies by the shape of its leaves.

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This genus is much more ample as it ftands in Linnaus. We have adopted all the Species retained by Willdenow, who has removed the reft to different genera, as follows. Leontodon bulbofus, and aurcus, are referred to Hieracium: L. bafilits, tuberofus, autumndis, alpinus and bificilus to Apargia of Schreber: L. Lirtus to Thrincia of Roth., and he has followed Swartz in calling L. tomentofits, Tupfilizo albicans. We do not feruple following Willdenew in reforming the genus of Leontodon, efpecially as we have the authority of Jacquin and Sinith for having done to in Trasopozon.

Leontodon Taraxacum, or Common Dandelion, in the Materia Medica, \&c. The young leaves of this plant in a blanched fate have the talle of endive, and make an excellent addition to thofe plants caten early in the fpring as falads. At Gottingen the roots are roalted and fubttituted for coffee by the pourer inhabitants; who find that an infulion prepared in this way can hardiy be diltinguifhed from that of the coffee-berry. Dandelion is generally confidered by medical writers as the moft active and efficacious of the lactefcent plants; the expreffed juice is fomewhat acrid, the root ftill more bitter, and poffeffing 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 moft of the European languages, "quafi lectiminga et urinaria herba dicitur." Bergius recommends its ufe in obltructions of the liver, hypochondriatis, and jaundice. We have various proofs of the gocd effects of the Taraxacum related by different authors, in jaundice, dropfy, pulmonic tubercles, and fome cuianeous diforders. The leaves, roots, flower-ltalks, and juice of dandelion have all been feparately employed for medical purpofes, and feem to differ rather m degree of ftrength than in any effential property ; therefore the expreffed juice, or a ftrong decoction of the roots, has been moft commonly prefcribed, from one ounce to four, two or three times a day. The plant fhould be always ufed frefh; 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 defcribed by Dr. Amman, being a fpecies of the leontice of Linneus; which fee. See alfo Tacca.

LEONTOPETALON, from $\lambda_{\text {E } 2 \%,} \lambda_{\text {eroins, }}$ a lion, and Tifla $\lambda 0$, a leaf. Lion's-leaf. Tourn. Cor, 49. t. 484. See Leontice.

LEONTOPODIUM, from $\lambda_{\xi \omega y}$, a lion, and $\pi \because \varsigma$, moso;, the foot, has been applied as a name to feveral plants, whofe thick and fuft hairinefs, enveloping their flowers or ftalks, as the claws of a lion are enveloped, feems to have given rife to the idea. Among thefe are Myofotis fcorpioides; feveral fpecies of Gnaphalium, efpecially the elegant Filago Leontopodium of Linnxus, now reftored by Willdenow, very juttly, to Gnapbalium, where Linnæus at firlt placed it; Alchemilla vulgaris, called Leontopodium by Brunfelfus, v. 2. 53; and Plantago cretich, the Leontopodium of Cluffus. What Diofcorides, the father of the name, intended by his Atovionodor, is very difficult to be gueffed. Dr. Sibthorp thought it might be Micropus eretus, which is very common in Cyprus and feveral of the Greek iflands; but it hardly anfwers to the defcription.

LEONTOPOLIS, or Leoston, in Ancient Gcagraphy, a town of Egypt, and capital of a nome, which took the name of. "Leontopolites nomos." Ptolemy.

LEONURUS,

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LEONURUS, from $\lambda_{\text {ewv, }}$ a lion, and spx, a tail; a name given by Tournefort to fome Linnæan (pecies of Phlomis, (fee Leovoris, but applied by Linneus to the Cardiaca of Tournefort, for which it is now retained. Mo:herwort. Liun. Gen. 295. Schreb. 391. Willd. Sp. P1.v 3. 114. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 405 Sin. Fl. Brit. 637. Brown. Prod. Nov. Holl, v. 1. 50. Juff. IIf. Lamarck. Illuftr, t. 509. (Cardiaca; 'Tourn. t. 87.) - Clafs and order, Didynamiua Gymnofpermia. Nat. Ord. Verricillate, Linn. Labiate, Juff.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, with five angles, and five awl-haped, finous teeth, permanent Cor. of one petal, ringent; tube narrow; limb gaving; throat long; upper lip longet, femicylindrical, concave, giblous, haggy, rounded and obtufe at the top, undivided; lower reflexed, in three deep fegments, not quite equal. Stam. Filaments four, concealed under the upper lip, two of them fhorter than the others; anthers oblong, incumbent, their lobes parallel, and near to each other, befprinkled with minute, globular, fhining, elevated granulations. Pijf. Germen fuperior, four-cleft ; ftyle threadfhaped, the length and fituation of the flamens; ftigma 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 coroila concave, hairy, undivided; lower in three deep, rather unequal, fegments. Anthers with parallel lobes. Stigma equally divided.

1. L. crijpus. 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 luxuriant or monftrous 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. £ 1.)-Upper leaves lanceolate; three-lobed or undivided. Corolla longer than the calyx; the middle lobe of its under lip acute - Native of walte 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 Augult. The berb is bitter, with a pungent unpleafant fmell. Stem a yard high, purplifh, fq̣uare, regularly befet with numerous, oppofite, ftalked, roughiih, darkgreen leaves; of which the lower are broadeft, three-lobed, and more or lefs deeply cut ; the upper gradually narrower and lefs divided, till they become lanceolate, acute, and quite entire. Flowers numerous, in denfe whorls. Bralleas awl-naped, pungent. Calyx-tectb fpreading, rigid, nearly equal, broad at the bafe. Corolla purple, variegated; its upper lip elegantly villous with white hairs. The anthers are marked with fhining points, but that is not peculiar to the genus.
3. L. Marrubiaffrum. Small-flowered Motherwort. Linn. Sp. Pl. 817. Ehrh. Pl. Exfice. n. 157. Jacq. Auftr. t. 405 -Leaves ovato-lanceolate, ftrongly ferrated. Cosolla fcarcely longer than the calyx ; the middle lobe of its under lip rounded, obtufe.-Native of Bohemia, Germany, Tartary and Siberia. The leaves vary in breadth, and are either flrongly ferrated or entire, but never cut or jagged like the preceding. The calyz-teeth alfo are narrower and longer; and the corolla totally different, fearcely exseeding the length of the calyx, but dightly downy, and the midule lobe of its under lip almoll heart-haped, or at leaft 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. Jupinus. Decumbent Motherwort. Willd, n, 5, -"Leaves moltly five-lobed; the lobes obtufe, toothed at the fummit. Calyx feffile. Stems afcending."-Native of Siberia, communicated to profeffor Willdenow by his friend Stephan. "Root perennial. Stons feveral, half a foot high, afceiding, branched, fquare, downy. Leaves oppofite, half an inch long, with three or five lobes, which are oblong, fomewhat wedgc--fhaped and obtufe, furnilhed at the extremity with three or five obtufe teeth; downy on both fides, efpecially the under. Fooffalks the length of the leaves. $l$ horls of four to fix flowers, feffile. Brateas briftleThaped, pointed, downy, Thorter than the calyx. Calyw downy, its fegments ovate, fpisous. Corolla white, rather longer than the calyx, its lip three-lobed, obtufe." Such is Willdenow's defcription. made from the dried plant, which in almoft every minute particular accords fo well with our Lamium palmatum, (fee Lamiuns) that we fhould conclude them to be the fame, were it not for the brafteas, of which our plant is certainly dellitute.
5. L. tataricus. Tartarian Motherwort. Linn. Sp. PI. 8IS. (Cardiaca foliis tenuiùs et profundiùs incifis glabra; Mill Ic. v. 1. 53. t. So.)-Leaves in three deep divifions; their lobes jagged. Upper lip of the corolla flattened, upright, reflesed.-Native of Tartary. It differs from the following merely in the forver being fmaller, with a more rounded upper lip, whofe extremity is reflexed. Gmelin, who gathered both, thought them varieties, and we find no difference to be depended on.
6. L. fibiricus. Siberian Motherwort. Linn. Sp. PI. 81S. Sm. Exot. Bot. t. 94. (Ballote inodora, foliis coronopi; Amm. Ruth. 48. t. 8.)-Leaves in three deep divifions ; their lobes jagged, bluntifh. Upper lip of the corolla ftraight.-Native of Siberia, China, and the Eaft Indies, a hardy annual in our gardens. Stem two or three feet high, branched. Leares deeply cut in a three-fold manner, into various deep divilions, mofly narrow and bluntifh, more or lefs downy. Flowers crimfon, in denfe whorls, with awl-fhaped bra\&eas. Calyx bilky. Corolla twice as long as the calyx ; its upper lip concave, but fraight; lower in three lobes, the middle one dilated, heart-fhaped. Mr. Sowerby found a double row of crimfon glands in the mouth of the tube. The calys is often fpinous, but not always fo.

For the $T$. Galeobdolon of Willdenow; fee Galeobdolon.
LEOPARI, in Zoology, the Englifh name of the longtailed filis, or Fellis 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 conclufion 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 thofe infringements of their privileges which have been continually renewed under the princes of the houfe of Auftria. The execution of the leaders in 1671 , for a time, quelled the diforders, without removing the caufes of difcontent. In 1672 Leopold joined in a league with other powers to protect the Dutch againft Lewis XIV.; at this crifis the Hungarian malecontents took the opportunity of thaking off the Auftrian yoke and afferting

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aferting their original independence. Headed by count T'ekeli, and fupported by the Turks, they again role in arms, and obtained various fucceffes againft the Imperialifts. In 1682 a new war broke out between the empire and France; and about the fame time the breach of a truce by the Hungarian revolters, and the irruption of a valt Turkifh arny;, reduced Lcopold to the greatelt 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 loft was gradually recovered. The rebels were tried, the nobleit blood was fhed without mercy or remorfe, and the Hungarians were fo far humiliated, that an affembly of the ftates, in 1687, declared the kingdom hereditary in the houfe of Auftria, and elected for their king the archduke Jofeph, then only nine years of age. Three years afterwards, Lespold procured the election of his fon Jofeph to the fucceffion of the empire, as king of the Romans. The war with France was carried on with various fuccefs, till the general peace, concluded at Ryfwick, in 1697. In 1699 a long truce was agreed on between the German and Turkifh empires, on terms favourable to Leopold, whofe arms had obtained great glory under the illuftrious prince Eugene. The war, on account of the Spanifh fucceffion, o 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 firit unfavourable to the emperor, but the decifive battle of Blenheim or Hochitet, in 1704 , changed the face of affairs. Leopold did not long enjoy the brighter profpect 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 houfe much augmented in his hands. "His original education," fays the hiftorian, "which was that of an ecclefiaftic, had coincided with his natural difpofition, in producing a cold formality of character; and the narrownefs 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 fleadinefs which enfured their final fuccefs." Modern Univer. Hift.

Leopold IL., emperor of Germany, born in 1747, fon of the emperor Francis I. and the emprefs-queen Maria 'Therefa, was created grand duke of Tufcany about the year 1765 , and during a reign of twenty-five years, difplayed a conltant regard and attention to the happinefs and profperity of his people. He carried into effect a number of improvements relative to all the branches of adminiftration, which rendered that portion of Italy peculiarly flourifling. He diminifhed the taxes, and yer augmented the revenue; introduced an exact police; encouraged the arts, manufactures, and agriculture; freed indultry from the fetters of numerous feltivals, meliorated the condition of the public hofpitals and prifons, 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 referm of the criminal laws as one of cur principal duties;"; and after much experience he fays with true patriotic exultation; "With the utmoft fatisfaction to our paternal feelings we have at length perceived, that the mitigation of punifhments, joined to a moft fcrupulous attention to prevent crimes, and alfo a great difpatch in the trials, together with the fuddennefs of punifhment to real delinquents, has, inftead of increafing the number of crimes, confiderably diminifhed that of the fmaller ones, and rendesed thofe of an atrocious nature very rare ;" fo rare, ino
deed, that during ten years not a fingle execution took place in his dominions. Leopold protetted the lower ranks from the oppreffion of the higher, and his palace was ever acceffible to the meaneft fupplicant. Though the father of his people, lie was alfo their mafter, and would admit of no oppofition to his will; though fincerely detirous of doing good, he was cold and faturnine. In 1790 the imperiat crown, and the fucceffion to the Auprian dominions, devolved to him on the death of his brother Jufeph. The refuit of that unfortunate prince's fchemes had been an abfulute revolt of the Low Countries, the difaffection of Huncary, and the jealoufy of all the furrounding ftates. leoopold, by employing the arte of conciliation, in conjunction with firmnefs and pradence, was able in a fhort time to recover the Low Countries, to quell the oppolition of the Hungaria, malecontents, to Itrengthen his houfe by fplendid alliances, and to eftabiifh. peace with the Ottoman Porte. He reflored a good under. Itanding between the courts of Vien:a 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 congreis of Pilnitz, a coalition with Pruffia, for the avowed purpofe of giving a goo vernment to Frasce, and the fubfequent 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 witnefs the commencement of hoftilities. He died in the month of March 1792, at the age of fortyfour, leaving behind him a numerous progeny, of whom his eidelt fon Francis II. fucceeded to the racant throne. Univer. Hit. New Ann. Regit. Ediat of the grand duke of Tufcany, printed by the celebrated $\mathrm{Mr}^{\text {. John }}$ Howard.

Leopold was paffionately fond of Italian poetry and mufic, and is faid by Quadrio (Storia d'Ogni Poefia, vol. i.) not only to have been the conftant patron of both, but to have compofed maffes and motets for his own chapel, and to hase written, and fet to mufic, himelf, many beautiful canzonets and madrigals. This prince, early in his reign, retained in his fervice the Italian lyric poet Minato, and Antonio Draghi, to write and fet operas for the imperial court at Vienna.

LEOPOLDSTADT, in Geography, one of the fuburbs of Vienna, large and populous; lituated on the N. fide of the Danube, and communicating with the city by a bridge. -Alfo, a fortified town of Hungary, on the river Waar ; 56 miles E. of Vienna. N. Lit. $\ddagger^{\circ} 23^{\prime}$. E. long. $1754^{\prime}$

LEOSTENIUS Snuus, in Ancient Geography, a gulf of Thrace, upon the Thracian Bofphorus, towards the northera part of the Hermæan promontory.

Leotaud, Vincent, in Biography, a French jefuit, and able mathematician, was born ai Laval-Louyfe, in the diocefe of Embrun, and died in the year 1672. He publifhed a work on the quadrature of the circle; "Arithmetical Inftitutions, in four books;" a treatife "On Cyclometry ;" a work "On Magnetology," and a work. "On the Primum Mobile."

LEOTIA, in Bctany, perhaps fo called from $\lambda_{\text {eas }}$, or $\lambda x a$; the people, or vulazar; yet it does not appear to be either a common genus of fungi, nor vulgarly ufed as food, like many others. Its afpect indeed is ordinary enough, being that of a fmall Agaric without gills. Perfoon. Syn. Fung. 611. Obf. Mycolog. v. 2. 21. t. 5. f. 1. t. 6. f. I, 2.Clafs and order, Cryptogamia Fungi. Nat. Ord. Furgit.

Eff. Ch. Head roundifh, reflexed at the margin and clofely embracing the ttalk, bearing feeds in its expofed: furface.

The fpecies enumerated by Perfoon are nine, four of

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which have a fmooth conical or ovate head, three an orbicular one, and the other two are efteemed doubtful.
Among the firt is L. Mitrula, the Elvela cucullata of Batich, f. 132, and probably Clavaria ferruginea of Sowerby's Fungi, $t .8+$; found in autumn growing copioufly on decayed leaves of Scotch fir. The flatk is near an inch high. Head conical or ovate, of a pale cimamon colour ; white and fpougy 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 greenilh buff colour, and tender fubftance. Stalk two or three inches high, hollow, tumid in the lower part; and the cavity is continued into the bend, which is rounded, depreffed, unchiated, and obfcurely lobed, about an inch in diameter, compofed as it were of two coats, with a hollow fpace between.

Helvella Relbani, Sowerby t. II, is one of the doubtful fpecies.
I.EOVILLE, in Geography, a town of France, in the department of the Lower Charente; eight miles N. of Montlieu.

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 altrononical productions, of which the principal were " $\mathrm{E}_{\mathrm{p}}$ hemerides ab anno 1556, ad Ann. 1606;" "Expedita Ratio conftituendi Thematis cocleftis;" "Loca fellarum fixarum ab anno Dom; 1549, ufque in Ann. 2029;" and "De Eclipfibus Liber." His celelrity occalioned Tycho Brahe to pay him a vifit in the year 1;69, when they had feveral converfations on their favourite lubjects. Notwithitanding the great learning of Leowitz, he was wcak enough to become the dupe of judicial aftrology. He died in Swatia in 1574. He had predicted that the world would come to an end in 1584, and of this prophecy many priefts and preachers took advantage as the important period approached, and enriched themfelves at the expence of the fears of their people. Bayle. Moreri.

LEPA, in our Old Writers, a meafure which contained the third part of two buthels. Whence we derive a feed leap.

LEPANTO, in Gcograpby, 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 fortilied and defended by a caftle on an eminence. N. lat. $38^{8} \quad 37^{\prime}$. E. long. $22^{\prime \prime} 0^{\prime}$.

LEPAS, in Conchology, a genus of the multivalve order, the animal of which, according to the Linnæan fyltem, is a triton, the fhell affixed at the bafe, and conlifting of many unequal erect valves. This genus, as defined by Linnaus and Gmelin, comprehends two very dittinct genera, the union of which, under one titie, is liable to much objection; though, for the fake of uniformity, we are not inclined in this article to feparate them. One of thefe natural tribes, for example, has the fhell of a conic form more or lefs tubular, the bafe firmly affixed upon rocks or other extraneous fubftances, without any tendinous tube; the fhell is compofed -of fix valves; and the truncated cpening above is clofed by a four-valved operculum. In the other genus the fhell, inthead of being conic, is broad, flattifh and wedge-formed, and in many fpecies refembling, in fome degree, the fpear or head of an arrow ; it is befides compofed, in general, of a much greater number of plates or valves, the aperture of which is lateral initead of being at the fummit, and has no operculum ; and lattly, the fhell is not affixed by its teflaceous bafe, but is placed at the extremity of a tendinous tube, the bate of which unites it to the rocks or other lubfances to shech, for convenience and fecurity, the animal connects it-

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felf. The very obvious diflimilarity that prevails between thefe 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 thefe names the two tribes of fhells are recognized in the writings of Gefner, Aldrovandus, and others. Linnexus, notwithftanding thefe authorities, however, confolidated them together. Da Cofta was the firtt among the Englifh authors who again feparated them; he affigned to the firt the original name of balanus, or acorn fhell, at the fame time that he retained the former under the name of lepas, or in Englifh bernacle, a term preferable, no doubt, to that of Concha anatifera, which applied to a fingle fpecies rather than the whole genus. The obfervations of Da Cofta, as they militate in various refpects againt the conchologioal 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 occafion lucid, neither as a fyltematilt does he deferve mention; yet, upon the whole, his remarks are often judicious, and almolt conftantly correct, and his ftrictures on the genus lepas, as propofed by Linnzus, are in particular fatisfactory: he has reftored both genera to their proper ftation. Among the collectors of \{hells in Britain, from the time of Da Colta to the prefent, the namies of balanus and lepas have been almoft conflantly adopted, but the feparation of them is afcribed to Dr. Solander, and the difcrimination of earlier writers ceafes to be remembered. In England, as before obferved, the Linnæan term of lepas has been retained for one of the two gencra; the continental writers, on the contrary, though they adopt this genus in the fame form, reject the word lepas, and fubflitute that of anatifa in its place; the French call it anatife, and under the latter term it is diftinguilhed by their belt writers. Having pointed out the leading character of the two genera into which the lepas of Linnzus and Gmelin is divided, it only remains to enumerate the fecies defcribed by thole and fucceeding 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 Cofta. Ridged acorn fbeell, Donov. Brit. Shells.

Frequent on the Britifh and other European fhores, adhering in vaft numbers to rocks, fhells and flones; the colour generally whitifh or greyifh, and the form rather variable.

Balanordes. Shell conic, truncated, and fmooth; operculum obtufe. Linn. Balanus parvus vulgaris, Petiv. Balanus cinercus, \&c. Lift. Common acorn 乃s:ll, Donov. Brit. Shells.

Found, like the former, in great abuindance on the fhores of Europe, and alfo thofe of the Amerizan and Indian feas. When afixed on an uneven furface, the bafe of this fhell fometimes extends down into a pretty long rugged tubular ftalk or root. This variety is noted by Pennant, and an extraordinary, but mutilated fpecimen, is fhewn in one of the plates of Brit. Zool. Another occurs in Brit. Shells. Donov. The colour is commonly greyifl ; the tips of the valves, as in the laft-mentioned variety, greenifh.

Intertexta. Somewhat deprefled; and ribbed obliquely. Donov. Brit. Shells. Leşas friata, Penn.
"This rare fpecies is the lepas intertexta of the Portland mufeum, and was fifhed up at Weymouth, adhering to a valve of the oftrea fubrufus, \&c." Brit. Shells.

Costara. Somewhat conic and fulcated, the ridges
equidiftant and divergent from the aperture ; operculum flarp-pointed. Donov, Brit. Shells.

A new fpecies found adhering to pieces of broken rocks on the coalt of Pembrokehhire.

Cosordes. Shell conic, fmooth, valves pointed at the tip, aperture very fimall. Donov. Brit. Shellis.
A new fpecies defcribed as above, the fpecimen was found by Mr. Bryer, of Weymouth, affixed to a fhell of the lepas anatifera.
Tinfinnabulum. Shell conic, or bell-fhaped, oftufe, rugofe, and fixed. Lepas tintimnabulum, Linn. Balanus major, Lifter. Balanus major, the conic centre kell, Grew. Belanus maximus, Petiver. Balanus ore hiante magnus, Borlafe. Gland de mer clochecte, Davila. B. tintinnabulttm, bell acorn Jeell, Donov. Brit. Shells.

Found adhering in large cluiters to the bottoms of thips in moth feas. A fuppofed variety of a dirty whitifh colour is mentioned by Chemnitz as a northern kind.
Tulipa. Shell fubcubic, and fmooth; operculum acute and tranfverfely ftriated. Müll. Zool. Dan.

Inhabits the North feas.
Borealis. Shell erect, fubconic, aperture quadrangular, operculum acute and tranfverfely ftriated. Donov. Brit. Shells.

A new fpecies, recorded as above flated. "A few fnall clufters, with fome detached fpecimens of this curious fpecies of balanus, were difcovered about the year i SOO , attached to the bottom of the Warfight thip 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 fhells of the fame kind, by dredging in Portfmouth harbour: The fpecies appears to be very rare; we have one feecimen attached to the valre of an oftrea rufus brought from Newfoundland." Vide Brit. Shells.

Diadema. Shell fubrotund, fix-lobed and furrowed, Gmel. Balanus polythalamius, Walch. Diadem acorn /kell, Donov. Brit. Shells.

A curious and rare fecies, about the fize of a walnut, or fometimes larger; colour whitifh. Inhabits the European and Indian feas.

Bal.f.yaris. Shell fomewhat conic; lobes fix elevated wrinkled and four-parted; the operculum membranaceous and bidentated. Müll. Chemnitz,-\&c. Whale acorn Joell, Danov.

Found adhering to the fins and pectoral wrinkles of the whale (Balena boops); its fize refembies the latt, but its form is sery much depreffed, colour the fame as in B. diadema, as are alfo the furrows of the lobes. This is erroneoufly defcribed by fome authors as the B. diadema of Da Colta; we po太efs the example defcribed by Da Cofta under this name, and can in confidence affirm it to be the former fpecies. See Brit. Shells.

Palmipes. Shell erect, conic; operculum acute and tranfverfely ftriated. Olaff.

Size of a pea, and fmooth. Inhabits the ocean.
Galeata. Shell helmet-form, with a lateral aperture.

## Schroet.

Difcovered adhering to the gorgonia verrucofa, and ventilabrum ; fhell boat-fhaped and fmooth; aperture rhombic.

Mitella. Shell compreffed, erect, and irregularly ftriated. Liin. Balanus Rondeletii, Gefn. Balanus chinenfis friatus, Petiv.

Native of the Indian feas.
Testudinaria. Shell plano-convex; rays fix excavated and IIriated. Linn.

Inhabits the depths of the ocean, and is ufually found adVol. XX.
hering to other fhelle; the form refemLles a globe cut off in the middle.
Scalifellum. Shell compreffed, thirteen-valved, rather fmooth, and feated on a fcaly peduncle. Linn. Ellis. Scaly lepas, Donov. Brit. Shells.
A. molt curious and very elegant fpecies, refembling in fome meafure the following kind, but rather fmaller. Gmelin defcribes it as a native of the Norway feas, on the authority of a fpecimen met with by Dr. l'ontoppidan, the bifhop of North Bergen, and which is defcribed by Mr. J. Ellis in the Philofophical Tranfactions, A.D. 1\%58. He found it flicking on the Norway fea-fan, and, from the peculianty of its flructure, was induced to call it the Norway fes-fan penknife. "This very rare fhell is introduced into the Britifh Fauna, on the authority of an example found attached to fome fea-weeds, dredged up on the coalt of Weymouth, which, after paffing through the collections of the late duchefs of Portland and Dr. Fordyce, is at prefent in our poffeflion." Vide Brit. Shells.

Anatifera. Shell corppreffed, five-valved, fmooth, and feated on a pedicle. Lion. Concho anatifera, Merret. Balanus compreffus, flat centre Jkell, Grew. Barnacle, Gerard. Letpas analifera, anaiferous acurn Jhell, Donov. Brit. Shells.

Found in mont feas, and is ufually found affixed in cluftera to the bottoms of thips, and pieces of decayed timbers floating in the water. The colour whitiifh, with a fine polith beneath the thin epidermis, and tinged with reddifh or blueifh-violet; the ftems of the finell red.

The tentacula of thefe animals are long and pectinated like a feather, for which they were in fact miftaken in the fixteenth century ; and hence arofe the whimfical belief that the barnacle fhell was the farent of the barnacle goofe! Nor was this the vulgar opinion only: it was fanctioned by the grave details of leamed naturalifts of that time, and particularly by Gerard, whofe obfervations are generally noticed by authors, in defcribing this fingular marine production. See Barvacle Goofe. Sea alfo Gerard's Herbal, P. 158.

There are feveral fuppofed varieties of lepas anatifera, in one of which the peduncle is black.
Anserifera. Shell compreffed, five-valved, flriated, and feated on a peduncle. Gmel. Donov. Brit. Shells.
"A native of the American and Atlatitic feas, and is chiefly diftinguihed from lepas anatifera by having the valves ftriated with elevated lines; the valves in the former being perfectly frooth. Lepas anferifera has been heretofore confidered as a native of the American and Atlantic. feas; but that it inhabits likewife the Englifh coalt is certain, the fhell with the living animal having been dredged up at Weymouth." Brit. Shells.
Dilata. Shell compreffed, five-valved, and thin; dorfal valve dilated at the bafe with an acute angle, and feated on a peduncle. Donov. Brit. Shells. Lepas fafcicularis, Ellis Zoophytes. Lefas figillatum, Muf. Portl.?
The firft and only account we have of this kind of lepas, except that inferted in "Britifh Shells," is that given by the late Mr. Ellis, from whom we merely learn that it is from St. George's Channel. The fpecimen appears to have been fent by Mr. Ellis to the late duchefs of Portland, from whence it paffed through the hands of the late Dr. Fordyce, and at his death came into our poffeffion, 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 largef lateral valve rather crumpled in the ufuad courfe of the ftrix, and marked tranfverfely with 4 A
obsolcte
obfolete rays. The fhell is likewife covered with a fine pale brown fkin, or epidermis. 'The acute prominent dilation at the bafe of the valve on the back is very dingular. We muft be excufed for having expatiated with more than ufual minutdnefs on local particulars, in deferibing the laft-mentioned fpecies; as it is principally, and in fome inftances entirely, on the authority of the individual examples mentioned, that the fuecies are recorued, and their exiftence afcertained.

Avrita. Shell membranaceous, ventricofe, feated on a tube, eared; mouth cight-valved, and dentated. Seba, Qic. Lepas nuda comofa aurita, Ellis.

Inhabits the North feas. Tube long.
lsittacess Sholl falcated behind, fix-valved, and wrimkled. Molina.

Native of Chili. Length an inch; the larger valves refembling the bill of a parrot.

Minor. Shell reddifh, fix-valved, unequal; operculum pointed. Chemn.

An Indian fpecies. Shell marked with tranfverfe curved lines, dotted with white.

Verruca. Shell hemifpherical, ferrated, fix-valved; the four outer valves and the operculum plaited. Spengler. Native of the North feas.
Axgustata. Shell elongated, fmooth, fix-valved; the aperture narrow; operculum very minute. Chemn. Country unknown.
Poros. Shell granulated, ftriated, conic, and tubular ; the operculum obtufe. Schroet.

Inhabits India. When living, the thell is green, becoming black after death. A fuppofed variety of a larger fize, and broader in proportion, is defcribed by Klein under the name of balanus major latus.

Elongara. Shell cylindrical, fnowy, pellucid, fixvalved, and cleft above; lid obtufe, grooved, and tranfverfely ftriated. Chemn.

A fmall and very rare fpecies, found in the Iceland Seas.

Patellaris. Shell fix-valved; externally violet varie. gated with white, and marked with fine longitudinal Atrix; within falcated; valves denticulated at the margin. Spengler.

Native of Coromandel. A rare fpecies; tecth of the valves inferted in each other alternately.

Spinosa. Shell conic, with twelve triangular valves, fix of them more depreffed, lefs, and whitifh, with tranfverfe ftrix; fix purple, and longitudinally ftriated, and all armed with tubular recurved fpines. Gmel.

Inhabits India.
Violacea. Shell thick, glabrous, fix-valved, and white, with rays of violet. Chemn.

Native of India. The fhell flightly grooved within.
Pollicipes. Shell comprelfed, erect, many-valved, fmooth, and feated on a hort, hard, fcaly, coriaceous pe. duncle. 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, Aightly curved, with a very larce oblique orifice; operculum homed. Gmel. Balanus naxillaris, Gronow. L.epas fefficis capenfis, E'c., Ellis.

Native of Africa under the torrid zone.
Crispata. Shell oval-truncated and conic, with fix blueifh valves thaded with white, and fix elevated reddifl ones fpinous and perpendicularly foriated. Schroet.

Country unknown.
Cariosa. Shell folid, white, depreffed with carious srooves; withim unequally fmooth. Pillas.

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Native of the feas about the Kurile ines.
Stramis. Conic-convex, with four ferrated ftriatect valves; operculum two-valved. Míll.

Inhabits the Danifl fea.
LEPASTRUM, cerived from the Greck $\lambda$ ertis, a fate Or plate, and asue, aflar, in Natural Hiflory, the name of a gensis of foffils, of the clafs of the felenite, compofed of filaments arranged into broad plates, and thofe difpofed in the form of a radiated flar.

Of this genus there are two known fpecies: the one a bright brownifhowhite lind, with thinner flakes; the other a white dull-looking kind, with thick flakes. They are both found on the fhores of Sheppey Ifland in Kent, and form themfelves in the cavities of the feptarix, called by authors ludus Helmontii ; and the feptarix, with thefe affixed to them, have been accounted a feparate fpecies of that body, and called the flarred waxed wein, or ludus Helmontii ftellatus.

LEPE, in Geograpby, a town of Spain, in the previace of Seville, celebrated for its grapes, figs, and wine; 10 miles E. of Ayamonte.

LEPECHINIA, in Botany, was named by Profeflor Willdenow, in his Hortus Berolinenfis, as a tribute of refpect to the labours of John Lepechin, Fellow of the A cademy of Sciences at St. Peterfburg, who publifhed various*tracts upon natural hiftory in the Tranfactions of that Society. Many of thefe were botanical monographs; fuch as, I. A defcription of Iris Güldenfledtiana. 2. Nowa fpecies Montha deforipla. 3. Quatuor Frucorum fpecies defcripta. 4. Refections on the ineceffity of ttudying the virtues of indigenous plants. He appears to have been an able chemift as well as naturalift, and to have travelled through various provinces of the Ruffian empire in the years 1768 and 1769 . We are unable to difcover either the time of his birth or of his death, though from the date of his Travels he muit have lived about the middle of the laft century, Willd. Hort. Be: rol. 21. Ait. Hort. Kew. ed. 2. v. 3. 390.-Clafs and order, 'Didynamia Gymnofpermia. Nat. Ord. Verticillate, Linn. Labiatr, Juff.

Eff. Ch. Calyx two-lipped. Upper lip of the corolla cloven, lower one deeply divided into three nearly equal: fegments. Stamens fpreading.
I. L. Spicata. Ait. Hort. Kew. ed, 2. v. 3. 390."Spikes of flowers on bracteated footitalks. Leaves ovate, crenate, truncated at the bafe." - The native country: of this hardy, peremial plant is manown. The fpecies in queftion was introduced into the Royal Gardens at Kew in; the year ISoo, by Mr. John Hunneman, who received it: from his friend Willdenow in Germany. By the above frecific character we prefume there are other fpecies.

LEPEIGA, in Geograply, a town of Hindouftan, in: the circar of Gangfour; 30 miles S.S.W. of Gangpour.

LEPEL, a town of Rufian Lithuania; 55 nilies S.E. of Polotfk.

LEPERS. See Elepifanthasis and Lephosy.
Lepers, I/le of, in Geography, one of the New Hebrides, fituated between Efpirito Santo and Aurora illand, eight leagues from the former, and three from the latter, in S. Jat. $15^{\circ} 22^{\prime}$, and netarly under the fame meridian as the fouth-eaft end of Mallicollo. It is of an egg.like figure, very high, and is or 20 leagues in circuit. In the north-ealt part there is anchorage half a mile from the land. It derived its namefrom Bougainville, who vifited it in 3768 , and found the inhabitants in general devoured with the leprofy. He deferibes the inhabitants as being of two colours, black and mulato. Their lips are thick, their hair frizzleds and that of lome is a kind of yellow wool: they are fmall, ugly, and

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ill made. Few women were feen, but they were no lefs difgufting 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 noftrils; and have no beads.

LEPIDIUN, in Botaty, is the $A$ Eseson of Theophraftus and other ancient writers, and is faid by Profeffor Martyn to be derived from $\lambda$ atrb; a fcale, no doubt from the fealy appearance of its pods after their feed is difcharged, but that is fo ufual a circumflance with plants of this tribe, that we are rather inclined with Ambrofinus to conlider the word Lepidium as derived from $\lambda s=i \delta^{2}=4$, to be bot, or punzent, becaufe other plants which have agreed with this genus in its quality of pungency, but in no other way whatever, have been ditinsuifhed by the fame appellation, and hence its Englifh name, Pepper-wort. Linn. Gen. 333. Schreb. $43 \%$ Wild. Sp. Pl. \&. 3. 43 I . Mart. Mill. Dict. v. 3. Sm. Fj. Brit. 68 It Ait. Hort. Kew. v. 2. 373. Juff. 241. Lamarck. Illuttr. t. j56. Gærtn. t. 141. Cournef. t. 103. (Natturtium; Tournef. t. IO2.)-Clafs and order, Tetradynamia Siliculofa. Nat. Ord. Siliquofi, Limn. Crucifcra; Juff.

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 moltly fix, awl-fhaped, the length of the calyx, the two thorter ones oppofite; anthers fimple. Pij2. Germen fuperior, cordate; ftyle fimple, as long as the ftamens; Itigma obtufe. Peric. Pouch heart-fhaped, emarginate, compreffed, acute at the margin, two-celled; valves boatfhaped, keeled; partition contrary, lanceolate. Seeds few, ovate, pointed, narrower at the bafe, pendulons

Eff. Ch. Pouch notched, elliptical, with few feeds; valves keeled, contrary to the partition.

Obf. It is in fome cafes difficult to draw the line between the pouch of this and Thlafpi, even Gærtner confiders them as of the fame figure. He would retain in Lepidium, which he wifhes to call Nafurtium, thofe which have folitary feeds, ceferring the others to Thlafpi. The regular corolla diftinguifhes this genus from Iberis, with which it is otherwife molt clofely allied. The number of ftamens is few, in fome Epecies is fewer than fix.

The fpecies of Lepidium, in the fourteenth edition of Linnæus's Syltema Vegetabilium, are twenty; Willdenow has twenty-nine. Of thefe $\mathcal{L}$. didymum belongs to the genus Coronopus, Fl. Brit. Three of the remainder are natives of England.
L. petreum. Mountain Pepper-wort. Linn. Sp. Pl. 899. Engl. Bot. t. III. Jacq. Auftr.t. I3I.-Leaves pinnated, entire. Petals not longer than the calyx, flightly notched. Th'tis rare Linglith plant is found on St. Vincent's rocks near Irriltol Hot-wells, which has been its habitat ever fince the time of Ray. It is occafionally found in other places that are open and expofed, in the fouth of England, flowering in the carly fpring. Root biennial, fibrous. Stems two or three inches ligh, fpreading, leafy, fomewhat downy. Leaves alternate, unequally pinnatifid, of many pairs of finooth oppofite fegments, which are elliptical or fpatulate, entire. Ciorgmbs of many fmall, white, hexandrous flowers. Poucb elliptic-oblong, compreffed, linooth. Sceds roundifh, two in each cell.
L. latifolium. Broad-leaved Pepper-wort. Linn. Sp. Pl. 8 g9. Engl. Bot. t. IS2,-Leaves ovato-lanceolate, undivided, ferrated.-This is alfo a fcarce plant, found in moift faltith marfhes, and on maritime cliffs, as at Sheringham, by Cromer, in Norfolk, fowering in July.-Roo perennial,

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branched, very long. Stents three feet ligh, ereet, leafys round, fmooth, paniched, many-flowered. Leares alternate, lanceolate or fomewhat ovate, attenuated at the bafe, ferrated more particularly in the middle. Flowers hexandrous, fmall, white. Potch elliptical, with a reliile figma. The whole plant is biting and difagrecable. An infulion of it is faid by Dr. Withering to be emetic.
L. ruderale, Narrow-leaved Pepper-wort. Linn. Sp. P1. goo. Engl. Bot. t. 1595.-Flower, with two flamen:, without petals. Lower leaves pinnatiid, toothed; upper ones linear, cutire. - A native of muddy and calcarcous foils, which it prefers to fand, in the neighbourhood of the fea. It keeps flowering from June to Augult. Root biennial, branched. Stem a foot high, erect, branched, leafy, wavy, round, hoary. Leaves flefhy, fmonth. IFluzurs fmall, apetalous, diandrous; the clulters when in fruit becoming very long. Pouch elliptic or roundifh, emarginate, finooth. Sceds generally folitary, pendulous, obovate. Dr. Smith mentions in his Flora that he never found any petals to this fpecies, nor more than two ftamens, though Withering defcribes the petals as "fometimes wanting," and that the ftamens are either two or four.

As to the foreign fpecies, we flall fay a few words upon fuch as are more efpecially interelting.
L. perfoliatum. Various-leaved Pepper-wort. Linn. Sp. Pl. 897. Jacq. Auftr. t. 346-Lower leaves mech divided in a pinnate manner; upper ones heart-haped, embracing the ftem, entire.-A native of Auttria 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 fmall and compreffed flowers in long loofe fpikes. Ca!yx-lcaves yellowifh-greer. Pouches orbicular, fmooth, having a lingle, bay-coloured feed in each cell.
L. vffriarium. 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 Augult. Dr. Smith has perhaps the only fpecimen of this fpecies to be feen in this country, which was given bim by the celebrated M. Le Monnier from his garden at Vers failles in the year 1786. Stem two or three feet high, remarkably inflated at the joints. Leaves pinnate, with long, narrow leaflets. Flowers fmall, white. Poucls very fimilar to that of $L$. ruderale.
L. alpinum. Alpine Pepper-wort. Linn. Sp. Pl. ŞS. Jacq. Fl. Auftr. t. 137.-Leaves pinnate, entire, fmooth. Flower-ftalk naked, afcending. Petals larger than the calyx. Pouches lanccolate, pointed.-A native of the German, Swifs, and Italian Alps, where it may be feen in flower from May to Augult. This pretty little perennial has a Alender root. Stems very fhort, clothed with alternate leaves. Flower-fialks an inch or two in length, bearing a corymbofe clufter. Leaves thick, dark.green. Florvers milk-white; their petals roundifh and entire. Poucb ovate or lanceolate, compreffed, with the ityle at the end. The whole plant is fmooth, and has the flavour of Crefs
L. Julivum. Garden or Common Crels. Linn. Sp. Pl. 899. (Nalturtium hortenfe; Dod. Pempt. 7II.) Flowers tetradynamous. Leaves oblong, much cut and jagged.-The habitat of this plant fo commonly cultivated was unknown, till. Dr. Sibthorp difcovered it in Greece. Root annual, white, fpindle-fhaped. Sten upright, fmonth, from one to two feet in height, branched at the top. Stems and branches terminated by a fpike of flowers. Louzr
$4 \mathrm{~A}_{2}$ leafirt

## LEP

Aaffels mich refembling thofe of Parfley; uppor ones linear, or lanceqate. Flowers fmall, white. Calyx very fmall, greenilh. Pouch roundifh; valves wiaged. Seeds brown, folitary, tafting like Muftard. This is undoubtedly the K $c_{i} \delta \times \mu 0 ;$ of Diofcorides, and is in univerfal requett for falads in the winter and fpring. There are two varicties 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. olvaccum. Notch-leaved Pepper-wort. Willd. n. 16. Forlt. Efcul. 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 thores of New Zealand. Root perennial. Stem herbaceous, from one to three feet in height. Leaves fcattered, alternate; the upper ones finaller, ferrated only at the tip. Flowers white. Poucles ovate, or heart-fhaped, compreffed, containing an ovate, acute, reddifh-gellow feed in each cell. Forlter fays that this plant, together with Apium or Smallage, and Tetragonia balimifolia, was of confiderable fervice to the fhip's crews under Captain Cook, when they lay in Charlotte Sound.
L. virginicum, a native of the Caribbee Iflands, is eaten by the natives in falads, like our Garden Crefs.
L. pifcidium, found in the South Sea iflands, is made ufe of by the inhabitants for catching fill by incbriating them. It refembles $L$. oleraceum, and is efculent like that fpecies.

Lepidiust, in Gurdening, comprifes a plant of the herbaceous annual kind, of which the fpecies cultivated is the garden or common crefs (L. fativum). But there are other fpecies 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.

Methood of Culture. - Thefe herbaceous plants are raifed by fowing the feed as wanted for ufe, at different times of the year, as once a week or fortuight, where a conitant fucceffion of fmall herbs in their young growth is wanted for falads, when only a fees days or a week or two old; or, where a conflant fupply of thofe fmall herbs is required in their young feedling growth, fome feed, as jult noticed, fhould be fown in fucceffion every week or fortnight at furthelt, all fpring, fummer, and autumn; and once a fortnight in the winter feafon.

The order of fowing them in the different feafons is, in a warm fouth border, or other fimilar lituation, or under a frame, \&cc. 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 fhady borders, or in a free fituation, fhaded with mats from the feorching fun, and daily watered; and in winter, in the warmeft lituation, or in fhallow frames defended with lights, and under hand-glaffes; but in frofly or other very cold weather, in that feafon, on moderate hot-beds; and hot-bed fowings are alfo requifite during the colder part of the fpring, or at any time in cold feafons, where a fupply of thefe and other fmall falad herbs are required to be raifed as quickly as pofible. The method of fowing the feed, in all the cafes, is very thick, as the plants are moftly ufed in finall young growth, and generally in frnall, flat, fhallow drills, about three inches afunder, fo thick as almolt to cover the earth, being lightly earthed over a quarter of an inch thick, or lefs; or on the plain furface, firft raking it fmooth, then fowing the feed thick as above, fmoothing it down with the back of the fpade, and either with the fpade fpreading fome fine earth lightly over it as thinly as polible, or covering it by fifting carth over it
evenly a fmall depth, juft to cover all the feed properly. This fort of falad herb thould always be cultivated fo as to grow as rapidly as poffible, being cut while perfectly young, and in a crifp ftate. See Small Salad Herps.

LEPIDOCARPODENDRON, in Botany, from $\lambda \varepsilon \pi t \%$,
 given by Boerhaave in his Hort. Lugd. Bat. ed. 2. v. 2. 183, to the Protec with hemilpherical heads of flowers, confricuous for the ample and beautiful fcales of their calyx, of which Linnæns compofed his genus Leucadendron, in Gen. $\mathrm{Pl},+6$, but which he fubfequently united to Protea. See Levcadendron.
 Eivos, form, figure, or Lepidoeides, in Anatomy, a name of the fquamous or fcaly future of the cranium.

LEPIDOLITE, Wern., Jam. Lepidolihh, Haiiy. Lilalite of fome other mineralogitts.

The colour of this mineral is generally pale peach-bloffom red, or rofe red, with an admixture of grey; but it alfo occurs of a pale violet and light cochineal red; fometimes the greyifh-red variety paffes into blueifh and greenifh; and a variety has been oblerved, in which the green approaches fikin green.

Occurs only maffive; but its fragments are faid fometimes to thew a tendency to adopting a prifmatic form.

Its internal luftre is gliftening, paffing into fhining : it appears fometimes between refmous and vitreous.

Fracture unceven, prefenting fine-grained and fcaly diftinct concretions; fragments generally indeterminately angular, with pretty fharp edges, which are faintly tranflucent.

It is moderately hard, paffing into foft; brittle; though not eafily frangible.
Specific gravity, 2,8jヶ, Haüy ; 2,816, Klapzoth; 2,35c, Gerhard.

Before the blowpipe the lepidolite, after a flight degree of intumefcence, melts. into a milk-white femi-tranfparent pearl. With borax it fufes more readily into a tranfparent colourlefs pearl.

Klaproth was the firt who analy fed this mineral. Among the refults of his analyfis was a deficiency of $6 \frac{\pi}{2}$ per cent., which a fubfequent chemical examination, (made by the fame chemift, with a view to afcertain the prefence of potafh, which he had a fhort time before difcovered in the leucite) proved to be occafioned by the lofs of the fame alkali, till then unfufpected to enter the compofition of mineral fubftances. Vauquelin afterwards found the fame alkali, but in far greater proportion.

| Silica | 54.50 | 54.0 |
| :--- | ---: | ---: |
| Alumine | 38.25 | 20.0 |
| Oxyd of iron | 0.75 | 1.0 |
| Oxyd of mangance |  | 3.0 |
| Potalh | 4.0 | 18.0 |
| Fluate of lime - |  | 4.0 |
| Lofs, partly water | 2.50 |  |
|  | 100 | 100 |

Klaproth Beitr. ij. Vauquelin J. d. M. N ${ }^{\circ}$ sI.
The fluate of lime, in Vauquelin's analyfis, is probably owing to particles of fluor fpar that were adhering to the fpecimen examined by that chemift.
Lepidolite is found (exclufively, as it is fuppofed) on mount Radifco, near Rozena in Moravia, in a kind of gneifs, which is faid to pals into granite on one fide, and into mica flate on the other. The accompanying minerals,

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with which it is alfo mixed, are quartz, feldfpar, fluor fpar, fhorl-beryl, apatite, and common florl.

Fichtel makes mention of a mafs mixed of brownifh-violet grains of quartz, whitifh fhining feldfpar, and light and dark coloured lepidolite, which, (if the laft-mentioned fubftance be confidered as a fubltitute for mica, with which it is indeed nearly allied, conflitutes a particular kind of granite hitherto uanoticed.
Beyer has defcribed a variety of Iepidolite from Sudermanland, in Sweden ; but fome writers have doubted this to be real lepidolite.
The lepidulite was, by its difcoverers and other mineralogits, referred to zeolite: it had alfo been miltaken for a variety of foliated gypfum. Klaproth, who determined its real nature, fubitituted for the tatelefs name of Filalite, that of lepitlolite, derived from its fcaly ftructure.

What has been defcribed as cryftallized lepidolite, is the red variety of horl-beryl, or picnite, which is likewife found at Rozena in Moravia, in a quartzy matrix.

LEPIDOPTERA, from $\lambda_{\text {Eat }}$, $a$ facale, and wifpov, wing, in the Linnaan Syfem, an order of infects, with four wings, imbricated with Icales: in the mouth is contained a fpiral toague, and the body is hairy. This order comprehends three genera, viz the papilio or butterfly, the fphinx, and the phalzen or moth; and each genus includes a number of Species.

LEPIDOSARCOMA, from $\lambda_{\varepsilon \pi!}!$, a foale, and $\sigma x_{p} \xi$, $f_{e} / \sqrt{6}$. Severinus, a furgical author, implies by this term a farcomatous and fcaly tumour in the mouth.

LEPIDOSPERMA, in Botany, fo called by Labillardiere, from $\lambda \in \pi t s, \lambda: \pi \Delta b o s$, a fcale, and $\sigma \pi \varepsilon q \mu \alpha$, the feet, becaufe of the fix permanent fcales which inveft the bafe of that part. Labillard. Nov. Holl. v. I. 14. t. II-17. Brown. Prodr. Nov. Holl. v. I. 233.-Clafs and order, Triandria Monogynia. Nat. Ord. Calamaria, Limn. Cyperoidea, Juff. Cyperacee, Brown.

Gen. Ch. Cal. Spikelet imbricated every way, of one or two flowers, and one feed; fcales feveral, ovate, concave, acute, for the moit part empty. Cor. none, except we fo call the fix flat, membranous, thickifh fcales, united at their bafe, which inveft the bottom of the germen. Stam. Filaments three, capillary, projecting; anthers terminal, oblong, acute, pendulous. Pif. Germen fuperior, very fmall; ftyle cylindrical, erect, as long as the ttamens, deciduous; ttigmas three, equal, recurved, Ilender, downy, acute. Peric. none. Nut roundifh, obtufe, hard, not burting, accompanied by the above-mentioned fix fcales, of one cell, with a fingle roundifh kernel.

Eff. Ch. Spikelet of one or two flowers, and one feed. Gtumes chaffy, imbricated every way, molt of them barren. Six* flat combined permanent fcales at the bafe of the germen. Style deciduous. Nut folitary, bald, obtufe.

This genus is allied to the Cladium of Browne's Jamaica, (confounded with Schoenus by Linnæus), but is diftinguifhed by the fix fcales that accompany the germen. From the Scleria of Bergius it differs in the number of its glumes, and in having always androgynous fpikelets, of which the upper flower is oaly male. Labillardiere defcribes and figures feven fecies; Mr. Brown defines 19, all from the colder parts of New Holland, or from Van Diemen's land. 'They are harfh rigid rufhy plants, one or two feet high, with ftrong perennial roots, fimple leaflefs fems, encompaffed at the bottom with feveral long, narrow, moftly equitant, leaves, which are more or lefs compreffed and acute, their edges either fmooth or minutely ferrated. The panicle or frike is terminal, mofly branched or divided.

Examples of this genus are

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L. gladiuta. Labill. Nov. Holl. v. 1. 15. 1. 12.-P. ${ }_{2}=$ nicle denfe, repeatedly compound. Stem comprefied with an clevated rib at each fide; its edges fmooth, like thofe of the leaves. Glumes rather fharp.-Gathered by Mr. Brown at Port Jackfon, as well as in Van Diemen's land, and the fouth part of New Holland. The flem is fout and rigid, from eighteen to twenty-four inches high. Leaves half an inch broad, fmooth. Panicle upright, large, of numerous acute, oblong, fcaly fpikelets.
L. tetragona. Labill. Nov. Holl. v. 1. 1\%. 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 fmaller plant than the foregoing. The feales of each sipikelet are from four to fix only. The nut is clevated on a more confpicuous fpongy bafe than in moft 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; fight examples of which may be feen in our Schoenus nigricans, Nardus frifa, and a few others, found on the molt dreary and barren inland fands. Such of them as inhabit the fea-fhore, anfwer the moit valuable purpofe poffible, in forming a natural barricr againtt the encroachments of the ocean. See Elyancs.

LEPIDOTES, in Natural Hijfory, the name of a fone bearing a refemblance to the fcales of fifhes. The word has been ufed by fome, as the name of thofe ftones which are compofed of fmall flakes, or fcales of talc, and by others to exprefs the flones containing fifh, or the impreflions of fifh, found in many parts of Germany.

LEPIDUS, M. Emilius, in Biograpby, a Roman triumvir, was defcended from one of the molt illuftrious families in Rome, and rofe to the higheft employments of the ftate. On the death of Cxfar, Lepidus, who was zealoully attached to his interefts, thought it prudent to conceal himfelf. He afterwards joined Antony in driving away the confpirators, 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 Tranfalpine Gaul. Here Antony arrived in a very diftreffed fituation, and conjured his friend to join his forces to thofe which he commanded. Lepidus refufed, but affured him he would not act with hoftility againft him. Antony knowing in what eftimation he was held by the army, rufhed into the camp of Lepidus, where he was faluted with the loudeft acclamations. Lepidus was now, in his turn, glad to fupplicate the aid of his competitor. Antony treated him with apparent refpect, left him the nominal command, while he himfelf exercifed all the real authority. By this conduct, Lepidus loft the confidence of the fenate; and in a fhozt time he was declared a public enemy, and Octavianus and Decimus Brutus were fent out'againit him and Antony. In dividing the Roman world between three mafters, Lepidus was allowed a place, principally by way of a connecting medium between the other two. He poffeffed a confiderable family-interelt, and was not dellitute 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 Otavianus fhould carry on war againtt Brutus and Caffius, Lepidus fhould remain at Rome with four legions, and maintain their authority in the capital. At the bloody profcription, and while the butchery was ftile raging, Lepidus had the unfeeling vanity to infult the public diitrefs by a triumph, on account of fome inconfiderable victories formerly-obtained by him over the revolted Spaniardsa

## LEP

## I. E P

Spaniardo. He was conful a fecond time, B. C. $4^{2}$, with Manutius Plancus. The part of the empire which was allotted to Lepidus, after the Triumvibate (which fee) was fully eltablifhed, was Africa. In the war with Sextus Pompey, Lepidus brought a large force to Sicily, with which he joined Octavianus; and he fhared in the victory obtained againft that great gencral. The conlidence he felt at being at the head of a large army, induced him to treat his colleague with haughtinefs and neglect; but he had foon the mortification to fee himfelf deferted by all his troops, who joined Octavianus. He now fupplicated his life of his rival, which being granted him, he retired into a kind of exile at Circeii, a fmall town in Latium, where he paffed the remainder of his days in obfcurity. Plutarch. Univer. Hitt.

## Lepine, Francesca Margarita di. See Mar-

 garita.LEPIOTA, in Botany, from $\lambda$ 2mts, a thin membranous lajer, or cuticle, the, firlf fection of the great genus Agaricus in Perioun's Synopfis Methodica Fungorum; the characker of which is to have the gills dry and membranous, as the name expreftes, not clouded nor footy, and the ftalk encompaffed with a ring. It includes twenty-nine fpecies, of which Agraricus procerus is the firft and molt 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, roundifh, and emarginated; antennæ fetaceous; body imbricated with fcales; tail ending in fetaceous brittles; legs fix, and formed for rumning. The character of lepifmx, as thus expreffed, combines the more effential character of Fabricius with that of Lineæus. Lamarck and others propofe fome further alteration; and, laftly, Latreille, in whofe arrangement they form the firtt family (lepifmenx) of the order thyfanoura, divides them into two diftinct genera: lepifma and machilis. The true lepifma, according to the nesv definition, has the antennx inferted between the eyes, the body flat, and the tail ending in three equal brittles. This genus walks and runs. In the genus machilis, (which moves by fkipping,) the antennx are feated under the eyes, the body convex, and the middle brifte of the tail larger than thole at the fides. The three firlt fpecies are defcribed by Linnaus; the other by Fabricius, and by Müller the author of Zool. Dan. All the fpecies, except the firlt, are natives of Europe. In their various flates of growth they prey on decayed wood, and moit or sotten fubbtances; and are moft commonly found in damp cellars, neglected water-courfes, lead gutters, and fimilar fituations. The larvæ, like the pupa and perfect ftate, are furnifhed with fix feet, and are remarkable for their activity and fwiitnefs.

## Species.

Saccrarincus. Scaly, filvery; tail triplc. Fabr. Leo pijma vulgaris, Scop. Forbicina, Aldrov. Forbicina plana, Geoffr. Lepisina faccharinum, Donov, Brit. Inf.

Originally a native of America, from whence it has been introduced and naturalized in Europe. The body is oblong and tapering; autennæ as long as the body ; tail terminating in three britles, and two pair of fmaller ones beneath. It fecretes itfelf among old furniture, and runs, when difturbed, with great agility: is often found among fugar.

Polyroda. Skipping; tail triple; fegments of the abdomen villous each fide beneath. Fabr. Lepifina foutata, - auda triplici, Linn. Donov. Brit. Inf.

Inhabits among ftones and rubbith on fandy fea-fhores, and poffefes the faculty of leaping to a prodigious height,
by means of the fprings under the tail ; antennx as long as the body.
Ternestris. Naked: tail triple. Linn. Fn. Suec. Gmelin mentions the clofe affinity this indiftinet fpecies bears to the podura tribe, to which it may perhaps belong. It is entirely white and cylindrical, with obtufe anterne half the length of the antenne.
Lineata. 'Tail triple; body brown, with two white fillets. Fabr.
Inhabits nld walls in Helvetia. Antenne as long as the body, which latter is brown above, wihh cinereous fpecks; legs fluort ; thighs corapreffed.
$V_{1 L L o s a ̀ ~ B r o w n, ~ w i t h ~ a ~ t r i p l e ~ v i l l o u s ~ t a i l . ~ F a b r . ~}^{\text {Br }}$
Native of China. The head villous-whitifh; body beneath whitifh; middle fpine of the tail longer; legs flart 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 illands. Antennre as long as the body, and brown, with the bafe pale; head whitifh; beneath the tail two fhort briftles; legs pale.
Porypus. Scutate; tail triple. Müll.
Native of Denmark.
Minutus. Yellow; tail of three briftles. Müll.
Inhabits fame country as the latter. Appendages of the tail fometimes wanting.

LEPITA, in Hindoo Mythology, a name of Sarafwati, fpoufe of Brahma, and goddefs of literature, harmony, rhetoric, and the fine arts. See Saraswati.

LEPIUM, one of Hill's names for a variety of gypfum.

LEPOIS, Nicholas, in Biography, a phyfician of celebrity in the fixteenth century, was born at Nancy, in 1527. He fludied medicine at Paris under Sylvius, together with his elder brother, Anthony Lepois, who was afterwards firtt phylician to Charles III. duke of Lorraine. In this office Nicholas fucceeded his brother in 1578 . He fpent his whole time in fick-chambers, or in his clofet, perufing the ancient authors from Hippocrates downwards. He drew. up the refult of his reading, corrected and corroborated by his perfonal obfervation, in an aphoriftic form, chiefly withthe view of being ferviceable to his fons, Chrittian and Charles, whom he deltined for the medical profeffion; but his friend the celebrated Foelius, and feveral other perfons, having feen his MS. prevailed upon him to publifh it. It was firit printed at Franckfort, in 15 SO , in folio, under the title of "De cognofcendis et curandis pæcipuć internis humani corporis morbis, Libri tres, ex clariffimorum 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 iot, at Leyden, 1736, in two volumes 4 to. Eloy Diet.

Lepois, 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 diltinguifhed himfelf by his rapid advancement in the knowledge of the languages, belles lettres, and philofophy. He received the degree of Matter of Arts in the univerlity of Paris in 15 Sx , and immediately commenced his career in the fchools of medicine. After four years, fpent in the faculty at Paris, he went to Padua in 1585 , and vifited the other fchools 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 phyfician, and retained him near his perfon both at home and in his travels. Duke Henry II. likewife held him in the fame ellimation ; and, among many other marks of his efteem for Lepois, he inflituted a faculty of medicine at Pont-i-Mouffon, and nominated him dean and firtt profeffor. In order to undertake thefe 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 1598. He had now an opportunity of difplaying the itores of knowledge, which his acquaintance with the Greek and Latin, Arabic, Hebrew, Italian, and Spanifh languages had enabled him to obtain; he was indefatigable in his obfervation of difeafes, and omitited no opportuinty of examining by diffection the bodies of thofe who died; from which he juflly anticipated the moft important improvements would accrue to medicine. His repatation was clevated to the higheft degree, fo that he was the plyfician of all the honourable perfons in Lorraine. His zcal in the pratice of his profeffion continued unabated, and ultimately occafioned his death at the age of Seventy; for he died of the plague at Nancy, whither he had gone to adminifter relief to thofe afflited by the peltilence, in the year 1633. He left the following works, which have tranfmitted his reputation to pofterity ; particularly the firt, entitled "Selectiorrm Obfervationum et Confliorum de preteritis hactenus morbis, effectibufque proter naturam ab aquâ, feu fcrofâ colluvie et deluvie ortis, Liber fingularis," Pont-a.Mouflon, 1618, in 4 to. This work paffed through feveral fubfequent editions, one of which, (that of Leyden I 733 , was publifhed, with a preface, by the celebrated Boerhaave. A felection from, or an abridgment of it was alfo printed in 1639 , with the title of "Pifo esucleatus," in 12 mo . His other works were, "Phyficum Cometr Speculum," Ponte at Moationem, 1619, in 8 vo.; and "Difcours de la Nature, Caufes, et Remiedes, tant curatifs que prefervatifs, des Maladies populaires, accompagnées de Dyfenterie et autres Flux de Ventre," ibid. 1623 , in 12 mo . He tranflated from the Spanifh into Latin, "Ludovici Mrercati Inltitutiones ad ufum et examen corum qui artem luxatoriam exerceat," Franckfort, 1625 , in folio. He likewife publifhed the following eulogy of his firft patron, "Caroli III., Serenifimi, Potentiffimique Ducis Lotharingiz, \&c., Macarifmos, feu felicitatis et virtutum egregio Principe dignarum coronæ,'" 1690. Eloy Dict. Hitt. 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 deftroying great numbers of hares. See Falco melaronotus.

Leporinum Labium, in Surgery. See Harlelip.
Leporinca Rofrum, a term fometimes applied to the portion of flefh frequently obfervable between the margins of the fiffure in cafes of hare-lip. See Hare-ile.

Leponnuma Genus, in Zoology, the name of a genus of animals, fo called from their general refemblance to the hare in fhape, and other particulars: the charagters by which they are diftinguifhed from other quadrupeds are the fe; they have feet divided into claws; they feed on vegetables; and they have two very long teeth in the fure-part of their mouths.. Ray's Syn. Quad. P. 204.

LEPORINUS Oculus, ia Surgery. See LagomiTHALMAA.

## L E P

LEPOTI, in Geography, a town of the principality of Georgia, in the province of Kaket; 22 miles S.E. of Kaket.
LEPPOWIRTA, a town of Sweden, in the government of Kuopio; 24 miles S. of Kuopin。

LEPRA, $\lambda$ : facte; whence our Enslinh term J.cpurfy ; which fee.

Lepri Lankeng, in Gcografls, a town of Thibet; 68 miles S.E. of Toudfong.

LEPRAS, in Ichelsyology, the name of a fea-filh of the turdus, or wraffe 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 lung, but that only in the ocean, never in the Mediterrancan 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 moot beautiful fifh of the Mediterranean, but is not much ettecmed at table, being of an infipid and watery talle.

Leprevin, Leprlos, or Iepriam, in Ancient Gcorra*phy, 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 perfon of the name of Leproos, a famous wreitler, who contended with Hercules, by whom hee was vanquifhed and killed. In the time of Paufanias, the inhabitants of Lepreum affumed the appellation of Arcadians. In this town was a temple of Ceres, conftructed of bricks, and near it was the fountain called Aréné.
LEPRIA, an ifland on the coalt of Ionia, mentioned by Pliny.

Leproso Amovendo, in Lawy, an ancient writ that lay to remove a leper, or lazar, who thrult himfelf into the company of his neighbours in any parifh, either in the church or at other public meetings, to their annoyance. The writ lies againft thofe lepers that appear outwardly to be fuch, by fores on their bodies, fmell, \&cc. and not againlt others : and if a man be a leper, and keep within his houfe, fo as not to converfe with his neighbours, he fhall not be removed.

LEPROSY, in MIedicine, a denomination which has been given to a variety of chronic difeafes, chiefly affecting the kin; but which has not been exclulively appropriated to thofe that are characterized by the formation of fcales, as the origin of the term imports. Even the Greek. writers. themfelves, and more efpecially the later ones, have not adhered uniformly to the proper import of the appellation; but the confufion which has prevailed in fubfequent periods of medical hiltory, in regard to the application of this term, almolt bids defiance to the induffry and difcrimination of the inquircr. This is partly to be afcribed to the difficulty of conveying accurate notions of cutaneous appearances by verbal defcriptions, partly to the extreme varie! y in which thofe appearances prefent themfelves, and partly to the neglect of minute obfervation, where diftinctions can only be detected by a careful and practifed eyc.. Thus the latter Greek phyficians applied the term lepra in a more extended fenfe than their predeceffors, and rendered future difcrimination more difficult. But this difficulty was exceedingly multiplied by the tranflators of the works of the Arabian phyficians into Latin, after the revival of learning. The Ara-1 bians appear to have diflinguifhed the lepra and elephantiafis of the Greeks, by appropriate terms in their own language : but the tranflators rendered the word which denoted the latter (viz. juxam, 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, a!phos, and pfora of the Greeks, they tranated by the terms impetigo and

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morphaer refpectively. (See Willan on Cutan. Difeafes, 2 dedit. p. 112.117. and 126.) This produced the double confufion of applying the fame appellation to a variety of difeafes, and of denoting each difeale by a variety of names; infomuch that almoft every fevere chronic affection of the flin at length acquired the denomination of leprofy, which became rather the name of a clafs of difeafes, than a fpecitic term. This confufion was flill farther increafed, during the middle ages ; when innumerable hofpitals and places of refort, together with the means of fubfiftence, were provided for thofe who were afflikted by this prevalent malady; and when the epithet of leprous was a fufficient claim upon the charity of the Chrittian world. For every Ipccies of difeafe affecting the fkin was reprefented as leprofy; and multitudes of idle and filthy perfons obtained a fubfiftence by ranking themfelves in that clafs.

The fame term, leprofy, has, moreover, been applied by the tranflators of the facred writings, to a variety of cutaneous difeafes, refpecting the nature of which there has been fome difference of opinion; fome referring it to the fcaly lepra of the Greeks, and others confidering it as a variety of the elephantiatis of the fame people; we mean the leuce, vitiligo, or albaras alba.

In order to arrive at a tolerably clear-notion of the feveral varieties of lignification, which have been given to the term, we mult, therefore, confider 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 Elephantiafis of the Greeks. See Elephantiasis.

Under that head, we have defcribed at length the fymptoms of this formidable difeafe, as detailed by Aretæus and the other Greek phyficians; as well as the appearances, which it has been faid to affume in the Weft Indies, in Arabia, and in other fouthern climates, in modern times. We mult here, however, obferve, 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 caft upon the Arabian phyficians, appears to be altogether incorrect. This imputation arofe from the mifinterpretation of their tranllators, as above ftated: and as the works of the Arabians were known only to European phyficians, through the medium of thefe tranflations, into Latin, it was naturally inferred that the original writers had committed the error. Avicenna defcribes the elephantiafis under the title of juzam, or ajiuzam, (the appellation which is ftill given to the difeafe in Arabia, according to Niebuhr,) and likewife diftinctly treats of the albers or albaras, and the albehtk or allokel (morphra of the tranflators). He carefully diftinguifhes, however, the albaras from the albohek, the former of which has feveral fymptoms in common with the confirmed elephantiafis (aljuzam), and is faid often to terminate in it. Thefe fymptoms are, a lofs of fenfibility in the parts affected; a change of colour in the hairs, which become white; and ultimately a lofs of the hair; and a change in the colour and texture of. the 1 kin , and of the mufcular fefly under it, which becomes white and bloodlefs, like that of oyiters, and finally perifhes and falls off. Thefe fymptoms have, in confequence of the miltakes of the tranflators of the Arabians, been transferred to the proper fcaly lepra, and are conjoined, in the ordinary defcriptions 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 fame import as the Greek terms alphos and leuce, which both Hippocrates and Celfus have carefully diftinguifhed; confidering the former as a mere bleminh of the fim, but the latter as a formidable and almoft
incurable difeafe. See Leuce. See alfo Hippoc. lib. $\pi \xi_{6} \pi \alpha \sum_{\omega v}$ Celfus, lib. v. cap. 28, and Willan on Cutaneous Difeafes, 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 fkin, which confift of morbid lamine of the cuticle, hard, thickened, opaque, and of a whitifh colour, and appear in patches of different fizes, having always nearly a circular figure.

Such is the defcription of the difeafe which has been left us by the Greek writers, and which is given as the character of the lepra by the beft writer on the fubject in our own time; we mean Dr. Willan. Hippocrates has not left any circumftantial detail of the fymptoms of lepra, but fpeaks of it, together with the alfoos, pora, lichenes, \&c. as an external blemin, rather than a difeafe. The later Greek writers, however, although brief in their defeription of lepra, have pointed out the diftinctions between it and thofe fimilar affections, with which it was conjoined by their predeceffors. Aëtius flates, that it differs from the lence (vitiligo, or white elephantiafis) in not penetrating deeper than the fkin, and leaving the fubjacent flefl found; from the alphos, which, though fcaly, is more fuperficial; and from the pfora, in having large fcales, like thofe of fifh; whereas, in the latter, only fcurf, or branny exfoliations, appear. (Aët. Tetrabib. iv. fermo i. cap. I 34 .) It mult be here obferved that the pfora, fimply, fignifies a flight, fcaly difeafe; and not the fcabies; or itch, which is defignated, together with the moift-tetter, by the epithet ulecrating pfora, $\psi_{\text {upp }}{ }^{\text {in }}$ スwoins. (Aët. loc. cit. cap. 126, 127, and 130. Galen, Introd. Paul. lib. iv. cap.2.) Paulus Ægineta, in a chapter "On Lepra and Pfora," obferves, that "both thefe difeafes are characterized by roughnefs and itching, and a feparation of a melancholic humour; but lepra affects the fkin deeply, in circular patches, at the fame time throwing off fcales like thofe of large fifhes; whereas pfora is more fuperficial, varioufly figured, and throws off little bran-like fubfances." (Lib. iii. cap. 2.) Actuarius has given the fame account of thefe difeafes. (De Meth. Med. lib. ii. cap. Ir.) This fcaly P fora will be afterwards confidered, under the appellation of Psoriasss, which Dr. Willan has appropriated to it, in order to avoid the confufion which would enfue in retaining the term $\oint$ fora, which has been applied by many of the moderns exclufively to fcabies, or itch.

Three varieties of the fcaly lepra are obferved in this country, according to Dr. Wiilan, which he has denominated Lepra vulgaris, L. alphoides, and L. nigricans.
r. The lepra vulgaris firl thews itfelf in fmall, reddihh, and fhining elevations of the cuticie, on the tops of which thin white fcales are feen within twenty-four hours from their appearance. After three or four days, the fmall elevations are flattened, and at the fame time dilated, by an extenfion of their bafes, to the fize of a filver penny. Thefe 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 fcales often accumulate on them, fo as to form a thick prominent cruft, which is quickly reproduced, whether it fall off fpontaneoully, or have been forcibly detached. On its removal, the furface appears, through a magnifier, to be perous 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 uneafinefs, excepting a flight degree of itching, felt when the patient becomes warm in bed, and a fenfation of tingling

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upon any fudden change in the temperature of the atmofphere.

This fpecies of lepra often appears firf at the elbow, or on the foresarm, but more generally about the knee; in the Iatter cale, 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, increafirs by degrees until they come nearly into contact. The difcafe is then often Itationary for a confiderable length of time: if it does advance farther, its progrefs is towards the hips and loins, afterwards to the fides, back, and floulders, and about the fame time to the arms and hands. In a great number of cales, the hairy fcalp is the part laft affected: although the circles formed on it remain for fome time diltinct, yet they finally unite, and cover the whole furface on which the hair grows with a fcaly incruftation, producing, efpecially in hot weather, a troublefome itching. In fome inftances, 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 ufual.

When the lepra extends to all the parts above-mentioned, it becomes highly difgulting in its appearance, and not only inconvenient, from the ftiffnefs and torpor which it oceafions in the limbs, but paipful where the fikin is red and tender, as it fometimes becomes, in the flexures of the joints. The difeafe, however, is feldom difpofed to terminate fpontaneoufly: it continues nearly in the fame fate 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 conftitution. An appropriate courfe of medicine, with a regular diet, acts very flowly on the lepra, but will at length accomplifh its cure ; and it then proceeds to a termination in the following manner. Firft, the incruftation feparates from about the centres of the patches, and is no longer reproduced. The fcales being farther and farther removed, a circle of red Thining cuticle, deeply indented, appears within the original patch, which fill retains a broad hard fcaly ring, or border: this border continues till the cuticle within it affumes the ufual colour and texture. It then gradually foftens, and the cuticular lines being extended over it, every veftige of the difeafe is erafed.

It may be obferved, with refpect to the fcaly Rpra, that the patches are generally fituated where the bone is neareft to the furface, as along the fkin, about the elbow, and upon the $u l_{n}$ in the fore-arn; along the fine, os ilium, and fhoulder-blade; and on the fcalp. They rarely appear on the calf of the leg, on the flefhy part of the arm and thigh, or within the flexures of the joints. The difeafe almolt conftantly affects both fides, appearing at each elbow, or at each knee about the fame time, and extending from thence along the limbs in a fimilar manser. But although frefh patches arife, from time to time, in different fituations, there is no ceffation of the complaint in the parts firt affected, as happens in fome cutaneous difeafes; but when it is about to terminate, all the patches aflume a favourable appearance at the fame time, thofe neareft the extremities going off fomewhat later than the reft. When the extremities, back, loins, and head, are all at the fame time covered with dry crults, it might be expected that the obftruction of the perfpiration on fo large a furface would produce difagreeable confequences; which, however, is not found to be the cafe.

The caufes of the common lepra are not fatisfactorily afcertained. Some writers maintain that the difeafe is both contagious and hereditary; but its contagious nature has probably been affumed from the erroneous notion of the

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affinity between the lipra vulgaris, and the cleplantiafis. Dr. Willan (to whofe accurate obfervations we are indebted for the defcription of lepra), alfirms, jully, thit it is not a contagious difeafe. Ife admits, however, that an hereditary predifpofition to it is orcafionally tranfinitted from the parent to the offspring. A flow pulfe, or a lanyruid circulation of the blood, and, what mult generally be connected with it, a harfh, dry, impermeable flate of the frin and cuticle, appear to contitute a fundamental part of the pre-difpofition: The morbid efiects of fuch a ftate of the integuments are moft likely to be felt in the declive of life: accordingly, the difeafe is of more frequent occurrence, and proves more inyeterate after the age of forty, than at any earlier period ; an obfervation made long ago by Hippocrates and Galcu. Willan. loc. cit.

Among the exciting caufes of this form of the lepra, particular kinds of dict, as dried meats, finh, oatmeal, and fome incongruous tnixtures of food, are ufually mentioned, but not on fufficient authority: at leait the diforder is very frequent in this metropolis and its environs, where the articles of diet juit mentioned are little ufed. Nor does it appear that the general opinion, that lepra is more prevalent in fifhing-towns on the rea-coaft, than in other fituations, refts upon any better foundation. Expofure to cold and moitture, and the accumulation of fordes on the fkin, are the only exciting caufcs of this variety of lepra which Dr. Willan has been able to point out. From the laft-mentioned caufe, he fays, it frequently arifes in bakers, bricklayers, labourers, coal-heavers, duft-men, labo-ratory-men, and others who work among dry powdery fubftances; for thefe perfons are not able to attend very carefully to perfonal cleanlinefs, from the want of public baths, and an imperfect fupply of water in their own houfes. For our own parts, however, we have feen the difeafe molt frequently in females, where the laft-mentioned circumflances had not operated.
2. Lepra alploides. In this form of lepra, the fcaly patches are fmaller than in the lepra vulgaris, and have their central parts a little depreffed. The eruption ufually begins about the elbow, with dillinct, hard, protuberances, not much larger than pimples, and of a dull red colour. Thefe, in a fhort time, dilate to nearly the fize of a filver pemy : two or three days afterwards the central part of them fuffers a depreffion, within which minute white feales may be obferved. The furrounding border, however, fill continues to be raifed, but it retains the fame fize, and the farne red colour as at firit. All the fore-arm, and in many cafes the back of the hand, is fpotted with fimilar patches, which feldom become conflueat; but there is fometimes a white incruftation round the point of the elbow. This eruption appears in the fame mainer upon the joint of the knee, but without fpreading far along the thigh or leg. It rarely, if ever, appears on the trunk of the body, or on the face.

This is a difcafe of long duration, and not lefs dificcult to cure than the foregoing fpecies of lepra: even when the fcaly patches have been removed by a perfeverance in the ufe of fuitable applications, the cuticle remains for a long time red, tender, and brittle; but the fmall hairs of the flin are not deftroyed, nor altered in their colour and texture, as fome authors have ftated, and as occurs in the leuee. This form of the difeafe feems to bave been ranked by the ancients under the head of white alphos, which Galen afo firms is a flighter affection, and lefs rough than the common lepra. Celfus, indeed, has claffed it (under the generic term vitiligo) with the leucè; but he points out with care the diftinction between the flight alphos and the incurable leucè.

The exciting caufes of this form of the difeafe are pro.
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bably the fame as thofe of the preceding ipecies. It chiefly affects wonten and chuldren: and is not unfrequently feen, according to Dr. Willan, in thofe who are employed to drefs Hlax, hair, or feathers.
3. The depra nigricans does not differ much from the keyra vullyaris, with refpect to its form or diltribution; but chiefly in the colour of the patches, which are dark and livid. 'I'hey appear firtt on the legs and fore-arms, extending afterva ads to the thighs, luins, neck, back, and hands: their central part is not deprelfed, as in the alphoides. They are fomewhat fmaller than the patches of the L. vulyaris, and have a livid or purplifh border. The fkin, likewife, appears of a livid colour thro"gh the fcaly incrultations, which are felfom very thisk. It is further to be obferved, that the fcales are more eafily detached than in the other forms of lepra, and that the furface remains longer excoriated, difcharging lymph, often with an intermixture of blood, till a new mocrulation forms, which is hard, brittle, and irregular. This complaint is particularly troublefome when it covers the fealip.

The lepra nigricans affects foldiers, failors, fculler-men; Rage-coachmen, butchers, brewers'-labourers, and others, whofe occupations are attended with much fatigue, and expofe them to cold and damp, and to a precarious or improper mode of dict. Women, habituated to poor living, and conftant hard labour, are alfo liable to this difeafe. It was probably comprifed under the denominations of black alphos (Mtaxs), by the Greeks, and of black albohak by the Arabians (or black anorphea of their tranflators.) On comparing their accounts, however, it will be folind that fome of them reprefent the black alphos as fmooth and fhining, like the leuce ; while others affert that it is rough and fcaly. By this inaccuracy refpecting the llack as well as the whbte alphos, they have led fucceeding writers to conjcin the lepra and elephantiatis, difeafes generically different.

Treatment of Lepra Gracorum. - In the treatment of lepra, the Greek phyficians always premifed bleeding and ftrong purgative medicines; but they feem to have depended chiefly on external applications, fuch as alum, fulphur, nitre, lupines, cabbage-leaves, elm-bark, the dung of goats, mice, and foxes, human urine, and the gall of bears. They likewife ufed feveral vegetable and mineral fubflances, which had a corrofive or velicating quality; as hellebore, colophonia, the roots of white lily, onien, bryony, afphodel, ranunculus, and anemone, the feeds of muftard, and horferadifh, quicklime, vitrinl, \&c. Remedies of this kind, or even blititers, are, however, found to have only a temporary effect, their operation being foon fucceeded by a re-production of the fcaly crults. Liniments, compofed of tar, or of fome mercurial preparations, have been much employed, both in ancient and modern practice, with fomewhat more beneficial effect.

Of all the external remedies, however, which can be employed in the two firlt fpecies of lepra, frequent bathing or voafhing is the molt advantageous. 1)r. Willis was averle to warm-bathing, or the external ufe of any mineral water, from fome theoretical notions, and cenfures efpecially the Bath waters, as having converted many cafes of Dight eruption into a confirmed leprofy. (De Medicam. Operat. fect. iii. c. 7.) It is pretty well afcertained, however, from experience, that not only the waters of Bath, but alfo the Iulphureous waters of Harrowgate, Crofi, Mof$\mathrm{f}_{\text {ac }}$, \&c. ufed both externally and internally, prove very bencicial in many cafes of the lepra. Where the flkin is niot very irritable, much advantage may be alfo derived from baths prepared with a folution of alkalized fulphur, and muriate of fuda; and when the furface is very tender,
fimple ablution with warm water, or bran and water, has the effect of abating the tingling or itching of the fkin, of encouraging the removal of the fcales, and of rendering the fkin fofter and more pliable. Similar effects are produced by the ufe of the Bath waters, according to Dr. Falconer. (See Memoirs of the Med. Society of London, vol. iv.) "The method in general purfued," this refpectable phyfician ftates, " is to order the patients to bathe twice or thrice a week, according to their age, ftrength, and other circumftances. This courfe 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 ealy and genlle perfpiration. If the amendinent appears to proceed according to expectation, no other medicines are given, but occafionally fuch as are opening, if the body be coftive." Dr. Falconer alfo ftates, that the whole numiber of perfons admitted into the Bath hofpital for this difeafe in the fpace of four years, from June 12 th, 1775 , was 83 ; of whom were difcharged 52 "cleanfed," and 24 " much better."

Bathing in fea-quater, Dr. Willan obferves, is a certain auxiliary in the cure of lepra. "It is ufual, and feems proper, firlt to ufe a bath of warm fea-water, till the fkin be foftened, and the fcaly incruftations removed; after which a cure is foon obtained, efpecially in young perfons, by bathing in the open fea. As the difeafe is apt to recur in winter, or in fpring, the fame plan may be requifite for feveral fucceffive fummers; but I have known it, by perfeverance, linally eradicate the complaint. A fimple warmbath," the fame phyfician obferves, "with moderate friction, likewife contributes to remove the fcales, and to produce a foft red Ain, which, in time, regains the ufual colour and texture. This plan is fufficient in the बighter cafes of lepra, without the ufe of internal remedies. If the difeale affects the extremities only, bathing the whole boly is not neceffary; it may be enough to apply fleam, or warm-water, frequently to the difordered 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 moft efficacious in reftoring the cuticle, after the leprous crufts are removed. He does not, however, think the latter preferable to the tar-ointment, which Dr. Willis and others have recommended. This ointment ghould be well rubbed upon the parts affected every night, and carefully wathed off, the following morning, with warm-water, or with a llight alkaline lotion. We may add, that in flight or incipicnt cafes, where there is much drynefs and an inirritable date of flin, the fcales may be often removed by a fpirituous lotion; and that the thick crufts which fometimes form upon the patches, may be foftened and removed by ftrong alkaline applications. The ufe of the decoctions of folanum dulcamara, or herb bitter-fweet, or of elm-bark, by way of lotion, has alfo been found of confiderable fervice in feveral inflances.

Many internal remedies have been employed and recommended for the cure of lepra, the efficacy of which has not been ftrong!y eltablifhed by fubfequent experience. Refpecting thefe, Dr. Willan remarks, that antimonials, fulphur, and nitre, have not alone any confiderable efficacy; that decoctions of emollient herbs, of guaiacum-wood, farfaparilla, mezereon, or of elm-bark, which have been recommended as fecifics, by no means deferve that character ; that calomel, bydrargyrus ca'ciactis, pilule bydrargyri, or mercurial frictions, applied fo as to produce falivation, do not remove the difeafe; and that the nitrous and muriatic acids, lately recommended in obftinate cutaneous eruptions,

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though fucceffful in fome cafes of lepra, have been given in other cales, for three or four fucceffive months, without any manifelt advantage. The tincture of cantharides has often been preferibed for the lepra Gracorum, as on the authority of Dr. Mead; but that phyfician recommended it only in cales of elephantiafis, or lepra Arabum; and it has been found totally ufclefs in the fcaly lepra. See Fatconer, loc. cit. Willan, loc. cit.

The following fubtances may be mentioned, however, as laving evinced confiderable efficacy, when taken internally, in many cafes of lepra. The corrofive muriate of mercury, diffolved in fpirit, and taken in fmall dofes for a length of time, has fometimes proved ufeful ; efpecially when its operation was affifted by fome antimonial, given at the fame time, with any of the decoctions above-mentioned. The caultic potafs in folution, or aqua kali puri of the late difpenfatories, given in the dofe of twenty or thirty drops, thrice a day, in a cupful of any mild fuid, has alfo mani. felted fome influence over the difeafe. But the preparations of arjenic have been employed with more conliderable fuccefs, in obttinate cafes of lepra, both in form recommended by the late Dr. Fowler, and in that of Dr. De Valangin. The dofes of the folution prefcribed by Dr. Fowler are larger than are neceffary. Five or fix drops taken three times a day will be generally fufficient for an adult. We have feen feveral cafes in which the difeafe yielded readily to this remedy. Sze Dr. Willan's Treatife, 2d edit. p. 137, where is alfo an intereiting communication on the fubject, from Dr. Girdleitone, of Yarmouth.

Among the vegetable remedies, the tincture of black hellebore has been occafionally prefcribed by Dr. Willan, its dofe being regulated fo as not to diforder the bowels, and he is of opinion that it has fome efficacy; but not more than the miseral remedies already mentioned. The decoction of the twigs and leaves of the folanum dulcamara (Linno), has alfo been found beneficial in the fcaly lepra, when taken interually, as well as when applied externally as a wafl. Out of twenty-three cafes, in which it was employed by Dr. Crichton, two only refifted 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 boiied in a pint and a half of water down to a pint. Of this decoction Dr. Crichton prefcribed two ounces, at firlt, to be taken every morning, nonn, and evening, but the quantity was afterwards increafed, until the pint was conflumed every day; at the fame time, the patient was ordered to wath the Ikin vith a ftronger decoction of the fame plant, which confiderably accelerated the cure. The remedy feldom begins to cxhibit any evident good effects for the firft eight days.

The remedies above-mentioned are applicable only to the twe firft fpecies of lepra; none of thein being particularly ferviceable in the lepra nigricams. 'Ihis form of the difea!e requires, in the firlt place, a regular and nutritive plan of deet, with moderate exercife : it may be afterwands wholly removed by the ufe of cinchona, and the mineral acids, feabathing, \&c. Willan, loc. cit.

It muft be obferved, before we conchude, that, in the senereal difeafe, circular patchez fometimes appear, which refemble thofe of the lepra nizricans in fize and colour, but which are not incrufted. The drynefs and harihnefs of the Skin, fo remarkable in the lepra rupgoris and alphsides, do not occur in the venercal lepra; ; its patches, when fomewhat advanced, being as foft and pliatle as other parts of the flain. Thefe patches are generally diffinet, and at a diftance from cach other; they feldom exceald the fize of a fhilling; yet it is probable, Dr. Wiitan remarks, that they might acquire a greater magnitude, if the progrefs of the difeafe
were not carly arrefted by the ufe of mercury. As the difeafe yiedds to the influence of this remedy, a circular red fuot appears for fome tine in the place of each decliming patch, and a minute fhallow depreflion, like a cicatrix, is left at the centre; but no permanent difcolouration of the ikin remains, as in fome other cales. If no medicines were employed, thefe, like other fyphilitic eruptions, would at length terminate in ulcerated blotches.
l.epross of the Jesus. The nature of this difeafe, which appears from the writings of the Hebrew legillator to have prevailed extenfively among that people, after they quitted Egypt under his guidance, has been the fubject of much difcuflion, and of conliderable difference of opinion. Some writers have referred it to one of the fpecies of leprofy above-mentioned, and fome to the other; and fome ygain have confidered it as a difeafe peculiar to the Hebrew peo. ple, differing from every malady with which other natous have been aflitict, and feut by Providence upon them, as a fu. pernatural-punifhment. Many of the ancient hiftorians afiert. that the Hebrews were expelled the Egyptian territories, in confequence of the general or even univerfal prevalence of the leprofy among them. Manethon, an Egyptian, who wrote a hiltory of the religion of his anceftors, makes this affertion; and a fimilar account is given by Lyfimachus, Plutarch, Jultin, Tacitus, and others. The learned Jewifh writer, Jofe. phus, however, treats thefe accounts as altogether fabulous; and flates fome fubflantial arguments in proof of their ablurdity and fallehood. (See Jofeph. Antiq. Judaic. Hib. iii. and contra Apisn, lib. i.) The concurrent tellimony of the hittorians, phyticians, and poets of antiquity, indeed, goes to prove, that the inhabitants of Egypt, for many ages, were fubject to e'cphantiafis, and that, in fact, the dileafe originated on the borders of the Nile; and modern obfervation has afcertained its more recent prevalence in the fame coun. tries. This circumftance feems to have led fome writers to conclude, that the Hebrew leprofy was the elephantiafis, or lepra Arabum, as it has been called. But a conlideration of the fymptness, enumerated by the divine lawgiver, fanctions the conclufion, which the majority of writers have drawn uan the fubject, that it was neither the elephantiafis, in its ordinary trbercular form, on the one hand, nor the fcaly lepra of the Greeks (which, however, it more nearly refembled in its extcrnal appearance) on the other; but that it was the leuce of the Greck writers, the witiligo of Celfus, and the white albaras of Avizenna, and the other Arabian phyficians. (See Lagcee.) See alifo Leon. Fuchfii, Paradps, lib. ii. cap. 16. Greg. Horft. Obf. Med. lib. wii. p. 3.30, Th, Campanellx, Ord. Medic. lib. vi. cap. 23. art. 3 . Forefti, Obf. Chirurg. lib. iv, Obl. 7. Raymond, Hitt. de 'Elephantiafis, p. Uf. Herdler, vom Abendländichers Auflatz, p. 34 t .

It will be fufficient to compare the obfervations of Avicenna, when pointing out the distinction between the ablite alburus and the alguada (morphara of the tranilators), with the marks of difcrimination detailed in the book of Leviticus. refpecting the unclan leprofy, and thofe forms of it which were not deemed unclean, in order to be convinced that the fame difeale is, in both cales, under the wiew of the writer. Avicenna flates that "both fpecies of algusda (viz. alphos and molas of the Greeks) are confined to the flin, and merely fuperficial ; but the albaras affects both the flin and the flesh, even to the bones." Aind again; "there is this difference between the white alquada and the white albaras, that hairs grow upon the tkin afected with the former, and they are of a black or browen colour: but thofe, which grow in the alloras are always rubite; and at the fame time the thin is more deprefled or funk, than the relt of the fur-

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Sace of the body. Some depreffion may, perhaps, occur in the suada, but it is very flight. Moreover, a puncture of the fkin with a needte draws blood in the guada; but no blood follows it in the baras, only a watery humidity ; and this is incurable." (Avicennx, Canon. Med. lib. iv. Fen. iii. tract. iii. cap. 9.) In the five or fix (pecies of leprofy defcribed by Mofes, namely, as commencing with a feab or bright fpot, a fwelling, a rawnefs of the flefh, a boil or ulcer, and a burning or inflammation, as well as the leprofy in the head, and that connected with baldnefs, it will be obferved, that the two charafteriftic fymptoms are the whitc$\mathrm{m} / \mathrm{s}$ of the hair, and the depreffion of the flin conjoined, as in the quotation from Avicenna. The whitenefs of the furface alone, without change of colour in the hair, or any depreffion (as it vccurs in the alpbos, morploza, or lepra Gracorum), is exprefsly afferted not to conititute an unclean leprofy. "When a man fhall have in the Gkin of his flefh a rifing, a fcab, or bright fpot, and it be in the fkin of his flefh like the plague of leprofy, then thall he be brought unto Aaron the prielt, or unto one of his fons the prielts; and the prieft fhall look upon the plague in the fkin of the flefl. And if the bair of the plague is turned cobite, and the plague in fight be detper than the jkin of his flefh, it is a plague of leprofy, and the priet thall look upon him and pronounce him unclean." But "if the bright ffot be white in the fkin of his flefh, and in fight be not deeper thals the ikin, and the bair thereof be not turned culite; then the prielt ©hall that him up that hath the plague feven days," in order to afcertain the nature of the difeafe by future infpection. "And the prieft Shall look on him the feventh day; and behold, if the plague in his fight be at a ftay, and the plague fpread not in the fkin, then the priett fhall thut him up feven days more; and the prieft fall look on him again on the feventh day: and behold, if the playue be fomewhat dark, and the plague fpread not in the fkin, the prielt thall pronounce him clean ;" it is but a fab ; and he fhail waith his clothes, and be clean." Leviticus, chap. siii.

Nay it appears that the whitenefs of the fkin, cven when extending over the whole body, was not conlidered as conftituting of i:felf the true leprofy, unlefs fome excoriation, or appearance of "raw hefh," was conjoined with it, or the hair was changed to white, or the depreffion of furface was obferved; and even after excoriation had occurred, if it were fcaled over, or became white, neverthelefs the perfon was declared clean. "A.nd if a leprofy break out abroad in the fkin, and the leprofy cover all the Ikin of him that hath the plague from his head even to his foot, whertfoever the priell lookcth; then the prieft flall confider; and, bèhold, if the leprofy have covered all his fleth, he flall pronounce hin clean that hath the plague: it is all turned rwbite : be is clean. Bat whea raso 在/h appeareth in him, he thall be unclean. And the prielt fhall fee the raw flefh, and pronounce him to be uncleau: for the raw flefh is unclean; it is a leprofy. Or, if the raw heht turn again, and be changed into white, he fiall come unto the prieft, and the prielt fhall fee him: ard, behold, if the plague be turned into white, then the rieft fhail pronounce him clean that hath the plague; he is clean." (Loo. cit.) And, in like manner, when the cutaneous difeafe originates from a "boil," or from a "hot burning," (ilid. vers 18 and 24 ,) in ei her cafe, if, in the place of the boil or burning, there be "a white rifing, or a bright fpot, white, and fomewhat reddilh, and it be fhewed to the prielt ; and if, when the prieft feeth it, behold, it be in fight lower than the fkin, and the hair thercof be turned wobite, the prieft thall 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 whitie
hairs therein, and if it be not lozver than the §kin, but be fomewhat dark ; then the prieft fhall thut him up feven days, Sc. ;" and it," in the mean time, it remains fationary, "it is a bsruing boil, and the prieft fhall pronounce him clean."

And, farther, when the hairy fcalp, or the beard, is affected with leprofy, "if it be in fight deeper than the fking and there be in it a yellow skin hair," the perion is pronounced unclean; "it is a dry fcall, even a leprofy upon the head or beard." But even if there flould be no depreffion of the furface, yet if there be likewife no llack and thick hair, (i. e. hair of the natural appearance,) it is ftill to be confidered as "the plague of the fcall,'" and the perfon is to be thut up for feven days, and to be fhaven, for the purpofe of more accurate inveltigation.

Laftly, when after thefe fucceffive feclufions and examinations, at intervals of feven days, in any of the cafes, the unclean leprofy is confirmed ; then "the leper in whom the plague is, his clothes fhall be rent, and his head bare, and he fhall put a covering upon his upper lip, and Thall cry ' unclean, unclean.' All the days wherein the plague fhall be in him, he flall be defiled; he is unclean: he fhall dwell alone; without the camp fhall 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 fubject to a variety of difeafes of the Ikin and mufcular folids, to which the appellation of leprofy was applied, as a general term ; but that the mot incurable and loathfome fpecies, which was called the leprofy, by way of eminence, was that malady, which has been fubfequently known in the countries which they traverfed and inhabited, and on all the eaftern fhores of the Mediterranean, under the various denominations above ment:3ned, of leuce, vitiligo, albaras alba, and elcphantia alba (Plin. Hitt. Nãt. lib. xxv. cap. 5): That it was not the elephantiafis of Aretæus, in which the face was deformed with tubercles, the lips thickened, the nofe dilated, the ears enlarged and tuberous, and the countenance diftorted, with a reddifh brown complexion tending to black; and ultimately with an ulceration of the rugous and tuberculated parts, (fee ElepiantiaSIS, is obviots from a perufal of the foregoing defcription. The extreme whitexefs, indeed, is mentioned in various parts of feripture, as characteriltic of the leprofy, and is feveral times compared to that of fuow. This colour is the only. circumitance that is flated, in refpect to the miraculors 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 depreffion of the fpots alfo afford a contralt to the prominent and rough tubercles of elephartiafis. Neverthelefs the leuce has fome affinity to the eleplantialis 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 Mofes, that the tubercular elephantiafis was either ex remely rare, if not altogether unknown to the Hebrews, or that it was not deemed unclean or contagious.
It is fcarcely neceffary to remark to the Englifh reader, that the word flugue, in the preceding paffages, obvioully fignifies only the fpot or difeafe; and implies nothing peltilential or infectious. The word, in the Septuagint, is $\dot{\alpha} \imath^{\prime}$, isus, plaga, (a froke); the latter of which is ufed in the Vulyate
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 expulfion of the difeafed from the camp was frictly commanded, in cafe the exiftence

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of the true leprofy wore afertained. For in the firft place, so apprehenfion of the communication of the difeafe by infection is any where exprefed; the leprous perfon is faid to be uncleant. But other circumftances, where no contagion or communication of difeafe could be fufpected, were faid, in like manner, to render a perfon traclean ; and the law enjoined, in thefe cafes alfo, a temporary feparation of the perfon from fociety, and fimilar rites, offerings, and ablutions, at the time of being declared clean before the prieft. (Levit. chap. $x v_{0}$.) Thus any iflue or difcharge from the body, the occurrence of the catamenia in women, child-bearing, \&c. all rendered a perfon unclean, and equally fubject to feparation and the fubfequent ceremonies. It would feem, therefore, that the loathfome and foul nature of the difeafe, which infpired this people with a fimilar horror and difguft to that which is felt towards a corpfe (" tanquam nihil à cadavere differentes;" Jofephus Antiq. Judaic. lib. iii. chap. x. fee alfo Numbers, chap. xii. ver. 12.) was the principal reafon for the feverity of the law of exclufion, which was ordained againft lepers. For we are informed by Jofephus himfelf, that, fo far from being fuppofed to be capable of infecting thofe about them with their difeafe, "lepers, in many countries, not only mix in fociety, but are even held in high eltimation ; fo far from being banifhed, or looked upon with. contempt, they are honoured, in warlike expeditions, with military dignities, and with ofices of truft in the adminiltration of public affairs; neither are they excluded from the places of public devotion." (Loc. cit.) The fcriptures, indeed, furnith us with an example of the high ftation of a leper, in the perfon of the Syrian general, Naaman, who was in great favour with his king. And even among the Ifraelites themfelves, it would feem that the exclufion of the leprous was not very rigidly enforced. For we find Gehazi, the fervant of Elifha, fill in the employment of the prophet, and converfing even with the king, after the leprofy had been infleted on him "and his feed for ever:" (fee 2 Kings, chap. v. and vi. and again chap. viii. v. 4.) to (ay 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 accefs to Chrit, and joined in the crowds that followed him. (St. Matthew, chap. viii.) They were alfo inhabitants of the towns and villages; for Jefus was "in the boufe of Simon the leper, in Bethany." lbid. chap. xxvi. v. 6.
Thefe fact c , then, afford more than prefumptive evidence, that the Hebrew leprofy, the leuce, or vitiligo alba, was not a contagious difeafe, any more than the white fcaly leprofy, -which is common in our own time. And there is much reafon for believing, that even the tuberculated leprofy, or elephantiafis, was equally void of contagious qualities, as we fhall prefently ftate, notwithflanding the ftrong affertions to the contrary among the ancients, We have already obferved, however, that the latter was confidered as a confe. quence of the white leprofy in many inftances, or as the fame difeafe, in a more fevere degree; for the lepra was faid to change into elephantialis (Galen. de Tremor. proter Nat. cap. 13.) : and this author alfo mentions two cafes, in which, on the contrary, elephantiafis was changed into lepra by a particular mode of treatment. Galen, de Simplic. Med. Fac. lib. xi.
Little can be faid, that fhall poffefs any intereft, refpecting the treatment of the'leuce, or Jewifh leprofy. It was generally deemed an incurable difeafe in ancient times, and is almolt uaknown, we believe, at prefent in Europe. It ftill, perhaps, appears occafionally in Iceland, and other northern regioss, as a precurfor, or as a modification of the
clephantiafis, according to the obfersation of a late intelligent traveller in the inalid juft mentioned. He Itates, that he faw a woman anfected with a horrible difeafe, which is there called Likthrau, $\mathrm{b}_{\mathrm{f}}$ which her face was fo corroded a4 to prefent a moft difguting fpectacle. "Her legs and hands," he adds, "were fwollen to an comonous lize, thefe later being alfo covered with a thick and almoff wublite fkin lying in oreat surinkles." (Hooker's Journal of a Tour in Iceland, F. 186.) The thickened and rugous fkin, with the ulcerations of the face, belong to elephantialis; whi'e the morbid cubitenefs is characteriftic of leuce. Mr. Hooker alfo expreffes his opinion, that this difeafe was not contagious. No light has been thrown upon this difeafe by a ftill later traveller in the fame ifland, who has recounted the fymptoms of elephantiafis, as commonly given in books, and apparently added nothing from perfonal obfervation. (See Mr. Holland's Paper on the Difeafes of Iceland, in the fir G. Mackenzie's "Tour" in that ifland, jult publifhed. Dec. 1810. ) Profeffor Henfler mentions a cale, which he once faw for a few minutes, and which appears to have refembled that mentioned by Mr. Hooker. "The whole countenance was puffed up; the cuticle was of a dirty white, or whitifh-grey colour, dry and fhrivelled; but foft to the touch, as if difterded with a watery fluid; with fiffures here and there, from which fome exudation took place." The cuticle alfo exhibited fome furfuraceous and powdery exfoliations. Henfler remarks, that the comparifon (applied by Aaron to his fifter Miriam, in Numbers, chap. xii. v. 12.) of fuch a perfon to a dead and macerated fatus, is a moft happy illultration of the appearance. ("Let her not be as one dead, of whom the flefh is half confumed, when he cometh out of his mother's womb.') The phyfician who attended the patient, feen but once by Henfler, compared the appearance of the ikin to that of thick, fliff, dried leather; it was fo thick, that an experienced furgeon made feveral atrempts to open a vein, without fuccels, in various parts of the body. There was great fwelling, ftifneefs, and tention of the eyelids, with a frequent ophthalmia, and great fenfibility to light. A thick and foetid cruft covered the fcalp. She was twice fo nearly cleared of the leprofy, fo as to go out of doors again; the firft time by large dofes of conium with fublimate of mercury; the fecond, by tincture of cantharides, after antimonials and mercurials had increafed the fymptoms. A third time fhe was improving much, under the ufe of fmall dofes of arfenic, which, however, was neceflarily omitted, and fhe ultimately died. (Henfler vorn Abendiz̈ndifchen Auffatz $3^{\text {er }}$ Abfchnitt. § 11. P. 351.) It is worthy of remark, that the leprofy, in this cafe, fufpended a pulmonary confumption, the fymptoms of which never afterwards returned.
Of the caufes of this form of leprofy, we fhall fay nothing, until we come to treat of the leprofy of the middle ages.
With refpect to the leprefy of horfes and of clothes, men. tioned in the Mofaic code, it is probable that the expreffion was merely analogical, the fpots and difcolourations which appeared upon the walls and articles of apparel being looked upon as refembling the leprous fpots : while, at the fame time, as they were molt probably the confequence of humidity, the appearance of them might either actually accompany, or precede and prognofticate, difeafes in the inhabitants of the houfes and wearers of the garments. (Levit. chap. xiii. and xiv.) It is no where faid that the difeefe, called leprofy, is capable of being communicated to the inhabitants or wearers, in thefe cafes; but that it is unclean. The garments were ordered to be burnt, and the flones to be taken away, and replaced by others, or the houfe ultimately
to be defroyed, whem; after cettain infecoions by the prief, the greenith or reddin fpots in them continued.

Lerrosy of the middle ages. The hitory of Europe, from the fixth to the ifteenth century, is fearcely lefs full of the defcriptions of the phylical dititrefles of the people, occafioned by famine, pellilence, and difeafes of the mot loathFome and fatal hind, than of the political and moral evils which befet them. Among the maladies of thofe times, leprofy, uides all the forms to which the term has been applied, appears to have exilted fo generally and uncealingly, as to have claimed a more univerfal attention than even the -plague itfelf. It was one of the firt fubjects, on which the active benerolence of the early Chrillians exerted itfelf, and thtimately it abforhed a very large propertion of the wealth of Chritendo:n, which was apprupriated by the donations of the pions to the maintenance and relief of thofe who were afficted with it. Thefe immenfe charitios, however, were at length adminitered under great abufes, and afford no accurate grounds upon which to calculate the extent of the prevalence of the maiady.

In inveftigating the hiftory of the difeare in the middle arpes, we fhall probably find it fufficiently clear that the elephantiafis, or tuhercular difeafe, (the Lepra of the tranilators of the Arabians, ) was the principal form againlt which the precautionary laws were framed; but that almolt all cutaneous difeafes were popularly confidered as of a leprous nature; that, in fact, many miltakes were committed, And many wilful deceptions practifed, by which other dileafes were confounded with elephantialis; and that its difappearance from Europe is probably the refult of the amelturation of the moral and plyyfical condition of fociety, which the progrefs of civilization and fcience has brought about.

The general opinion, which was prevalent among the Greeks and Romans, that leprous difeafes originated in Egypt, is in fome meafure confirmed by the particular confideration given to them in the firtt hintory of man; and the more copious and dittinet defcripion of thefe dileafes, fubdequently given by the Arabian phylicians, as well as the accounts piblithed by travellers in, more ricent times, (fee thofe of Prolper, Alpinus, Tournefurt, Niebuhr, Bruce, \&c.) who witneffed their frequent occurrence in that and the neighbouring countries, have led to a common belief, that the infeqtion 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 refpect to the contarious nature of elephantiafis and leuce, there is fufficient evidence recorded, efpecially among the tranfactions of the faints, in proof of the prevalence of leprofy in the welt, at a much earlier period. Lepers are mentioned in many public asts, according to Muratori (Antiquit. Ital. Med. Ævi. t. ii. difl. 16.), in the fixth century; and Gregory of Tours fpeaks of a place, where .thefe unfortunate perfons were accuitomed to walh themfelves, as well as of a hofpital appropriated for them. Gre--gory the Great, in the fanie century, likewife alitdes to the fubject, and particularly mentions one leper, "quem dealis vulneribus morbus elephantinus defedaverat." In the following century, Rhotaris, king of the Lombard, publihed an edict agrainit lepers, by which they were conlidered as dead in the bav, and enjomed not to come near to found perfons, but to apprife them of their approach, by making a noife with a w, oden chapper. There was a river near Alli, in Lombardy, ta:nous in thofe times for the cure of leprofy; whence, in the eighth century, the Lombards were confidered as a filthy leprous people : aud the wife pope Sylvelter, upon the plea of leprofy, difiuaded the king of

France from marrying a Lombard princels. So early as the eighth century, St. Othmar, in Germany, and St. Nicholas de Corbie, in France, inflituted leprous houfes, which had been already numeroufly eftablithed in Italy. King Pepin, in 757, and Charles the Great, in 789 , iffiued ordinances, by which the marriages of lepers were diffolved, and their alfeciation with the healthy prohibited. In the life of St. Athanafius, in the ninth century, lepers are alfo mentioned; and indeed, in general, the acts of the faints, compiled by the Boilandifts, are replete with examples of the malady, thronghout Europe, in the middle ages ; even in the life of St. Antonimus, fo early as the fourth century, a cafe of leprofy, "horrendiffima elephantix lepra," is mentioned. Muratori, loc. cit. : alfo Raymond, Hiftoire de l'Elephantiafis, p. 107: Henfler, über den Auflatz, p. 211.

Thefe facts imply the general prevalence of leprofy in Europe, long antecedent to the Crufades. It is clear, however, that many fevere difeafes afflicted Europe to a much greater extent, and with augmented virulence, about the period when thofe fanatical expeditions were executed, or rather from the tentl to the fixteenth centuries, than before; and, among the reft, the leprofy appears to have been every where prevalent. Every country abounded with its hofpitals, eftablifhed for the exclufive relief of lepers, although the number, of thefe inftitutions has been probably exaggerated. Several authors have, by an error in tranflation, quoted Matthew Paris (Hift. Angl, ad annum 1244) for an affertion, that nineteen thoufand lazarettos exilted in Chriftendom; but that author only flates, that the horpitalers were, at that period, poffeffed of 19,000 manors. "Habent bofpitalarii novem decim millia maneriorum in Chrittianitate." Ir is affirmeć, however, that Lews VIII., king of France, made bequefts, in the year 1227, to two thoufand legrofories within his own kingdom. (Raymond, loc. cit. 106. Collect. des Hitt. de France. Du Cange, Glofs. voc Lazari.) In this country, there were a great number of thefe eftablifluments. It is affirmed, that the city of Norwich alone contained five. (Sprengel, Gefchichte ii. Theil, P. 498; who quotes Hutchinfon, in the Polit. Mag. for Feb. 1789 , p. 93.) The mott extenfive inflitution of this kind was in Leicefterfhire, 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 poffeffed of immenfe riches; fo that all the inferior lazar-houfes in England were in fome meafure fubject to the mafter of it, as he himifelf was to the mafter of the l:zars at Jerufalem. (See Nichols's Hift. of Leicefterfhire.) In London there were fix, according to Becket, the largelt of which was that of St. Giles, without Temple Bar.

Mureover, the general exilitence of leprous difeafes 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, fo prevalent in thofe times. In the parable of the rich man and the poor man covered with ulcers, recorded in the New Teftament, the latter was mentioned by the name of Lazarus; whence the devout difpofition of the times invented a St . Lazarus, whofe name was given to the order of knighthond, and who was deemed the tutelary faint of the leper-houfes, 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 Paleftine affected with foul fores, deemed a faint, Lazarus; but was particularly recommended to the devout, as one under the fpecial punifiment of Gad, for the benefit of his foul. Wherefore pious perfons of the lighelt rank believed that they could bring themfelves no greater

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favour in the ejes of the Deity, than by their attention to thefe holy fuffercrs, by wafhing, kiffing, and even licking their wounds. Not only priefts and archbihops, but even kings are recorded to dave performed this naufeous piety at certain feafons. King Robert of France, and Louis IX., have been particularly mentioned as practifing thefe ceremonies. (Du Cange. yoc. Lazari. Joinville Hitt. de St. Louis. Sprengel, Gefchichte, ii. 4S9, \&cc.) '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 mafter of it was alfo required to be a leprous knight. (Moëhfen de Medicis equeltri dignitate ornatis, p. 56. quoted by Henfler.) The immenfe wealth, which they accumulated, became at length, however, a temptation to the rapacity of fome fovereigns; and Philip V., efpecially, accufed all the hofpitallers in France of high treafon, by confpiring with the Turks and Jews, feized their property, and ordered them to be burnt. Sprengel, loc. cit. Mezeray Hift. de France, ii. p. 7 I.

We may obferve, 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 difeafe of Lazarus not termed leprofy by the divine fpeaker of the parable; but the fatement that his body was "covered with fores," neither reprefents the picture of the Jewifh leprofy, nor of the elephantiafis, nor yet of the lepra of the Greeks. (See a learned diff. by Fred. Hoffman, "De Morbo Lazari," in his works, Supplem. tom. iii. p. 553 .

In all the towns, where lazarettos were eftablifhed, medical ufficers were appointed by the police, to examine all perfons, who were fuppofed to be affected with leprofy, previous to their feclufion in thofe receptacles; indeed, where no fuch eftablifhments exitted, huts were erected a little way out of the towns (where alfo the hofpitals were generally placed) for each individual leper. The rules and edicts, with regard to the conduct of the lepers, were, as far as the circumitances admitted of it, nearly copied from the Mofaic laws. It is obvious, however, from the writings of thofe phyficians, 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 earlielt 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, ) defcribed the elephantiafis under the appellation of lepra. (See the works of Guid. de Cauliaco; Gul. de Saliceto, and the Compendium Medicina of our learned and able countryman; Gilbertus, who lived about the reign of Edward I., and has left a defcrip. tion of leprofy, fo full and minute, as to evince a confiderable fhare of perfonal obfervation, notwithlianding the charge of plagiarifm from the monk, Theodorick, which Dr. Friend enforces againft him.) Greg. Horlt, 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, ufually practifed by himfelf and his collearues, when fummoned by the magifirates for that purpofe. After the preliminary queitions relative- to the age and family of the perfon brought before them, they examined him refpecting the exiftence of the difeafe in his parents and progenitors; his habits of life and his allociates, with a view to the probability of contagios; his peculiar temperament, and previous ftate of health, and particularly as to the fup-
preffion of cuflomary evacuations; and then as to the climate, foil, habitation, and diet, to which he had previoufly been accuftomed. They then queltioned him, feriatim, as to the ftate of all the functions, mental and corporeal : ard lattly, denudatis partibus omnibus, they examined the whole body, with a view to afcertain the prefence or abtence of the following external fymptoms. Firlt they infpected the head, to fee whether the lair was begimning to fall off; whethe: that of the beard was becoming fofter and thinner; and that of the eye-brows and eycelafhes was difappearing ; and whether, when the hairs were pulled up by the roots, a part of the fkin was brought away with them; whether the eyes were round and grim, the ears acuminated, the lips thick, the nofe tumefied externally, the nofrils, internally ftuffed and ulcerated, the face unequally fivelled 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, efpecially behind the ears, and on the extremities? Whether the fkin was rough, like that of an unfeathered goofe, or affected with horrid fiffures, and ruge, refembling the hide of an clephant, or covered with warts, like the grandines of fwine, or affected with morphsa, impetigo, or a dry and incurable fcabies? Whether there were any nodes about the joints? Whether the mufcles of the extremities, efpecially about the thumbs, were emaciated? Whether the naiis were incurvated? Whether the fkin was fenfible to the puncture of the furgeon's needle? Whether there were offenfive ulcers, with a bad habit of body, efpecially ulcerations and fiffures in the fingers and toes? and whether the voice was hoarfe and obtufe ? They then drew fome blood, for the purpofe of examining it. "Thefe fymptoms being prefent," fays the author, " we deem the difeafe elephantialis, and decree that the patient, inafmuch as he is affected with an incurable and contagious leprofy, is to be feparated from all communion with the healthy." Gregor. Horttii Obf. Med. lib. viio Obf. xviii. Epilt. J. H. Hoptnero.

It is obvious, however, from the acknowledgment of Horlt himfelf, as well as from the concurring oblervations of feveral phyficians before his time, that the elephantiafis was by no means the only difeafe of the kind admitted into the lazarettos. He goes on to obferre, that where the tubercles of the face, the thick lips, acuminated ears, flattened nofe, round eyes, (the efficutial fymptoms of elephantialis,) are abient ; yet where the patients are affected only with a dry and foul fcabies, with puttular eruptions, tiffures, and branny exfoliations, which conltitute the fora of the Greeks ; or even with great itching, emaciation, ulceration, and exfoliations of thicker fcales, affecting alfo the head and face, which are the lepra of the Greeks; neverthelefs they are fent to the lazarettos, if they are poor, for the means of fubfiftence. "Hence it happens," he adds, "that here, and elfewhere, very fers inftances of real elephantiafis are found in the lazarettos, whillt many are there, affected only with an obltinate pfora or lepra Gracorum."' We have alfo the dire $E$ t teltimony of an able obferver, Van Foreeft, (better known by his Latin appellation, Forellus,) who practifed at Alcmaer and Delft, in the middle of the fixteenth century, and who has alio left an account of the mode of examination of lepers, duopted by himfelf, that a very fmall proportion of the pcrfons, who wandered about the Low Countries, as lepers and beggars, were true lepers; but were merely affecteil wath icabies, or fome external defredation of the fkin. "Nay," he fays, " not one in ten of them is truly a leper, or afflicted with the legitimate elephantiafis." And he adds the authority of a phylician at the Hague, who had,

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with him, lamented the careleftaefs or ignorance of the public examiner at Harlem, לy whom a great number, (quem plurimi,) who were the fubjects of fome ordinary cutancous eruption, were declared leprous. (See Forelti, Obferv. Chirurg. lib. iv. Obf. vii. Schol.) But, above all, Riedlin, who was phyfician to the leper-houfe at Augfourg, affirms that, out of fifty-nine cafes, he faw but one which was elephantiafis, and that in a flight degree; all the reft were inftances of the pfora and lepra of the Grecks. (See Shroeck, Mifc. Anu: 1689, p. 61 , and Henfler, loc. cit.) It is probable, moreover, that in addition to all the ordinary cutaneous difeafes, which were thus denominated leprofy, the fcurvy itfelf (we mean the true foorbutus, 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 fame difeafe. This idea was thrown out by Hoffmann. "Quando mecum perpendo hodierni veri fcorbuti fymptomata, vix mihi temperare poffum, quin, iis cum adflictionibus elephantiacorum collatis, fcorbutum leviorem elephantiafeos effe fpeciem afferam; at inde miram morborum pro diverfâ regionum ac aeris conftitutione mutatione confiderem. Sed tranfeat hæc conjectura, digna qux penitius inveftigetur." (De Morbo Lazari, § vo) Prof. Sprengel alfo fufpects that thofe forms of leprofy, which have been called mal de la rofa in Afturia, and pellagra in Lombardy, were fcorbutic (Gefchichte der Arzneykund, ii. 486.) : and many analogies between the two difeafes are pointed out by Raymond. Hift. de l'Elephant. p. II8, et feq.

Thefe 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 difeafe, elephantiafis, was almolt unknown in Italy. For Ant. Beniveni, who died very old at the beginning of the fixteenth, obferves, that he once faw at Florence a ftranger affected withelephantiafis; a difeafe, he fays, almoft never feen (in his time) in Italy, and almof unknown to phyficians. At the beginning of the fixteenth century, Alex. Benedetti and Joh. de Vego omit the tubercular leprofy from the lif of difeafes, mentioniag it only curforily, and not from experience; but the latter fpeaks fully of morphea, impetigo, baras, alopecia, mal morto, and other difeafes that have been claffed with leprofy. (Henfler, loc. cit.) About the middle of the fixteenth century, Irancis I. ordered the number of lepers in each lazaretto, or maladrèrie, to be reported, and after appropriating a fuficient fum for their fupport, ordered the remainder of their revenues to be given to the grand almoner, for general ufe. In the feventeenth century, leper-houfes were itill continued, (though fimilar meadures had been generally adopted fince the decline of the difeate throughout Europe, ) and were greatly abufed by the admiffion of beggars, and idle vagrants of all defcriptions, who employed every fpecies of trick to imitate leprofy, or to produce appearances of cutaneous difeafe. The elephantiafis itfelf, however, ftill occafionally appeared, of which feveral recorded cafes are referred to by Henner. Some writers, indeed, have fuppofed, that the changes, which took place from the clofe of the fifteenth century downwards, were rather changes of names than an actual difappearance or diminution of leprofy ; and that the veneral difeafe, which was firft noticed at that period, was in fact the leprofy 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 difeafes, under the title of lepra Gallica. (See his 3Ted. Pradict. 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 inftances, and for fome time; yet, as the learned and able Aftruc, after Leonicenus and others, has thewn, there were fo many points of obvious and decided difference, in the fymptoms and proo grefs of the two difeafes, as rendered fuch a confufion to any great extent improbable. (See Aftruc. de Morb. Vener. vol. i. lib. i.) Neverthelefs, when we reflect upon the unvarying adherence to ancient authority, which characterized the profeffion for centuries after the revival of learning; and when we confider, that the mealles and fmall-pox, for infance, were deemed the fame difeafe, including alfo farlet fever, fo late as the time of Diemerbroeck (Fce his Tractat. de Variolis et Morbillis, cap. 13.) ; we fhall readily conceive, how flow the early phyficians would be in acknowledging a new difeafe, 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 fubject, that, during the middle ages, moft erroneous notions prevailed refpecting the leprofy: and that the terrors of the ancients, refpecting the contagions and unclean nature of leuce and elephantiafis, were transferied almoft indifcriminately to every chronic cutaneous difeafe, whether fcaly, fcabby, puftular, or ulcerous, contagious or non-contagious, which then occurred. And as we are now well acquainted with the latter claffes of difeafe, (although, from caufes to be mentioned immediately, they may be much lefs frequent than formerly), as we know that all the forms of fcaly difeafe, fuch as the modifications of lepra, pforiafis, ichthyofis, and pityriafis, to ufe Dr. Wil. lan's nomenclature, as well as the running tetters, or impe. tigines, the veficular eruptions, herpes, miliaria, and pompholyx, and the lichenes, prurigo, \&c. among the papulousaffections, are all void of any infectious quality; we mult be fatisfied, on the one hand, how miflaken was the charity, which erected thoufands of hofpitals, and appropriated immenfe treafures, for the maintenance of thofe who. were affected by thefe diforders, and for the fancied fecurity of the healthy; while, on the other, we fee the cruelty and abfurdity of the regulations and ceremonies, which were inftituted in regard to fuch patients, iomewhat after the manner of thofe enjoined in the thirteenth chapter of Leviticus, for the Jewifh lepers. In fact, a perfon affected with the real or fuppofed leprofy, was treated like a dead body: funeral obfequies were performed, and maffes faid for the benefit of his foul. The whole is thus defcribed by a French writer.
" A prieft, clothed in a furplice and ftole, repaired with the crofs to the leper, who was prepared for the ceremony. The holy minifter began by exhorting him to bear patiently, and in a fpirit of refignation and penitence, the incurable affliction with which God had ftricken 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 purpofe, fell on his knees before the altar, between two treftles, and heard mafs; after which he was again fprinkled with holy water. This ceremony, it will be remarked, differed very little from that which is ufually performed at funerals. While the leper was conducted to the church, the fame verfes were fung as at burials, and after the mafs, which was allo the fame as that which was performed for the dead, the Libera was fung, and the leper was then conducted to the houfe deftined for him. When he had arrived, the prieft again exhorted and
confoled him, and threw a fhovel-ful of earth on his feet. The hut (where there was nolazaretto) was fmall, and was furnifhed with a bed and bedding, a veffel for water, a chett, a table, a chair, a lamp, a towel, and other neceffaries. He was prefented with a cowl, two fhirts, a tunic, and a robe called bouffe, a little cafk, a funnel, a rattle (des eliquettes), a knife, a ftick, and a girdle of copper.
"Before the prieft 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 wafhing his hands and clothes, \&c. in the wells and brooks; from touching any commodities that he defired to purchafe at market, except with a ftick, in order to point out the article wanted; and from entering houfes, or taverns, for the purpofe of purchafing wine, as he had only the privilege of remaining at the door, of alking for what he required, and receiving it in his little cank. He was farther enjoined not to draw water, but with a proper velfel; never to reply to the queitions of any one who met him on the road, unlefs he was to leezward, in order that the inquirer might not be infected by his breath, and the contagious odour exhaling from his body; never to place himfelf 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, thefe wretched people were regarded as dead among the living : their children were not baptized at the fonts; and the water employed at their baptifm was thrown into lonely places. When a leper was fick, the prieft adminittered 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'Hitt. de Bretagne, prefixed to the Dietion. de Bretagne.
In mof places thefe miferable outcafts were allowed to enter the towns, near which their hovels or lazarettos flood, at certain times of the year, efpecially about Eafter and Chrittmas. The following law exitted at Mareilles. "Prefenti conflitutione firmamus deinceps obfervandum, quod nulli Leprofi feu Mezelli, divites vel pauperes, poffint vel debeant ftare infra Maffiliam, nec converfari deinceps, nifi tantum per xv dies ante pafcha, et per viii dies ante Natale Domini, \&c." (Stat. Maffil. lib. v. cap. 15.) When they walked, or came into a town, they made a noife with their rattles, to warn paffengers of their prefence. In fhort, their fituation 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 Henfler, loc. cit. § 4. Sprengel, loc. cit. p. 49r-2. Raymond, p. 112.
Yet not only were thefe laws executed againft multitudes who were affected with cutaneous difeafes, neither properly leprous nor contagious; but it is even very queitionable whether the true tubercular elephantiafis itfelf, any more than the lefs formidable baras alla, or leuce, were actually contagious. We have already ftated the reafons which tend to difprove the infectious nature of the latter. (See Leprosy of the Jezus.) The evidence againft the probability of contagion, in the cafe of elephantiafis, refts partly upon the facts, which are cafually mentioned, in more ancient times; and partly upon thofe which have been more carefully and correctly afcertained nearer to our own. The obfervations of Aretæus, which have been echoed by almoft

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all fucceeding writers, are given with an appearance of terror, excited rather by an acquiefcence in the popular belief, than from any actual knowledge of the fact. When we defcend to the early ages of Chrittianity, we find thefe terrors perpetuated by the laws refpecting lepers, which were at once the effect and the caufe of a continuation of the popular opinions; but at the fame time, we find kings and bihops mixing familiarly and frequently with thefe very objects of legal profcription, and condefcending to offices which ra quire the clofeft contact with their perfons, not only without any expreffions of apprchenfion, but without any one recorded inttance of the difeafe being fo communicated : we find, too, that fora term of feveral days, during certain fafts and feltivals, thefe infected people are actually allowed to mix in the towns; facts which fland in direct contradiction to the traditienal prejudices and laws upon the fubject.

Defcending, ftill farther, to the period when learning and obfervation had again enlightened the minds of men, we find thefe very prejudices and laws extending equally to a numerous tribe of cutaneous diforders which we know are not contagious, as to the elephantiafis; an error which muft render the accuracy of the opinion, as to the contagious quality of the latter, exceedingly queftionable. At the fame time we difcover the contention between obfervation and pre-conceived opinion in the minds of the learned, which almofts breaks forth in the admiffion of the truth. Thus Fernel, who adopted the common notion of its contagious quality, admits, neverthelefs, that from all the obfervations he has been able to make, he has never difcovered a cafe which proved its exiftence (De Morb. Occult. lib. i. cap. xii.) ; and Foreftus, Fabricius, Plater, \& c . who ftill held the popular opinion, expreffing their aftonifhment at feeing the daily commerce between the leprous and healthy, even in married perfons, without any communication of the difeafe; fo that they are compelled to afcribe 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 teftimony of the nop-contagious nature of the tubercular leprofy. Dr. Thomas Heberden, ftill retaining fomewhat of the prejudices of education, when fpeaking of the cales of the difeafe which he faw at Madeira, fays, "Notwithftanding the juft abhorrence which every one entertains of this loathfome difeafe, it certainly is not fo contagious as is commonly imagined;" and then he relates his obfervations, which prove that it is not at all contagious. "For I have niever beard of any one," he adds, " who has contracted the diftemper by contact of a leper; and, on the contrary, I not only am a daily ruitnefs of communication between lepers and other people, without the leaft ill confequences, but know feveral inftances where a leprous hufband, 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 leaft fymptom of the dif. order, although the children have inherited it; and vice verfá between a leprous wife and found hufband. ${ }^{20}$ (See Med. Tranf. of the Coll. of Phyf. vol. i. p. 32.) Still more recently, Dr. Adams has inveftigated the nature of elephantiafis, in the fame inland, where there is ftill a lazaretto, near Funchal; and his obfervations not only confirm thofe of Dr. Heberden, as to the non-contagious nature of the difeafe; but they alfo fhew that other miftakes, which originated probably in the terrors of the imagination, when the difeafe had acquired the appellation of Satyriafis (from the acuminated ears, flattened nofe, and rugous front); namely, that fo far from being poffeffed with a libido inexplebilis, the pro-creative appetite and power are gradually deftroyed, if the difeafe arife in the age of manhood, and

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never developed if it commence before that of puberty. See Adams on. Morbid Poifons, 2d edit. chap. IS.

It is true, that about the middle of the 18 th century, Dr. Hillary hasd deferibed the elephantiafis as occurring in the Weft Indies, with all the characteriftics attributed to it by the ancients. But the defcription of that lcarned phySician is but too obvioully a tranfeript of the account given by Aretrens, uncorrected by his perfonal obfervation. (Sce his Obf. on the Dif. of Barbadocs.) In this the learned writer affords but one example, among a long feries of medical fcholars, in whom authority but too often dimmed the eye of obfervation, or diftorted its views.
If the leprofy of the middle ayges, then, were not contagious, whence did it originate and frecad fo widely ? Probably the hint thrown out by loreltus, 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 atmofphere; the falt, putrid, indigeltible aliment, and the frequent fcarcity even of that which the phyfical and political diforders of the times produced; the infalubrious condition of the towns and habitations, both in refpect to bad fituation, want of cleanlinefs, and other pernicious circumftances; in fhort, thefe combined evils, which appear to have exilled in thofe times and countries where the leprous, among other frequent and diltreffing maladies, prevailed, were, in all probablity, the fources from which thefe cacheetic difeafes fprung.

It has been fatisfactorily fhewn, from a review of the domeftic hiftory of the times, in which frequent and fatal epidemics have raged, how much thefe were connected with the circumfances juit enumerated (fee Epidemic, and Health) ; and it is interefing to trace the diminution, and ultimately the total difappearances of thefe peftilences, in proportion to the amelioration of thofe phyfical and moral evils; and to difcover, that while the happinefs and comforts of man are extended by the advancement of civilization, the wort difeafes that harafs and fhorten life are at the fame time nearly extinguifhed. (See the excellent Obf. on the Increafe and Decreafe of different Difeafes, by Dr. Heberden; alfo, Ann. Med. Regifter 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 hive generally gone hand in hand. (See Scurvy, It:ys Sacer, Ergot, Sce.) The hiftory of the fourry, in particular, affords an analogical ilfuftration of the influence of the circumftances alluded to, in producing many of the loathfome fymptoms enumerated amnng thofe of leprofy; efpecially the defædations of the fkin, the fivellings of the limbs, the ulcerations, fungous excrefcences, fectid difcharges, gangrenes, and lofs of joints and limbs;-appearances as hideous as any of thofe afcribed to leprofy. Now, this difeafe has been banifhed from our fleets within the lalt half century, fol ly by the fubatitution of whole ome and digeftible aliment, and by the adoption of vemtilation and internal cleanlinefs; it has, in like manner, been fubdurd in Germany, and thofe parts of the north of Europe, where it prevailed fatally in the tiwe of the Rumans, in proportion as agriculture and the arts have changed the face of that once marthy and uncultivared region, and obtained a regular fupply of nutritious and wholefome food.

If our fpace would admit of a review of the phyfical and politia circurnflances of the times, in which leprous difeafes have been fo extenfively prevalent, it would be eafy to adduce ample proof that, from the begrinning of hiltory, thefe madadies leve occurred under fuch ftates of fociety;
and that they have commonly vifited, almolt exclufively. thofe clafles of fociety who were moll expofed to the influence of thofe circumftances; namely the poor. Lower Egypt has, from the earlieft antiquity, been fubject to thefe difeafes, and from the extenlive inundations occafioned by the overflowing of the Nile, can never be rendered a dry or falubrinus country. The ancient hiflorians concur in their defcriptions of its heavy and milty atmofphere, furcharged with vapours. (Strabo, lib. xvii.) The inhabitants ate a glutinous fort of bread made of the roots of the lotus, \&c. ; and ufed much fifm in every flate; and having few trees, they had no wholefome fruits to conjoin with their diet. But how much more imperfectly the Hebrews were nowrifhed in their long march through the wilderneflist of Arabia is obvious, and indeed recorded; to which all the infalubrions circumflances of a camp were added. Perliaps no combination of circumftances could be conceived more favourable, as well to the production of frequent peltilences, as to the excitement of thofe cachectic ftates of the body, in which foorbutic and leprous affections originate, than the foil and marfhes of an uncultivated land, the fordes and miafmata of an immenfe encampment, frequent fcarcity of provifions, fatiguc, and univerfal public anxiety and diffatisfaction, for the quelling of which the great leader had recourfe to fupernatural means.

It appears from the account of Prolper Alpinus, a profeffor of Pavia, who vifited Egypt late in the fixteenth century, that both the lepra and elephantiafis of the Grecks were common among the poor at that period; and he attributes them to the caufes above-mentioned. "They are compelled through poverty," he fays, "t to drink muddy: and femiputrid water; they eat the fleh of camels and becf, and fifh falted and half putrid, caught in the marfhes 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 Aegyptior. lib. i. cap, xiv.)-a diet very much refembling that formerly ufed on flip board in long voyages; when, as we have been informed, the falted provilion, which had been fometimes two years in cafk, emitted an almoft intolerable ftench during its maceration, before being cooked.

Without attempting to trace the progrefs of leprous difeafes, in comection with the phyfical and political derangements in various countries, (a fatisfactory fletch of which the reader will find in Raymond's treatife,) we fhall merely exemplify this view of the fubject by a fight notice of the ftate of Europe in the middle ages, when leprofy and peitilence of every fpecies prevailed. From the fifth century, when the empire at length fell under the repeated affaults of the northern invaders to the tenth, the finelt parts of Europe lay in a ftate of devaftation, little cultivation was prac+tifed, all the arts were neglected or loft, and clothing, habitations, and food were alike infufficient and unwholefome = and for three centuries more this dcfolation was increafed, if poffible, by the inceffant 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 provifion, efpecially in the winter, and of a hard and black bread, chiefly of rye, to the fcarcity of whicl corn, rather than to its ergoted or difeafed condition, the ignis facer, malades ardens, and other fimilar maladies, fhould doubtlefs be attributed. So little were vegetables cultivated, indeed, or gardening underfood, even in the fixreent'. century in this country, that, in the year 1509; queen Catharise could not procure a fallad, till Henry fent to the Netherlands, and engaged a gardener to come over to

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raife the proper articles here. (Northonck's Hill. of Lond book. i. chap. 7.) How totally deftitute of fuch diet mur the people in general have been at a much later period! Sce Heazth of London.
In fhort, in whatever country an uncultivated foil, a marfhy funface, and a humid atmofphere have been found, together with a diet generally confilting of a falted, femiputrid, infufficient, or indigctible aliment, and compofed chiefly of animal flefh or fifh, with a fmall proportion of nutritious vegetable matter; there, from the carlieft times, luman life has been fhortened by the multiplication of peftilential fevers and cachexies of a leprous and fcorbutic nature. Therefore, as Raymond obferves, even if the ecclefialtical writers of the middle ages had left us no records of the hiitory of fuch maladies; the hiftory of the foil, of the circumiltances of the times, and of the food generally ufed, would afford an inconteltible monument of the exiftence of leprofy.

Of the cure, or of the attempts to remedy a difeafe which was generally admitted to be incurable, it would be futile to enter into any detail. The treatment of thefe forms of cutaneous difeafe, which were claffed with the elephantiafis, will of courfe be deferibed under their refpective heads.

LEPSIA, in Ancient Geography, an ifland in the fea of Rhodes, near the coalt of Caria. Pliny.
LEPSINA, in Geography, a town of European Turkey, in Livadia, anciently called "Elcufis" of which confiderable ruins remain; 12 miles N.W. of Athens. See Elevesinia.

LEPSIS, in the Greek Mufic, is a name given to one of the rules of the ancient melopocia, called alfo fanetimes, euthia; by which the compofer difcerns in which of the three fyftems of founds he fhould place his melody:-in the grave part of the fcale, called bypatoides; the acute, called netoides, or the mean, called mefoides. See Melopceia 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, fo called from $\lambda$ emios, flender, or minute, from the remarkable diminutivenefs of its flowers. Loureir. Cochinch. v. 1. 82,-Clafs and order, Tetrandria Monogynia. Nat. Ord. Hederacea, Linn. Vites, Juff.
Gen. Ch. Cal. Perianth inferior, fpreading, fmall, divided into four ovate fegments. Cor. Petals four, fomewhat triangular, furrowed, inflexed, twice as long as the calyx. Stam. Filaments four, awl-fhaped, inflexed, inferted into the receptacle at the angle of the bafe of the petals; anthers ovate, two-celled. Pijf. Germen fuperior, roundifh, four-furrowed; ftyle fcarcely any ; figma obtufe. Peric. Berry four-lobed, lobes ovate, flightly confluent towards the centre, fingle-feeded. Seeds roundifh.

Eff. Ch. Calyx four-cleft, inferior. Corolla of four triangular petals. Berry four-lobed, four-celled, each cell containing a fecd.

1. L. triphylla. Loureir. Cochinch. A native of woods in Cochinchina, and called by the natives Cay Mat.-This trce is about ten feet high, and exceedingly branched. Leaves ternate, lanceolate, entire, wąved, fmooth. Flowers white, very fmall, in compound, fmall, axillary clufters.

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 refpecting 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 $\lambda$ etios, flender or fbarp, and ainnv, ditvos, a gland, expreffive of the contracted acute termination of the maffes of pollen, which makes a very peculiar
part of the gencric charakter. Brown Afclep. 23. Mem. of the Wernerian Soc. v. 1. 34-Clafs and order, Pentandria Digynia. Nat. Ord. Contorte, Limn. Apocinte, Julf. Afclepiadce, Brown.

Eff. Ch. Corolla fornewhat whecl-flaped; tube fhort; orifice crowned with tive feales, Handing between the fegments; limb bearded. Crown of the flamen 3 wanting. Antliers uncomuected, fimpic at the top. Maffes of pollen crect, attached by their bafe, contracted and pellucid at the fummit. Stigma pointlefs. Follicles . . . . .
Mr. Brown has examined three Species, reducible to this genus, in the Bankfian herbarium, none of which are yet defcribed, nor has he named or defined them feecifically. One was gathered by Forfkall. They are all natives either of the Lalt Indies, or of Africa. They appear to be perennial, herbaceous, climbing plants, clothed with a greyith, impalpable, powdery down. Leares flut, oppofite. Umbels between the footflalks, fometimes cymofe. Stigma minute.

## leptanthus. See Heterantiera.

LEPTASPIS, from $\lambda s$-itios, finder, and asmb, a field, a genus of graffes, feparated from Pharus by Mr. Erown in his Prodr. Nov. Holl. v. 1. 211 , on account of the peculiar ovate concave outer valve of the corolla; but its habit and inforefcence are fo like P/barus lalifolia, that the author himfe!f candidly expreffes his doubts of the propricty of this meafure. One fpecies was found by fir Jofeph Banks in the tropical part of New Holland; another comes from the Molucca ines.

## Leptaurea. See Zoegia.

LEPTIS:Magna, in Ancient Grograpby, a town of Africa, on the fea-ccaft, 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 allo called Neapolis. Leptis was a Roman colony, and in procefs of time became epifcopal. See Lempta.
Leptis Paria, Lempta, a town of Africa, on the feacoaft, S.E. of Adrymetum, about a mile in compafs. Some ruins of the ancient town remain. Sec Lempta.

LEP'TOCARPUS, in Botany, from $\lambda$ srios, flender or Tharp, and $火 x_{\text {pros }}$, fruit, the minute feed or nut being pointed with the permanent bafe of the Ityle. Brown. Prodr. Nove Holl. v. 1. 250.-Clafs and order, Diocia Triandria. Nat. Ord. Tripetaloidea, Linn. Junci, Juff. Refiacee, Brown.

Gen. Ch. Male, Cal. of feveral coriaceous, keeled fcales, either fafciculated or imbricated, each one or two-flowered. Cor. Petals fix, membranous; the three inner ones thinner and narrower. Stam. Filaments three, flattifh; anthers fimple, peltate.

Female, on a feparate plant, Cal. and Cor. as in the male. Pif. Germen fuperior, roundilh; ftyle folitary, thread-fhaped; Itigmas two or three, oblong, downy, acute. Peric. Nut fmall, roundifl, not burfting, tipped with the bafe of the ftyle, with one cell and one kernel.

Eff. Ch. Male, Calyx-fcales cluftered or imbricated. Petals fix. Anthers fimple, peltate.

Female, Cal. and Cor. as in the male. Style one. Stigmas two or three. Nut cruftaceous, fingle-feeded, crowned with the bafe of the ftyle.
A genus of hard rufhy plants, of nearly the fame defeription as Lepidofperma; fee the conclufion of that article; but more akin to the Limmean Refio, from which it differs in having a fimple fingle-fceded nut, inftead of a capfule with two or three cells and as many valves. The ftems are generally quite fimple, leaflefs, but clothed with theaths Iplit at one fide. Flowers cither in tufts, or in fpike-like catkins. Mr. Brown thinks thofe which come under the
firft defcription may hereafter be feparated from the latter. Examples of Leptocarpus, are Refio difachyos of Rottboll's Icones 8. t. 3. f. 5, and Schoenodum tena.x of Labillardiere, Nov. Holl. v. i. t. 229, the female plant.-Seven feecies are defined as natives of New Holland, and there are fuppofed to be feveral at the Cape of Good Hope, befides the above Refio, and $R$. imbricatus of Thunberg.

LEP'TOCEPHALUS, in Ichebyology. Sce Morris.
LEPTODECARHOMBIS, a name given by Dr. Hill to fome prifmatic varieties of felenite. Sec Gypsums.

LEPTOMERIA, in Botany, named by Mr. R. Brown
 a portion or Bare. Brown Prodr. Nov. Holl, v. 1.353 .Clafs and order, Pentandria Monogynia. Nat. Ord. Calycifora, Linn. Elaagni, Juff. Santalaces, Brown.

Gen. Ch. Cal. Perianth fuperior, of one leaf, 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-fhaped, fhorter than the calyx, inferted into the bafe of each fegment; anthers roundifh. Piff. Germen inferior, ovate; ftyle very flort ; ftigma depreffed, of from two to five rays. Peric. Drupa ovate, more or lefs juicy, crowned with the calyx. Seed folitary.

Ef. Ch. Calyx of one leaf, wheel-fhaped, fuperior, bearing the ftamens. Nectary glandular, crowning the germen, four or five-lobed. Stigma divided. Drupa of one feed.

Eight fpecies are defined by Mr. Brown, as natives of New Holland. They are flender branched fhrubs, with fcattered minute leaves, or none at all. Flowers minute, white, reddifh or green; generally fpiked, with a fmall deciduous brallea to each; fometimes axillary, without bracteas. The genus is akin to thofe fpecies of Theffum which grow at the Cape of Good Hope, but differs in its glandular neetary, which is either of one piece, lobed, crowning the germen, or compofed of glands, each of which ftands at the bafe of ore of the fegments of the calyx. Three of the fpecies have a ftarry five-rayed acute ftigma, and fivecleft, fpiked, bracteated flowers; among which is L. Billardicri, (Thefium drupaceum; Labill. Nov. Holl. v. I. 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 obtufe ftigma, four-cleft flowers, and no leaves. The remaining four have a drier drupa, a notched blunt ftigma, and five-cleft flowers, and all grow on the fouth coaft of New Holland.

LEPTOS Libanotis, in the Materia Medica of the Ancients, a name given by forre of the Groek writers to the fmall frankinconfe, that is, fuch as came to their hands in fmall flakes, broken from the larger maffes in the gathering or packing up. This was alfo called manna thuris, the manna of frankincenfe. the word manna being of old ufed to exprefs any thing formed of granules, or fmall pieces. The ancients eftcemed this lepros libanotis, or manna thuris, when pure, bevond any other kind, for they always valued that frankincenfe molt, which was drielt and molt brittle; and fuch only as was fo, could break off iu thefe fmail flakes. The medicine, however, foon became fubject to adulteration, and lolt its credit; for the dult of the frankincenfe bei.g 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, inflead of this genuine dult, the fifted powder of the refin of the pinetree. Sce Frankincense.

LEPTOSPERMUM, in Botany, fo named by Forfter, from $\lambda e \pi i o s$, finuler, and $\sigma \pi \epsilon \mu \mu$, feed, becaufe the numerous
feeds are remarkably fmall and flender. Forl. Gen. 36. t. 36. f. f-l. Smith Tr. of Linn. Soc, v. 3. 260. Willd. Sp. Pl. v. 2. $94^{8 .}$ Ait. Hort. Kew. ed. 2. v. 3. 181. Juff. 323. Lamarck. Dict. v. 3. 465. Illuftr. t. 423 . Gærtn. t. 35-Clafs and order, lcofandria Monogynia. Nat. Ord. Hefperidea, Linn. Myrti, Juff.
Gen. Ch. Cal. Perianth half-fuperior, in five deep, ovate-oblong, or roundifl, often coloured fegments. Cor. Petals five, with claws, roundifh, equal, twice the fize of the calyx, and much longer than the ftamens. Stam. Filaments numerous, inferted into the calyx, awl-fhaped, incurved, fhorter than the corolla; anthers fmall, roundif, two-lobed. Pijf. Germen half-inferior, turbinate ; ftyle fimple, columnar, erect, about the length of the ftamens; ftigma capitate, umbilicated, undivided. Peric. Capfule roundihh, coated in the lower part, of three, four, or five cells, and as many valves, burfting at the upper part, the partitions from the middle of each valve, oppofite to each calyx-tooth. Seeds numerous, linear, fomewhat angular, tapering at each end, very fmall, inferted into the central column.

Eff. Ch. Calyx five-cleft, half-fuperior. Petals five, longer than the flamens, furnifhed with claws. Stigma capitate. Capfule of three to five cells. Seeds angular.

Obf. L. ambiguum only has the ftamens longer than the corolla,
This genus of New Holland fhrubs was confounded by Dr. Solander with Pbiladelphus, and by Gxrtner, Forter, and others with Metrofideros and Melaleuca. The former is diftinguifhed from it by having the flyle deeply four-cleft, with limple fligmas, the petals broad at the bafe and feffile, leaves oppofite and deciduous, and the habit indeed altogether unlike; Metrofideros differs in its fimple ftigma, extremely long thread-ffhaped ftamens, and more dilated habit, in which characters Melaleuca accords with the latter, with a few exceptions as to habit in the foliage of fome fpecies, but differs from it and from Leptoffermum in the polyadelphous ftamens.-The fpecies of the genus before us are rigid, branched fhrubs, of rather humble, fometimes proftrate, growth, aromatic when bruifed; their leaves alternate, fmall, entire, evergreen ; fowers numerous, ufually 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 Southfea Myrtle. Andr. Repof. I. 622. (L. fquarrofum; Gæertn. v. I. I74.t.35. Melaleuca fcoparia; Linn. Suppl, 343. Fort. Prodr. 37. Pl. Efc. 78. Schrad. Sert. Hannov. 25. t. 15. Philadelphus fcoparius; Soland. in Ait. Hort. Kew. ed. I. v. 2. 156. Tea plant; Cook's Second Voyage, v. 1. 100. t. 22.) - Leaves ovate, fharp; pointed, obfcurely three-ribbed. Calyx fmooth; its teeth nembranous and coloured.- Native of the coalt of New Zeeland, where it was difcovered by fir Jofeph 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 fland too long, in which cafe it becomes bitter. Mixed with an equal quantity of the New Zeeland Spruce, (fee Dacrydiom, ) it was found to make excellent and highly palatable beer, of the molt falutary qualities, the Dacrgdium being too aftringent alone. This plant, raifed at Kew from feed in ${ }_{1772}$, is eafily kept in our green-houfes, and is covered in fummer with elegant white blofoms, whofe calyxteeth, ftamens and fyle are purplifh. In New Zeeland it becomes a fmall tree. The liaves are numerous, fcattered, ever-green, fmall nearly feffile, entire, fharp-pointed, rigid,
fmooth,
invoth, 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 diftinctly marked, and the gardeners make many more, which are 'equally evanefcent. The capfule is hard and woody, permanent on the old branclies long after the feeds are difperfed, $3 s$ in moft New Holland plants of this family.
2. L. flavefcns. Yellowifh South-fea 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.)-Leavcs 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 Alexible, than in the former; leaves narrower, longer, almof linear, inclining to elliptic, and pointlefs: Petals whire, often with a purple tinge, turning yellowifh in drying. The talys-deth are coloured, that is, whitifh, not green; which Willdenow, in copying the character, has omitted, and this caufed the fame omiffion in Hort. Kew.
3. L. attenuatum. Fine-branched South-fea 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 nender habit, and narrow acute leaves diftinguifh this from both the former. The flozvers moreover are imaller, often two together, their flalks. germen, and bafe of the calyx clothed with filvery, filky, rather fpreading 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, obfcurely five-ribbed, downy beneath. Calyx hairy; its teeth membranous and coloured.-Sent from Port Jackfon, 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 fmall prominent fharp point; Chining and fmooth 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 handfome, feffile and folitary at the ends of the fhort lateral leafy branches. The back of their caly $x$-teeth, as well as the germen, is covered with long, white, fhaggy hairs.
5. L. trinerve. Silky South-fea Myrtle. (L. lanigerum; Willd. Sp. Plo n. 50 Melaleuca? trinervia; White's Voyage, 229. t. 24 .) -Leaves lanceolate inclining to obovate, three-ribbed. Calyx filky; its teeth leafy, perma-nent.-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 lefs obovate. The germen, with the calyx and its teeth, are entirely clothed externally with beautiful, clofepreffed, filky or filvery hairs. Peials 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. I. v. 2. 156.) - Leaves oblong or obovate, obfcurely three-ribbed, fomewhat hairy. Calyx clothed with long fhaggy hairs. -Native of Van Diemen's land, and of New South Wales. In the Tranf, of the Linn. Soc. this was confounded with the laft, but Mr. Brown has corrected that miftake. The prefent fpecies has the germen and whole calyx remarkably hoary with long fpreading hairs, not filky with clofe or erect
ones. The leaves when young are more or lefs hairy, and the young branches downy. The fcales of the flowering buds appear alfo to be larger and more permanent, imbricated, 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 fpreading 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, thickih, withont any rib, dotted, fmooth, on fhort pale fmooth flalks. Flowers terminal, folitary, fmall, white. Germen and bafe of the calyx clothed with fpreading hairs, but the teeth are naked, roundifh and coloured. The younger branches are rough with coarfe, long, fpreading hairs.
8. L. imbricatum. Imbricated South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 6. 3.0.-Leaves obovate, imtricated, riblefs. Branches and calyx fmooth; teeth membranous, coloured, naked, keeled - Gathered at Port Jackfon, New South Wales, by Mr. David Burton, and communicated to us by fir Jof. Banks in 1797. It greatly refembles the laft, but the copious little leaves are ftill more ftrikingly im. bricated, efpecially on the long lateral branches, which moreover are imooth, as well as every other part. The flowers are extremely fmall, ftanding two or three together about the end of each branch; their germen and caly.x perfectly naked; the teeth of the latter fharply keeled, which in L. parvifolium are only a little convex.
9. L. aracbnoideum. Cobweb-flowered South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 263. Gærtn. จ. 1. 174- t. 35. f. 3-Leaves awl-fhaped, fharp pointed. Branches hairy. Germen and calyx entirely clothed with long fpreading hairs. - Native of New South Wales. The fem is flout, apparently of humble growth, with numerous, fhort, zigzag, leafy, hairy, lateral, compound branches. Leaves crowded, awl-fhaped, fharp-pointed, fmooth, dark-green, about half an inch long, chanrelled above, convex beneath, refembling fome flonder kind of juniper. Flowers fmall, folitary, terminating the fhort fubdivifions of the branches, and remarkable for the very long and fine white fpreading hairs, like a \{pider's web, which clothe the germen and whole calyx. It is a ftranger to our gardens.
10. L. juniperinum. Juniper-leaved South-fea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 263. Venten. Malmaif. t. S9. -Leaves lincar-lanceolate, fharp-pointed. Young bratiches filky. Calyx fmonth; 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 buify $/ b r u b$, whofe young branches are ciothed with filky hairs. The leaves are larger, and ftill more like juniper, than thofe of the preceding; Gilky when young. Flowers numerous, white, folitary at the ends of the very fhort, lateral, axilary, leafy thoots. Germen depreffed, fmooth as well as the caly, and its teeth, which are broad and coloured.
II. L. trilocilare. 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 defcription in M. Ventenat's fuperb Jardin de la Malmaifon. The habit and foliage are much like the laft. Branches downy and reddilh. Germen rather more elongated, clothed with fhort filky down, as are alfo the calyx-teeth, which are fringed, and

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coloured of a purplint red. Pctals white. Stamens but fifteen, and cells of the frait only three.
12. L. baccatum. Pulpy-fruited South-fea Myrtle. Sm. Tr. of Limn. Soc. v. $3 .{ }^{264 .}$ (L. juniperifolium; Cavan. Ic. v. 4. 18. t. 33 I. f. 2.)-Leaves linear-lanceolate, flarppointed. Bracteas fmooth. Germen and caly $x$-tecth downy. Capfule with a pulpy coat. - Native of New South Wales, fent to Kew garden by fir Jof. Banks in 1790 . A low depreffed rigid thrub, with the habit and foliage of our Englifh dwarf variety of the juniper. Flowers much like fome of thofe laft defcribed, but their germen and whole caljs $x$ with its teeth are clothed with white cottony, rather than filky, hairs. The germen is clofely enveloped in fmooth, fomewhat fringed, concave braleas, which, being taken for the germen itfelf, caufed an error in the original defcription of this fpecies ; but indeed that part becomes fmooth as it ripens into fruit, as well as very thick and pulpy. The petals are yellowith in the dried plant, but probably white when recent, like L. flavefcens. Cavanilles's fynonym feems rightly applied in Hort. Kew. though he defcribes the caly.x as fmooth. The fruit in our plant, as well as his, has five ceils.
13. I. ambigurm. Hook-leaved South-fea Myrtle. Sm Tr. of Linn. Soc. v. 3. 264 . Exot. Bot. v. 1. 115 . t. $5^{\circ}$ (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 Ncw South Wales, fent to Kew garden by fir Jof. Banks in 1791. It Forms a handfome buhky evergreen fhrub, bloffoming plentifully in the green-houfe in fummer. The branches are downy. Leaves numerous, crowded, dark-green, channelled, dotted, bluntifh, recurved at the tip, often roughifi. Flowers white, with very numerous fpreading famens, that are peculiar in this genus as being longer than the corolla, yet not near fo long as in Metrofideros, and the capitate figma ftamps our plant a Leptofocrmum, which the habit altogether confirms. Ventenat defcribes the germen as of three cells ouly; we find four or five, fo that this character appears variable.
14. L. virgatum. Wand-like South-fea Myrtle. Fortt. Gen. 36. Wiilld. n. 12. (Melaleuca virgata; Linn. Suppl343. Forf. Prodr. 37.)-Leaves oppofite, linear-oblong, bluntifh. Stalks axillary, three-flowered.-Gathered by Forter in New Caledonia. As Willdenow has admitted this into Leptofpermum, we would not leave it out, notwithflanding the reatons given in Tr. of Lian. Soc. v. 3.265 , which ftrongly induce us to think it a decandrous Beckea. The flamens are ten. Leaves oppofite, whereas in every certain Leptofpermum they are alternate. The umbellate flowerfalks too are not natural in this genus.
${ }^{15}$ L. pubefens. Downy Twifted South-fea Myrtle. Willd. n. ह. 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, conmon in gardens. We fubjoin this as a fpecies taken up by Willdenow from the Linn. Tranf. but whofe limits we have not yet fully determined. It does however feem diftinct enough from laniger and trinerve, as well as from all the reft. Much more light is to be expected relative to all the fpecies of this genus from the fequel of Mr. Brown's Prodromus, and we therefore leave thefe two laft fpecies for future determination, efpecially as the pubefcens is not received into the fecond edition of Hort. Kew.-For fimilar reafons we leave unnoticed the three fpecies figured in Cavanilles, to 330 and 33I, which moft probably are reterable to fome of the above; but his plates and defcriptions are infufficient to de-
termine which, and would therefore fill be ufelefs, if by any means determined.
 a Spike of flowers, elegantly applied by Mitchell to the Phryma of Linnxus, and retained by the latter as the fpecific name. See Phryma.

LEPTOS'IOMUM, from $\lambda$ anin, fender or narrozv, and sq $\mu x$, the mouth, expreflive of the narrow orifice of the capfule. Brown. Tr. of Linn. Soc. v. IO. 320.-Clafs and order, Cryptogamia Mufci. Nat. Ord. Mujci.

Eff. Ch. Capfule oblong, without furrows, terminal. Lid hemifpherical, without a beak. Fringe a fimp?e, flat, annular, undivided membrane, from the inner coat.

All the four known feecies of this genus are natives of the fouthern hemifphere. They are moffes of a denfely tufted mode of growth, with upright, branched, perennial ftems. Leaves moderately fpreading in every direction, broadifh, entire. revolute, with a ftrong midrib, and a terminal hair, which is fufpected by Mr. Brown to be fumetimes branched. Fruit-Atalk terminal. Capfule either erect or drooping; tapering at the bafe into an inverfely conical apophyfis; much contracted at the mouth. Veil fmouth and naked, deciduous.

1. L. inclinans. Tr. of Linn. Soc. v. 10. 320. t. 23. f. 2.-Leaves obovate, obtufe. Capfule drooping, obovate-oblong.-Found by Mr. Brown in Van Diemen's land, upon rocks and Itones at the eaft fide of Table Mcuntain, near the fummit, in 4.3 fouth latitude, and from 3000 to 3500 feet perpendicular above the fea. This mofs is two or three inches high. Slems but little branched, leafy in the upper part, denfely clothed with rulty down below. Leaves rather concave, very minutely dotted or reticulated, tipped with a twilted hair $\frac{1}{4}$ th the length of each leaf. Fruit-falk brown, fmooth. Sheath at the bafe accompanied below by numerous abortive pirtils and capitlary, jointed, fucculent threads.
2. L. ereflum. Leaves oblong-parabolic, obtufe. Capr fules oblong, ereet - Found by Mr. Brown on the eaft coalt of New Holland, in a mountan:ous 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 clofe-preffed by drying, each tipped with a firple hair. Fruit-falk elongated, brown, fmooth. Capfule itraight. The lid had fallen off.
3. L. gracile. Leaves ovate-oblong, rather pointed; terminal hair half their length. Capfule oblong, flrajght, drooping. - Gathered by Mr. Archibald liserzies, at.Dufky bay in New Zeeland. The fems are denfely tufted, fomewhat branched, about an inch high, thickly clothed with rufty down in their lower part. Leaves yellowihh-green, dotted, clofe-preffed when dry, pellucid, ftrongly revolute, with a very thick rib, and a fmooth terminal hair. Fruibfalk near two inches high, flender, tawny, with a fheath at the bottom, the fumniit very flender and drooping. Capfule nearly pendulous, a quarter of an inch long, flender, ftraight, nightly fwelling in the middle, of a dark opaque brown. Lid very fmall, obtufe, of a till deeper brown.
4. L. Menziefit. Leaves oblong-lanceolate, acute; terminal hair a quarter their length. Capfule cylindrical, drooping, recurved.-Difcovered by Mr. Menzies at Statenland in ${ }^{7} 887$. We, as well as Mr. Brown, are indebted to him for fine fpecimens of this and the lait. The flens of L. Menziefii are half an inch or more in height, mokly fimple, with denfe rufty fibres and roots. Leedrees bright yellowih-green, crowded, finely dotted, wavy and clofe-

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preffed when dry, with a flortifh terminal hair. Fruit-falk about an inch high, folitary, crect. Capfule light brown, fmooth, one-third of an inch long, drooping, cylindrical, fingularly recurved, with fomewhat of a turgid appearance. Liid very fmall; after it is fallen the white, membranous, very delicate friuge becomes dittinctly vifible.

Mr. Brown with good reafon fufpects Bryum macrocarpum of Hedwig, Crypt. v. 3. t. ro, may belong to this genus. If $f o$, there is an error in the delincation of its fringe; and it will prove the only known fpecies whofe leaves are tipped with a branched hair.

LEPTUM, in Antiguity, a fmall piece of money, which, according to fome, was only the cighth part of an obolus; but others will have it to be a filver or brafs drachm.

LEPTURA, in Entomology, a genus of Coleoptera: the antemx are fetaccous; palpi four, and fliform; wing-cafes tapering towards the tip; thorax flender and rounded. Thofe of the Linnæan lepture which have the lip entire, conftitute the genus Donacia of Fabricius; and fuch as have the lip bifid form a part of the lepture of that author ; for the latter do not exclufively confitt of thofe infects which, according to the Limnæan character, belong to leptura; leptura abbreviata of Fabricius, for example, is necydalis major of Linneus, and leptura variegata, the Gmelinian nerydalis variegata. Moft of the leptura tribe are furnihed with legs of pretty confiderable length ; run with much fpeed' and activity; and are found on flowers.

## Species.

Aquatica. Golden; poferior thighs clavated and den. tated. Fabr. Leptura aquatica, Linn. Leptura aquatica Jpinofa, Degeer. Donov. Brit. Inf. Donacia dentata, Hoppe.

The colour of this Ipecies varies from reddifh, or braffy, to green; the antennx blackin, with pale teltaceous at the joints; head with a line down the middle; thorax grooved ; body beneath downy; legs obfcure, teftaceous. Common in Britain, and other parts of Europe, on aquatic plants, particularly the nymphra.

Simplex. Golden; thighs fimple. Fabr.
An European fpecies, perhaps leptura aquatica mutica of 1 Degeer.

Fasciata. Golden; wing-cafes with a purple longitudinal band. Herbit. Leptura aquatica fafciata. Degecr.

Inhabits watery places in Europe. The thighs fometimes armed with teeth.

Micans. Pofterior legs bidentated; flanks fimple; wing-cafes gloffy-violet. Hoppe.
Allied to L. aquatica, and inhabits the fame places.
Holosericea. Shining.green; antennæ and legs fufcous, black; pofterior thighs dentated. Herbit.
An European fpecies, found in damp fields, \&c.
Palustris. Blackif-violet; antennæ and legs chefnut; pofterior thishs dentated. Herbft.

A native of Pomerania; found in marhes.
Cinerea. Cinereous, fpeckled with coppery. Herbf.
Inhabits with the former.
Marginatus. Pofterior thighs one-toothed; wingcafes golden ; margin and fpot at the bafe rufous; abdomen and legs filvery. Hoppe.

On aquatic plants in Germany.
Nymphefi. Potterior thighs dentated; thorax and wing-cafes coppery; body cinerecus, downy. Fabr.

Native of Europe, on the leaves of the nymplira alba. The head is coppery; antcunz and mouth black; body beneath filvery-brown.

Sagitiariz. Poiterior thighs one-toothed; wing-cafes

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green-golden, minutely punctured and truncated ; abdomen and legs golden. Hoppe.

Antennx blackifh; thorax wrinkled and furrowed.
Viol,Acea. Deep black, and fomewhat brafly; wingcafes obfcure, violet ; abdomen fanguineous. Pallas.

Size of leptura aquatica, and inhabits Siberia.
AEsa. Pofterior thigh armed with one tonth; wingcafes brafly, equal, rounded; abdomen and leges brafly. Hoppe. Lefpirticanca, Lime.

Native of Europe.
Brcolok. Golden; thorax above, with the wing-cafes, green, the latter with ftriee of impreffed dots ; polterior thighs dentated. Linn. Muf. Lefk.

An European fpecies.
Fusca. Polterior thighs with a fingle tooth; body brown; wing-cafes itriated and punctured; mouth, anteonx, and legs rufous. Limn.

Inhabits with the former.
Crassipes. Pofterior thighs umarmed; body greenbronzed, beneath cinereous, brafly ; wing-cafes itriated with punctures, and marked with tranfverfe fmall lines; mouth, antemme, and legs rufous. Linn.

Native of Europe.
Rufescens. Polterior thighs dentated; body reddifh. bronze; beneath cinereous-bronze ; wing.cafes itriated, punctured with crenated wrinkles. Lim.
Inhabits Germany and Sweden.
Nitida. Pofterior thighs toothed; body Mining-green gold; wing-cafes ftriated and punctured, with crenated wrinkles, and a broad, common, purple-green fillet; abdomen, antennæ, and legs gold. Linn.

Native of Europe.
Cerulea. Pofterior thighs dentated; body blue; wing-cafes friated, punctured with crenated wrinkles; antennx braffy. Linn.

Inhabits Europe.
Clavipes. Pofterior thighs unarmed; body: bralfy; abdomen covered with filvery down. Fabr.

Native of Germany, on aquatic plants.
Fasciculata. Body black ; polterior legs long; thighs unarmed; the fhanks with a tuft of long feathers.. Fabr.

Inhabits Cayenne; the body very flender, with a filvery glofs beneath.

Linearis. Pofterior thighs unarmed; wing-cafes linear, truncated, fhining-braffy; legs fomewhat teltaceous. Hoppe. A fpecies found in Europe; antenne blackifl; abdomen cinereous.

Hydrocharis. Pofterior thighs unarmed; wing-cafes cinereous, gloffy, rounded at the end; body and legs cinereous. Hoppe.
Native of Germany ; the antennre cincreous.
Mucronata. Pofterior thighs unarmed; body above livid ; beneath, head, and antennæ black; thorax with two divergent lines; wing-cafes fpinous at the end. Hoppe.

Vulginis, Potterior thighs unarmed; body filverygreen; wing-cafes flriated and punctured, with crenate wrinkles, and a broad, common, purple-green fillet; head, abdomen, and legs filvery-afh.
**: Lip biful.

Unipunctata, Black; wing-cafes rufous, with a black dot in the middle. Fabr.
Inhabits about Drefden.
Hastata. Deep hlack; wing-cafes red; tip and future in the middic black. Fabr. Stenocorus niger, E̛c. Geoffr.

Native of the fouthern parts of Europe. Segments of the abdomen with filvery down at the edge.

Bipunctata. Black, villous; wing-cafes livid, with a black dot in the middle. Fabr.

Inhabits Siberia.
Tomentosa, Thorax villous and golden; wing teftaceous, with the tip black. Geoff.

Head and antennæ black; wing.cafes fmooth, flightly notched at the tip; abdomen covered with filvery down; tail emarginate; legs black.

Native of France.
Melanura. Black, wing-cafes reddifh or livid, the future and tip black. Schæff.

Inhabits Europe on flowers.
Levis. Black; wing-cafes and legs livid, future, and tip of the wing-cafes black. Fabr. Leptura futuralis.

Antennæ black; body clothed with filvery down. Native of Europe.

Livida. Black; wing-cafes teftaceous and without fpots; legs black. Herbit.

Wing-cafes rounded at the tip, and fcarcely emarginate. Native of Germany.
Vililica. Ferruginous; antennæ, wing-cafes, and breaft brown. Schaff., \&c. Fabr.

Inhabits Europe; firft joint of the antenne rufous.
Meridiana. Thorax fumewhat fpinous; wing.cafes fattigate; breatt chining. Schæff.

Male blackifh, female teftaceous; legs of the larva long. A native of Europe.

Strigilata. Black; wing-cafes teftaceous, with a blackifh fillet. Fabr.

Native of Sweden.
Emarginata. Black; wing-cafes purple, tip black, and emarginate. Fabr.

Inhabits Cayenne, the abdomen bidentated at the end; fegments fhining filvery at the bafe.

Sanguinolenta. Black; wing-cafes fanguineous. Linn. Fn. Su. Leptura dubia, Scop.

Native of Northern Europe.
Rubra. Black; thorax, wing-cafes, and fhanks purplered. Linn.

Inhabits Sweden.
Testacea. Black; wing-cafes teftaceous; fhanks rufous; thorax rounded behind. Fabr.

Found in the north of Europe, and is fuppoled to be the male of the former.

Revestita. Teftaceous; wing-cafes, breaft, and antennæ deep black. Schreber.

Native of Germany.
Pubescens. Black, with cikereous down, rib of the wing
teftaceous at the bafe. Fabr.
Inhabits Sweden.
Virens. Silky greenih; antenne varied with brown and green. Oliv.

Smaragdula. Silky greenif; antennæ and legs black. Fabr.

Inhabits Sweden.
Atra. Body entirely deep black. Oliv. Fabr. Lepsura atbiops, Poda.

Legs Cometimes teftaceous; abdomen with white filky down.

Humeralis. Black; fhoulders and abdomen ferruginous. Fabr.

Native of Germany.
Scutellata. Black; fcutel white. Fabr. Inhabits Italy.
Suturata. Cinereous; wing-cafes teflaceous, with a black future. Fabr.

Found in Germany; the antennæ teflaceous, with black tip; legs rufous, the joints black.

Exclamationis. Black; wing-cafes with a yellow line down the middle, and a dot at the bafe. Fabr., \&c.

A fmall fpecies found in Sweden.
Lumida. Ferruginous; wing-cafes teftaceous. Fabr., \&c.
Inhabits deferts of Hircania.
Femorata. Black; thighs rufous at the bafe. Fabr. Found in Saxony.
Ruficornis. Black; antennæ and legs rufous. Fabr.
Native of Italy. Body covered with yellowihh down.
Marginata. Black; margin of the wing-cafes and hind fharks rufous. Fabr.

Inhabits Norway.
Nigra. Wing-cafes tapering; body black, polifhed; abdomen red. Schæff.

An European fpecies.
Praeusta. Body covered with golden down; head and tip of the wing-cafes black. Fabr.

Firft joint of the antennæ ferruginous; legs red.
Native of Europe.
Quadrimaculata. Black; wing-cafes teftaceous; with
a black ring. Oliv.
Native of Germany.
4-Guttata. Brown; wing-cafes black, with two ferruginous dots at the bafe. Fabr.

Inhabits Saxony.
Rostrata. Dull braffy; legs yellow. Fabr.

- Subspinoza. Black; wing-cafes teflaceous, with four
black bands, the firt punctured; antennæ and legs yellow. Fabr. \&c.

Perhaps the female of the laft. Head black, with a ful. vous frontal band; wing-cafes emarginate; three fegments of the abdomen yellow. Native of Germany.

Aurulenta. Black; fore and hind margin of the thorax golden; wing-cafes teftaceous, with four fimple black bands. Fabr.

Inhabits Germany; fegments of the abdomen edged with white.

Dubia. Black and fomewhat villous; wing-cafes teftaceous, dotted with black; legs black. Fabr.
Native of Siberia. Allied to Leptura attenuata.
Sexguttata. Black; wing-cales with three yellow fpots. Fabr.
Inhabits Germany. Herbft.
Quadrifasciata. Black; wing-cafes teflaceous, with
four indented black bands. Linn. Leptura octomaculata, Degeer. Cerambyx fafciatus, Scop.

Native of Europe.
3-FAsClata. Black; wing-cafes with three yellow bands, the firft interrupted. Fabr.

Antennx pale alh, with the bafe black; firt band on the wing-cafes compofed of two dots, the fecond with a fmall tooth, the third lunated. Inhabits Sweden and Germany.

Reticulata. Black; wing-cafes teftaceous at the bafe, reticulated with yellow, and tipped with black. Fabr.
Native of Italy. The antenne black; joints at the bafe yellow; legs rufous, with black joints.

Sericea. Green-blue; wing-cafes fomewhat faftigate. Fabr.

This and the feven following inhabit Europe.
Collaris. Thorax globular, and with the abdomen red; wing-cales black. Fabr.
Virginea. Thorax globular and black; wing-cafes violet ${ }^{\circ}$; abdomen rufous. Oliv.

Carmonarra. Black; wing.cafes teflaceous; tipped with brown. Linn.

Native of Africa. Antenne yellowifl at the bafe; thorax and wing-cafes fmooth.

Lutercornis. Yellow; thorax with two black lines; wing-cales with four black bands. Fabr.

Inhabits Carolina. Head and antennx yellow; legs yellow ; polterior thighs with a black ring.

4-Pustulata. Black; wing-cafes with two remote fermaginous fpots. Fabr.

Native of Sweden.
8-Maculata. Black; wing-cafes livid, with four black fpots. Scheff.
An European fípecies.
Interrogationis. Black; wing-cafes yellow, with a longitudinal curved black line, and four marginal fors. Linn. Donov. Br. Inf.

Native of the northern parts of Europe.
Marginella. Blackifh; future of the wing-cafes, two marginal fpots, and tip yellow. Fabr.

An iuhabitant of Italy.
6-Maculata. Black; wing-cafes teflaceous, with three indented black bands, the anterior one a little interrupted. Scheff. \&c.

Native of Europe.
7-Punctata. Black; thorax teftaceous, with a black dot; wing-cafes teftaceous, with feven black dots. Fabr.

Small, linear; head with a large frontal teftaceous〔pot; abdomen teftaceous; legs black. Native of Hungary.
i2-Maculata. Black; wing-cafes yellow, with fix large black fpots on each. Fabr.

Native of Siberia.
Atrenuata. Wing-cafes tapering, yellow, with four black bands; legs teftaceous. Scheff.

Inhabits Europe ; abdomen entirely black, or rufous, with the tip black.
Calcarata. Black; wing-cafes tapering, yellow, with four black bands, the firlt punctured, fecond interrupted; pofterior Chanks bidentated. Herbtt.

- Nigella. Black; wing-cafes teftaceous; anterior fhanks rufous. Linn.

Erythropus. Black; legs red; bafe of the thighs, tips of the fhanks, and ends of the legs black. Limn.

5-Maculata. Black; antennx 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 antenne teftaceous; fore thighs and fhanks teflaceous, the former with four teftaceous bands, the latter tettaccous at the bafe. Linn.

Monio. Thorax orbicular; body entirely black and polifhed. Fabr.

Native of Sweden.
Cerambyciformis. Black, with whitifh down; wingcafes yellowifh, with five black fpots and a line in the middle. Herbit.

## Found in Hungary and Auftria.

Russica. Black, with whitifh down; wing-cafes yelIowifh, with five black fpots and a line in the middle. Herbit.

Inhabits Ruffia.
Levis. Black, beneath filky; antentre yellowih.brown; anterior legs ferrugisous. Herbft.

Native of Pomerania.
Solistifialis. Black; antenna ferruginous at the bafe;
legs and wing-cafes yelluw, the latier edged with black. Herbit.

Inhabits Pruflia.
4-Notata. Black, with yellowihh down, beneath with whitih; anteme brown at the bafe; thighs ferruginous at the bafe; wing-cafes punctured with two orange fpots. Herblt.
Same country as the preceding.
Splendidat Black, with yellow down; wing-cafes glabrous at the tip; legs fulvous; antenna brown, with ferruginous bafe. Herbla.

Inhabits Germany.
Plumipes. Brown, punctured; thighs fubclavated: hind-legs very long, the flaank; rufous at the tip. Pallas. Country unknown.
Ruripes. Black; legs rufous; thighs black at the bafe. Schaller:

Native of Germary,
Octo-macllata. Black; wing-cafes teflaceous, with
fix black fots and tip. Schaller.
Inhabits Saxony.
Schallebr. Brown; bafe of the fhells with fout rufous fpots. Schaller.

Iohakits Germany.
Pumila. Brown; anterior legs teflaceous, the thighs black above. Schaller.

Native of Saxeny, A rare fpecies, found on rhamnus catharticus.

Ustufata. Black; thorax and wing-cafes teftaceous, tipped with black; legs teftaceous.

Inhabits Germany on flowers.
Parisina. Black; bafe of the antenne and thighs reddih. Thunb.

Oblong, narrow. Inhabits Germany.
Bipustulata. Wing-cales black, ftriated with dots,
and marked with two teltaceous \{pots。 Thunberg.
Inhabits Upfal.
Scopolis. Abdomen and thorax at the pofterior margin red; wing-cafes teflaceous, pellucid, and attenuated; tip and margin below the middle black. Scop.

Nrgripes. Black; wing-cafes dull yellow-teftaceous; legs black. Gmel. Degeer, \&c.

Country unknown.
Verna. Black; anterior fhanks fulvous. Müll.
Native of Denmark.
Maculosa. Black; wing-cafes livid-teftaceous; antenne fotted with black. Degeer.

Country unknown.
Luneulata. Black; thorax with a narrow yellow band
behind; wing-cafes with two ferruginous lunules. Swederus.

Inhabits the Cape of Good Hope.
Bicolorata. Pale ferruginous; eyes, wing-cafes, wings, and tail above black. Leptura bicolor, Swederus. Native of America.
Vittata. Pale teflaceous; antennæ annulated with fufcous; wing-eafes dotted with black, with four yellow Atripes. Swederus.

Inhabits America.
10-Punctata. Black; thorax fubglobular; wing-cafes with ten dots. Lepech.

Inhabits Ural.
Varia. Villous, hoary; thorax fubglobular; wingcafes black with white dots, and four interrupted bands. Lepech.

Same country as the former.

Vikiols. Grecnifl ; thorax fomewhat ovate, with two darker lines; the back black. Lepech.

Native Siberia.
Nitris. Thorax globular, and with the abdomen black, with yellowifh thining down; wing-cafes black, with four broad yellow bands; legs ferruginous. Foriter.

Intabits North America.
Bhlineata. Blackifl-brown; thorax with two yellowifh lines; wing-cafes with feattered dots. Scop. Found in Carniola.
C.irlle.. Diuc ; anterior flanks rufuus. Scop. Native of Italy:
Squalida. Black; wing-cafes teffaceous at the bafe and inner margin. Scop.

Same country as the former.
Bipartita. Black; thorax ferrugimons with a black line ; wing cafes with a common ferruginous fpot. 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.cafes with three white bands. Schrank.

Macelata. Black, with yellow downy fouts; thorax globular; antentre half as long as the body. Geoffr.

This and the five following are inhabitants of France.
Nevid. Black, with yellow down; wing-cafes with two black glabrous fpots. Geofir.

Puscrclata. Blackif; head and thorax red, dotted with black. Geoffr.

Strigosa. Yellow downy; wing-cafes with three narrow black bands. Geoffr.

Gallica. Blue; fhanks rufous; thorax fubglobular. Geoffr.

Crassipes. Deep black; thighs thick and rufous. Geoffr.

Bmaculata. Rufous; thoras cylindrical; wing-cafes dotted, with a frot and waved line of white. Müll.

Iuhabits Europe.
Villos.a. Black, villous; thorax cylindrical, with pale longitudinal line. Müll.

Native of Denmark.
LEPTURUS, in Botany, from $\lambda เ$ mins, flender, and $8 \mathrm{p} x$, the tail of an animal, a genus of grafles, eltablifhed by Mr. Brown, Prodr. Nov. Holl. v. I. 207, and fo called from its long dender cylindrical fipe. It is founded on Rottbollia refens, Forlt. Prodr. 9. u. 50, with a quettion whether $R$. incurvata of Linneus and Fl. Brit., as well as $R$. filiformis of Roth, may not belong to the fame. The chisef difference between Leftrurus and Rottbollia feems to lie in the joints of the fpike being lingle-flowered in the former, twoHuwered in the latter; for in the detail of the florets, refpecting the prefence or imperfection of the parts of impreynation, this tribe of grafles, and indeed all grafles, are to be trulted with great caution.

Leiturus, in Ichthyol.gy. The name is of Greek origin, and is formed of $\lambda s a i z s$, fander, and $\operatorname{cog} x$, a tail, expreffing that the fifn bearing thas name has a wery long and flender tail. Sec Trichuches lepturus.

Lepturls, in Ornithology. See Pinaeton athereus.
LEPUS, the Hare, in Afronomy, a conltllation of the fouthern hemifphere; whole fars in Ptolemy's catalogue are twelve; in that of Tycho thirteen ; in the Britannic catalogue nineteen. See Constellatios.

Lepus Aqueus, the suater-bare, in Ornithology, a name fiven to the creft 1 diver, or colymbus of America, which is the farse fpecies with the large European kind, though

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deferbed 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 difficuly; and the Mexicans have a thoufand fabulous flories about it. See Colymbus crifatus.

Lepus, in Zoology, a genus of the order of Glires, in the clafs 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-tecth, which are confiderably fmaller than the outer or primaries; the forefeet have each five, and the hind-feet four toes. - Thefe 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 cither exceedingly fiort tails, named fiuts, or none at all.

$$
\because \text { With tails. }
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1. L. Tijifaccia, Vizcacha, Vifcachos, the Peruvian hare, with a longifh tail, befet with britles. Molin. Hilt. Nat. Chil. Hares of this fpecies inhabit the p'ains and bafes 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 iuto cloth for the Peruvian nobles, and is that employed for bonnets by the Chilefe. In habit and manner this ipecies refembles 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 provifions, that are collected in the night ; the tail is bufly, and much longer than that of any other fpecies, and in general it turns up and is ufed 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 fraw colour, of the fame fize with the hare, and running like it. Cook's Voy, iii. Pemnant's Quad.

This fpecies inhabits the whole of Europe, and more plentifully in Bulgaria; in the northern parts of Perfia, Japan, Ceylon, and almot the whole of Afia; 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 fecds only by night, and cliefly on the twigs and bark of flrubs and young trees. It is hunted for fport with dogs or hawks, and, in India, with fome fpecies of the cat genus. It is faid to be fond of the found of a drum; it is much infetted with fleas; it does not burrow, but makes a kind of neft, called by fportfmen a "form," among bulhes or long grafs; its urine is fuetid, which it takes care not to dit-charge in its neft. It does not pair, but breeds often in the fummer and ipring, the male purfuing the female, when in feafon, by the fcent; after coing 30 or 3 I days, the female brings three or four at a litter ; and as hares are very lafcivious, fuperfetation 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

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lip is divided; the fnout furnifled with long white whinkers, 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 brealt and throat are reddilla ; the belly is white ; the tail is black above and white bencath; the hind thighs are ftrong, thick, and flelly, with a cavity on cach fide at the pubes; the feet are thickly covered with hair on the foles. 'This animal is fond of birch, parfley, and pinks. Its fleh was forbidden by the Druids, but much elteemed by the Romans. For other particulars, fee Habe.,
3. L. Fariabilis, varying hare, Alpine bare, has a very flort tail, the ears fhorter than the head; the whole fur beconies white in winter, except the tips of the cars, which remain black. Of this fpecies there is a variety, called the L. variabilis bybridus, or fpurious varying hare, the fides of which only turn white in winter. This fpecies inhabits the coldeft and moft hilly parts of Europe and Afia, as Scotland, Norway, Lapland, Ruffia, Siberia, Kamtfchatka, Grecnland, and in America, about Hudfon's bay, and Labrador. The fpurious varicty is a mixed breed, between the varying and conmon fpecies, fuftaining a partial change of colour, and found ouly in the fouthern and weftern 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 quett of fubfiltence into the lower country, and return in fprang. The flefh of this fpecies is harder, drier, and lefs flavoured than that of the common kind. It never mixes with the common fpecies, but keeps on the tops of the higheft hills; it does not run fwiftle, but when purfued, takes fhelter in the clefts of rocks; is eafily tamed and very frolickfome; fond of honey and fweatmeats; it eats its own dung before a florm; changes to white in September, and recovers its grey colour in April; and it is fubject to thefe changes when kept in a warm room; in Greenland, it is always white. Penn. Quad. Arctic Zool. Foriter. Phil, Tranf. lxii.
4 L. Nizer, the black hare, has a very fhort tail, fur entirely black, or very dark tawny, the whole year, and inhabits Siberia, and the government of Caffan. It is much larger than the common kind, and very gloffy.
5. L. Amcricanus, 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 fhort tail. The hind legs are a half longer than the body; the tips of the ears and tail grey. This fpecies inhabits North America. In New England, Canada, and farther north, this fpecies 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 jear a fhort fur of an afh colour, mixed with rulty and black; on the neck and body, the legs pale-afh colour, and the belly white. It is fmaller than the common hare, thelters 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 thorter, and the hind legs confiderably longer than thofe of the common kind.
6. L. Tolai of Buffon, Baikal hare of Pennant, the Daurian hare of Erxleb, the cuniculus leporin:s of J. G. Gmelin, has a thort tail, and the edges of the ears black. This fpecies 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 feccies; in fummer 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 fhorter than that of the common hare, and like that black, efpecially at the root. It does not burrow, runs ftraight forward when purfued,
and fhelters in the holes of rocks. Its fefh is white, like that of the rabhit.
7. L. Minimus, Chilefe hare, has a very fhort tail, and the ears of an uniform colour. Molin. H.N. Chil. This fpecies inhabits the kingdom of Chili. It is finall, not exceeding the lize of a mall rat ; its budy is of a eonical form, its ears are fmall and flarp-pointed, its fnout is lengthened, the fur is fine and very flort; the flefh is white and good for food. It refembles the domeftic rabbit in variablenefs of colour, in its prolific quality, producing almolt every misath fix or feven young ones at a time; and in Chirit it is dometticated.
8. L. Capenfis, Cape hare, has a buthy tail, as long as the head, and red feet. It inhabits the country three days' journey from the Cape of Good Hupe; dwells in the fiffures cf rocks, and does not burrow; about the fize of a rabbit, and probably the fame animal that is mentioned by Adaufon as found in Cfinea, which, he fays, is fmaller than the common kind, with a colour between that of a rabbit, and has white flefl.
9. L. Cuniculus, common rabbit, has a very fhort tail, almoft of the fame colour with the bodj, ears black at the points, and hind legs fhorter than the body. Of this fpecies there are the following varietics, viz. cuniculus ferus, or wild rabbit, of a brownifh-grey colour; cunic. domeflicus niger, of an uniform black colour; cun. domeflicus albus, of an uniform, white colour, with fiery red eyes; czn. domeflicus variegatus pied tame rabbit, of a pied or mottled black and white colour; cun. domefficus argenteus, fitvery tame rabbit, of a filvery grey or alh-colour, with tawny feet. 'This fpecies inhabits naturally the warmer parts of Europe, Afia, and Africa; it is not a native of Britain, but has fubifted in a wild and tame flate in this country for feveral ages. It occupies principally dry fandy foils, in which it forms long winding burrows; confining itfelf to thefe 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 fleth is white and much efteemed. The female breeds fix or feven times in a year, going 30 or 3 x 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 lalacious, and apt to deitroy 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 Itate in places fet apart for the purpofe, called " warrens," and many are bred in houfes in a domeftic itate. The wild varicty is of a brown afh-colour, having the upper part of the tail black, and the under part white. The fur of the filvery variety is valuable.
10. L. Satcatus, hooded rabbit, Ruffian rabbit, has a double fold of the fkin behind the head, and another under the throat. This animal's habitat is unknown. It is defcribed by Mr. Pennant, from a drawing in the Britif Mufeum by Mr. Edwards, and called by him a Ruflian rabbit, but it is unknown in that empire.
11. L. Scricens, Angora rabbit, is covered with long, waved, filky hair. The Ruffian rabbit is reckoned by Gmelin a variety of this. It inhabits Angora in Afia Minor, and is exccedingly beautiful on accoumt of its fine, white, filky fur, which is a valuable article in commerce.
** Having no Tails.
12. L. Brafilicnfis, Braflian hare, named "Tapeti" by the natives, has very large ears, no tail, and, for the molt part, a white ring or collar round the neck. (Pallas Glir.) This fpecies inhabits So:th America and Mexico; it is of

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the fame colour and magrinude with the common hare, but darkes, with timilar large ears; in its general appearance it refembles the rabbit. It lives in the woods, dues not burrow, and its flefh 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 blackith-grey, and the under parts hairy. (Schreber.) This fpecies inhabits the fouthern extremity of the Ural mountains, about the lrtifch and the funny hills to the fouth of the Altaic chain. It feeds chiefly on the flowers and bark of the Cytifus fupinus, Robinia frutefcens, Cerafus pumila, and Malus fylveltris; digs holes in dry places, amid bufhes, and leads a very retired life, near its burrows, which are long and intricate, with a very fmall entrance. Thefe animals are difcovered by their voice, which is very loud and fonorous, like the piping of a quail, and may be heard at a great diftance ; it is repeated at fhort intervals, three, four, or ceren fix times, montly at night and morning, and never in winter or bad weather. This fpecies is gentle, and eafily tamed; it neeps little, drimks frequently, and is moft active in the night feafon; its pace is not quick, but by leaps.
14. L. Alpinus, Mountain hare, Alpine hare of Pallas, \&c. Multela Daurica, or Daurian weafel, has flort 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 moft rugged and inacceffible fhelves of the mountains, burrowing in the clefts of the rocks, or living in the hollow trunks of decayed trees. Its voice or cry refembles a loud whiftle. The mountain hare is preyed on by fables and Siberian weafels, and is much infetted by the Oeftrus leporinus, a fpecies of gad-Ay, which lodges its eggs in their kins, and often deftroys them. This fpecies varies in fize from feven to nine inches in length, and weighs from $1 \frac{1}{4}$ pound to four ounces.
15. L. Ogotona, the Ogotona hare, or Mongalian weafel, hias oblong, oval, fomewhat pointed ears, of the fame 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, efpecially the great defert of Cobi; dwelling fometimes in rocky places, among fones, or forming in the fand with two or three entrances. Its voice is fharp and clamorous; it feeds chiefly on the bark of the Pyrus baccata, and on the fuckers of the dwarf elder, and in furing on various herbs which grow on the fandy foil. It is nimble, and fcarcely capable of being tamed; it is preyed upon by various fpecies 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 $6 \frac{1}{2}$ inches long. It procreates in fpring, and the young ones are fully grewn by the end of June.

LEPYRODIA, in Botany, $\lambda$ stupwine, facly, fo callecं on account of the inner fcales at the bafe of each flower. Brown Prodr. Nov. Hollo v. I. 247.-Clafs and order, Dioecia Triandria. Nat. Ord. Tripetaloidea, Linn. Junci, Juff. Reftiacea, Brown.

Eff. Ch. Flowers either dioecious or hermaphrodite. Petals fix, nearly equal, prominent, with one or two fcales at their bafe, within the proper fcale of the fpike, or catkin.-Male, Stamens three. Anthers fimple, peltate. A rudiment of a piftil. Female, Styles three. Capfule of shree cells, three-lobed, burfing at the prominent angles. Seeds folitary.

This genus is very near Elegia, Linn. Mant. 2. 162, (which was afterwads funk in $R_{f} f i o$ ), but differs in the
prefence of inner fcales to the flowers, and in the male flowers being like the female, with nearly equal petals, as well as in having the fheaths of the ftem permanent, not feparating juft above their bafe, and in the firaller fize of the fpathas. The Calorophus of Labillardiere nearly anfwers to the above character, but is a totally different plant.

1. L. gracilis. Stems fomewhat branched. Sheaths tight. Spike compound; its lower branches rather diftant. Three outer petals fhorteft. - Gathered by Mr. Brown at Pore Jackion, New South Wales.
2. L. friala. 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. farriofa. Stems perfectly fimple. Sheaths lax. Spike compound; its branches imbricated, divided. Three inner petals fmaileft. Found at Port Jackfon.
4. L. bermaphrodita. Stems perfectly fimple. Sheaths lax. Spikes nearly fimple. Flowers hermaphrodite. Found on the fouth coalt 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 ufed in the articles Leptocarpus and Lepidosperma.
LERANG Point, in Geography, a cape on the N. coaft of the inland of Java. S. lat. $6^{\circ} 37^{\prime}$. E. long. $111^{\circ} 27^{\prime}$.

LERAY, a town of France, in the department of the Cher, and chief place of a canton, in the diftrict of Sancerre ; 8 miles N. of Sancerre. The place contains 1109, and the canton 6544 inhabitants, on a territory of 170 kiliometres, in 7 communes.
LERCHEA, in Botany, was fo named by Linnzus, as a tribute of refpect to the botanical acquirements and publications of John James Lerche, principal phyfician to the Ruffian armies, who was born at Potrdam in the year 1703, and who died at St. Peterßurg in 1780 . He publifhed a defcription of certain plants growing at Aftrachan, and in the provinces of Perlia which border on the Cafpian fea. This tract is printed in the 5 th vol. of the New Traniactions of the Academy Nature Curioforum, Appendix 161. 206. He alfo furnifhed an account of the Nymphaa Nelumbo of the Cafpian fea. Haller mentions that Lerche made many curious obfervations on the agriculture and botany of the countries through which he travelled.-Linn. Mant. $155^{\circ}$ Schreb. 453. Willd. Sp. Pl. v. 3. 586. Mart. Mill. Dict. 7. 3. Juff. 42 r.-Clafs and order, Monadelphia Pentandria. Nat. Ord. unknown.
Gen. Ch. Cal. Perianth of one leaf, tubular, five-toothed, permanent. Cor of one petal, fumnel-fhaped ; tube longer than the calyx; limb fivecleft, nearly erect. Stam. Filaments fearcely diltinet from the tube of the germen; anthers five, oblong, placed upon the tube of the germen. $P_{i j /}$. Germen fuperior, fomewhat ovate, terminated (within the corolla) by an obtufe tube; ttyle within the tube of the germen, thread-flaped, the length of the ftamens; ftigmas two or three, rather obtule. Peric. Capfule fomewhat globofe, torulofe, of three cells, fometimes only two. Sceds numerous.

Eff. Ch. Calyx five-toothed. Corolla funnel-fhaped, fivecleft. Anthers five placed on the tube of the germen Style fingle. Capfule of three ceills and many feeds.

1. L. Pongicauda. Linn. Syft. Vez. ed. 14. 6ro. Mant. 256. There is no figure of this folitary fpecies of Lerchea, which is a native of the Eaft Indies, and a Arub of irregular growth, furnifhed with Araggling jointed branches. Leaves oppofite, on foot-italks, lanceolate, fonooth, entire, a foot in length. Stipulas fword-fhaped, Thorter than the leafftalks.

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falks. Spike terminal, nender, a foot high; flowers remote, fcattered, finall.
The above defcription is entirely taken from the works of Limeus; the only perfon who cver faw the plant. No trace of it is to be found in his herbarium, yet it is to be prefumed the fpecimen exifts fomewhere in his collection, probably without a name.

LERENZA, in Geography, a town of New Granada; 25 miles N. of 'Tunga.
LERGE, a town of Sweden, in Wert Gothland; 4 miles N . of Gothenburg.

LERI, Joun de, in Biograply, a French Proteftant minilter, was born at La Margelle, a village in Burgundy, and profecuted his academical lludies at Geneva. In 1556 he was felected to accompany two minitters, on a miffion 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 altonifhing hardhips during his voyage. He afterwards was admitted to the office of the miniltry, and exercifed it at La Charitè, at the time of the maffacre of St. Bartholomew, when he was obliged to make a very hafly efcape to the town of Sancerre. It was during the memorable fiege of this place that he was granted a paffport from marfal de la Châtre, permitting him to retire wherever he pleafed: he went to Bern in Switzerland, where he was received in the moft kind and hofpitable manner by M. de Coligny, fon of the admiral. In 1574 he publifhed an interelting "Hiftory of the Siege of Sancerre :" giving an account of the tranfactions of that fiege, and of the horrors of famine to which the Proteftants fubmitted in defence of their religion, and all that was dear to them, which was widely difperfed, and went through many editions. In 1577 he publifhed 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 Geograpby, an illand of the IEgean fea; one of the Sporades, according to Strabo.-Allo, a town of Spain, in the Tarragonenfis, and in the interior of the country of the Edetani. Ptolemy.

LERIDA, in Geography, meiently called Ilerda, a town of Spain, in Catalonia, diftinguifhed in ancient and modern hittory for the great events which have rendered it memorable. It was the capital of the country of the Ilergetes long before the firt invafion 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, likewfe, under the walls of this town that Julius Cæfar conquered the lieutenants 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 conqueft 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 Chritian 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 eccleliaftics from fhedding human blood, and another permitting the commuvion to be adminittered to magicians when they are dying. After the conquelt of the Moors, it became at firft fubject to the caliphs of Damafcus, and afterwards to the Moorifh kings of Cordova; but its own governor erecting the ftandard of rebellion and ufurping the fupreme power, it had a feparate king. In II 49, Raymond Berenger, the lalt count of Barcelona, who had jult afcended the throne
of Aragon, trok 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 caftle itands, on the right and weft bank of the river Segra, which bathes the walls of it. It is long, narrow, almoft triangular, clofe, and ill built. It has s'ne tolerable ftreet, 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 diocefe includes 150 parifhes; Lerida itfelf has one cathedral chapter, four parifhes, eight convents of monks, three of nuns, one hofpital, and one college. The town has a civil and military governor, a fmall garrifon, and an alcade-major for the adminiftration of juftice. Its univerfity, eftablifhed in 1300, by James II., king of Aragon, was fuppreffed 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-fifh, which has wholly failed. Its prefent 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 ; confifting of wheat, oats, flax, hemp, oil, wine, beans, and all kinds of excellent fruits and pot-herbs. The country is interfected with canals fupplied by neighbouring rivers, and is fkilfully and carefully watered. Some filk-worms are alfo bred here, but in no great number; 62 miles E. of Saragoffa. N. lat. $41^{\circ} 29^{\prime}$. E. long. $0^{\circ} 25^{\prime}$.
LERIKA, a town of Swedih Lapland; 100 mules W.N.W. of Tornea.

LERILLON, a fmall ifland in the Grecian Archipelago, near the N. coalt of the ifland of Lero.
LERIN, a town of Spain, in Navarre; 15 miles E. of Eftello.

LERINA, in Ancient Geography, Lerins; an ifland of the Mediterranean, upon the coaft of Gallia Narbonnenfis, 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 iflands in the Mediterranean, near the coaft of France, about fix miles S. of Antibes; called "St: Marguerite" and "St. Honorat;" near thefe are fome other intets.

LERMA, a difmantled town of Spain, in Old Caftile, on the Arlanza; 23 miles S. of Burgos.-Alfo, a town of Mexico, in the province of Yucatan; 12 miles S. of Campeachy.

LERNA, in Ancient Geography, a lake or marfh, now called "Molini," is the Argolide, a little N. of Genefium. It is rendexed famous by the fable of the defeat of the hydra with many headṣ, 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 myfteries confecrated to Ceres: and hence thefe mytteries were denominated the "Lernæan mylteries." Near the lake was a wood confecrated to this goddefs, which commenced at mount Pontinus. Paufan. Corinth. 1. ii. c. 36.

LERNEA, in Zoology, a genus of the clafs Vermes, and order Molluica, which is characterized by Linnæus as laving an oblung, fomewhat cylindrical and naked body; tentacles or arms two, or fometimes three on each fide and round, by which it affixes itfelf to any fubltance' two ovaries projecting like tails from the lower extremity. They are without

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eycs, and are very troublefome to fifli, adhering very firmly to them, chicfly to the gills and fins. There are fifteen fpecies, which we fhall brielly enumerate.

## Specics.

Brascmalis is one of the largeft, being about two inches in length. The body is round and flexuous, the mouth is lateral, and feated between three flightyly branched horns. It inhabits the northern feas, and is found adhering to the gills of cod-fifth. It is ufed as food by the Greenlanders. Müll. Zool.

The body of this fpecics is hollow, membranaceous, thicker before and behind; dull white, dirty red. The neck is long, tubular, and filiform; tail cnding in a perpendicular groove; ovaries two, compofed of long twilted cirri.

Cxprinacea. Body cylindrical, clavate behind; thorax 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 thicknefs of a fmall ftraw ; the body is rounded, of a pale greyifl-white, glofly on the furface, and fomewhat pellucid; it is thruft out of a kind of theath at the bafe, which is of a white colour, and a thick flin ; towards the other extremity of the body there are three obtufe 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.

Salmonea, or Sulmon lonfe. Body obovate; thorax inverfely heart-fhaped; 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 ovate; ovaries round, granulate within, and as large as the whole body.
Asellina bas a lunated body, and cordated thorax, and is found in the gills of cod-fifh and ling. Barbut.

Huchonis. Body knotty; two tentacula; ovary doub'e 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 beneath the tip and fnout. Muill. It is found in the fins, gills, mouth, and eyes of the Perca Norwegica.

Unciata. Body rather heart-fhaped; fnout fimple, curved, and the mouth terminal. Miill. It is found on the gills and fins of cod-fifh in the Grcenland feas. The body is foft, pale, with a longitudinal groove down the middle of the back; the 'ovaries are rounded and thickened towards the tip.

Gorres. Body rhomboid; it has two arms before and two behind, all of which are nodofe; 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 blueifh-white; head roundifh, with two incurved horns; the mouth is placed between the horns, and is furnifhed with three lips; the tentacula are angular, curved, knotty ; inteftines tranflucent above; tail bifid; ovaries fpiral, round, fubulate.
Rapiata has a fquare depreffed body, with three pair of arms and four horns. Mîll. It is found in and about the mouth of the Coryphrena rupeftris, in the Greenland feas. It is rather more than an inch in length; whitifh or cinereous, and rough with hardifh tubercles; the fides a little
crenate ; head depreffed, rounded, and copered with numerous papillx; ovaries large, oboval.
NodosA. Body 〔quare tuberculate; with two very fhort arms beneath on each fide. Muill. Shaw. It inlabits about the month of the Perca Norwegica.

Body foft, pale cinercous, convex above, and concave beneath, with four hard white tubercles in the middle of the back, and five white teeth on each fide ; head rounded, and divided by a ftreak in the middle.
Consuta. Budy oblong, with four ftraight emarginate arms; head fubovate. Shaw. Mûll. It is found on fome fpecies of the Pleuronectes.

Body covered with a pellucid fkin; front with ? wo horns and a fingle tooth; the mouth has two feclers ; ovaries brown, and its eggs are of a tawny colour.
Pectonalis. Head orbicular ; hemifpherical; abdomen obcordate, with a terminal truncate papilla. Müll. Shaw. It is found on the gill and pectoral fins of the flounder, or Pleuronectes fleflus, and other fpecies of the fame genus.

Body white, diaphanous, covered with fmall blackifh fpots ; the crown has two falciform projections ; fnout conic, truncate, with four minute horns, two hort fpines, and two feelers near the third conic fpine. Two tentacula, not curved; ovaries two, rather narrow, fub-annulate, and of equal diameters.
Lots, found on the gills of the Gadus lota, has four unequal ovaries ; the mouth has two hooks ; four cruciate appendages.

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 Lamp-filh.

Body refembles the branchialis above defcribed, but the horn is flender, 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 arother variety which is rather lefs and has greenifh ovaries.
Pinnarces is of a reddifh colour ; head cylindrical and roftrate 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 deprefied, flefly, grooved on the back, with a cylindrical arm placed on the forc-part of the back, concealed in a groove; the ovaries long and cylindrical.

LERNEB, in Geograpby, a town of Algiers; 20 miles S. of '「ip\{a.

LERO, anciently Lero, or Leros, an ifland 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 alfo high mountains, in whofe bofoms mines and quarries of marble might be worked; its foil is ungrateful, and its inhabitants are under the neceffity of feeking fuccours abroad by navigation and traffic. N. lat. $37^{\circ} 12^{\prime}$ E. long. $26^{\circ} 35^{\circ}$.

LERONA, a town of Ctaly, in the Orvietan ; 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 lignified by the clerk of the parlianient to public bills; to private bills this aflent is expreffed by foit fait comme il eff defiré.

Le Roy s'avifera. By thefe words to a bill, prefented to the king by his parliament, is underftood his abfolute denial

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denial of that bill in a more civil way; and the bill thereby becomes wholly null and void. Sce Roval and Pahlianent.
LERVADILLA, in Geography, a town of Spain, in the province of Leon; 12 miles S. E. of Ciudad Rodrigo.

LeriwiA, or Lerwee, in Zoqlogy. See Astelope Lerwia.

LERWICK, in Geography, a fea-port town, fituated in a parifh of the fame name, on the ealt fide of the Mainland of the Shetland inles. It is diltinguifhed as the feat of the courts held by the fheriff-depute of this ftewartry, and as the general rendezvous of all the veffels employed in the whate-filhery: The harbour is one of the fafelt and largeft in Great Britain. It is formed by the ifland of Breflay, and is particularly commodious from the circumftance of having two entries, one from the fonth, and another from the north. 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 Shetlard. As this veffel appeared at the mouth of the fouth entry, before her approach was difcovered by the earl, he with difficulty efcaped by the north pafiage. The Unicorn eagerly purfued, but having no pilot on board, fhe ftruck 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 houfes. Near the north end is a fmall fortification, called Fort Charlotte. It is ufually garrifoned by a party of invalids, and ferves to protect the north entry of the harbour. A bout a mile and a half. from the town are the remains of two ancient Danifh caltles. The parifh extends about fix milcs along the coalt, but at no point is more than one in bread h. The furface of the ground is for the molt part rocky and mountainous. Inmediately upon the fhore, however, there are many very fine arable fields, the foil of which, though light and fandy, poffefles confiderable fertility. The population of the whole parif, according to the parliamentary returns in 1800, amounted to 1706 perfons; abour 900 of whom are refident in the town. Sinclair's Statiftical Account of Scotland, vol. iii. communicated by the Rev. James Sands.

LESARA, a fmall ifland in the Baltic, E. of Aland. N . lat. $60^{\circ}$ IS. E. long. $20^{\circ} 19^{\prime}$.

Lesibian Cymatium. Sce Crmatium.
LESBIUM Marmor, a name given by the ancients to a fpecies of marble of a blueifh-white, fometimes ufed for the vafes and other ornamental works, but principally in the walls of public buildings.

LESBONAX, in Biography, a native of Mitylene, who flourihed in the firft century of the Chriltian era, was a difciple 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 philofophy, and Photius fays he had read fixteen orations written by him. Two of thef, it is Appofed, have reached modern times, and were firf publifhed by Aldus, in his edition of the ancient orators, in 1513. They were afterwards publifhed by Henry Stephens o with the orations of Efchines, $L_{\text {yfias, }}$ and outhers. They were alfo publifhed, in I619, by Gruter. Lefbonax is faid to have been the author of a treatife "De Fjguris Grammaticis." He left a fon named Putamon, an eminent rhetorician at Rome, in the reign of the emperor Tiberius. So fenfible were the magittrates of Mitylene of his merits, and of the utility of his labours, that they caufed a inedal to be ftruck in his honour: one of which was difcovered in the fouth of France about four-
fcore years ago, and an engraving of it publifhed in 1744, by M. Cary, of the Academy of Marfeilles. Moreri.

LESBOS, in Ancient Gcography, now called Mctelin, an ifland of the Grecian Archipeladto, fituated N.E. and S.W. and occupying in its length the port of the gulf of Adramyttium, on the coaft of Afia Minor. It extended in latitude from $39^{\prime} 5^{\prime}$ to $39^{\prime}, 30^{\prime}, S . E$. of the ifland of Lemnos. It is foid, that the: Pelafgi firlt fettled themfelves in this ifland unser the conduct of Xinthus, fon of Triopus, king of the Pelafgi, driven from Argos, who paffed from Lycia to this inland, calted Iffa, and naried by him Pelafgia. Seven generations after this time, the iohabitants perifhed in the celuge of Deucalion, or rather in an inundation that overwhemed this ifland. It was then left defolate. In procefs of time Maccareus, an inhabitant of Ionia, afterwards denominated Achaia, formed an eftablifment in this inand. This prince was accompanied with Ionians and fome other people of different nations. Lefjus, it is faid, came hither fome time after Maccareus, his progen itor.
Euftathius, in his Commentary on the third book of the Odyffee, fays, that this ifland contained five towns, viz. Lefbos, whence it derived its name, Antiffa or Iffa, Pyrrha, Methymna, aud Mitylene, whence this ifland has been fince called Mitylene and Metelin. This lalt town was the capital, Lefbos, originally geverned by rulers chofen among its own inhabitants, became afterwards fubject to the dominion of foreign tyrants. It fuceffively paffed under the domination of the Perfians, and then under that of the Greeks, till its liberty was reftored to it by Alexander the Great. This liberty it preferved till the time of Pompey, who redured it into the flate of a Roman province; continuing, however, for fome time to Mitylene its ancient privileges. The Crufaders next eftablifhed themfelves for a certain period, and the Genoefe were malters of it when the empire of the Eaft fell into the hands of the Turks. It was on this occalion that Mahomet II. ten years after the capture of Conftantinople, equipped a confiderable fleet in order to fubdue it. Mitylene, Methymna, and moft of the places of this ifland 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 Conftantinople, were all difpofed to defend their lives. The Ottoman forces, although very confiderable, would undoubtedly have mifcarried againft thoufands of heroes, if thefe heroes had not been betrayed by the treachery of Lucco Gattilufio, who thought of obtaining the fovereignty of the ifland by delivering it up to Mahomet. Accordingly, he perfuaded his coufin Gattilufio to fign a fhameful capitulation. However, as a recompence for the treachery of the one, and for the weaknefs of the other, Mahomet caufed them to be cruelly put to death a fhort time after. Lefbos gave birth to feveral perfons of diftinstion; among whom we may reckon Alcæus, a lyric poet, who long declaimed againft tyranny; Sappho, the celebrated pociefs, whom antiquity has placed among the Mufes, and who, by an unfortunate paffion, was. impelled to precipitate herfelf from the promontory Leucates; Theophrallus, a dicciple of Plato and Ariftotle; Pittacus, whom Greece reckons among her fages, and who, more ardently defirous of the happinefs of kis fellow. citizens than of his own, conceived and exccuted the project of ufurping power in order to reftore liberty to his country ; and laftly, Potamon, barn at Mitylene, a diftinguifhed rhetorician, who lived at Rome under Tiberius. This latter, wifhing to return to his country, and there eftablih a chair of eloquence, obtained from Tiberius letters, in which it was exprefsly mentioned, that whoever fhould dare to infult Potamon, would infult in his perfon the em-

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peror himfolf. We might alfo mention, in more modern times, the two brothers, Barbaroflas, [ons of a porter, who from fimple failors, became famous pirates, and were afterwards, in fucceffion, fovereigns of Algiers. The younger, appointed high admiral by Soliman I, is more known than his brother in the hitlory of the Ottoman empire. For an account of the prefent flate of Lefbos, fee Metelin.

LESCAILLE, James, in Biography, a Dutch prirter and poet, born in 1610 , was defcended from a family of diftinction and much confideration at Geneva, which took refuge in Holland on account of fome perfecution. By profeffion he was a printer and bookleller, and gained great reputation by the beauty and accuracy of various editions of books which he publihed. 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 is 1649, and fo difinguifhed by her poetical talents, that the was called the Dutch Sappho. Her brother-in-law, Ranck, publified, in 1728 , a volume of her works, which contains feven tragedies, befides other pieces. She died in 1711. Moreri.

LESCANO, in Geography, a town of Spain, in the province of Guipufcoa; 9 miles S.S.W. of Tolofa.

LESCAR, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diftrict of Pau; 3 miles N.W. of Pau. Before the revolution, it was the fee of a bifhop, fuffragan of Auch. The place contains 1885 , and the canton 7823 inhabitants, on a territory of $177 \frac{1}{2}$ 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 Perfia, in the province of Irak ; Ior miles W. of Hamadan.

LESCZYN, a.town of Poland, in Volhynia; 24 miles N. of Berdiczow.

Lesdigueres, Francis de Bonne, Duke of, in Fiography, was born of an ancient family, in the Upper Dauphine, in 1543 . He was brought up to the military profeffion, and acquired, while he was yet a young man, fo much reputation for fkill and true courage, that he was chofen by the Calvinifts 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 1590. When the duke of Savoy, taking advantage of the difturbances in France, projected an invafion of Provence and Dauphinè, I.efdigueres, 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 refufed his requeit, he applied to the council affembled, ${ }^{6:}$ Gentlemen, if you do not thisk it proper that my mafter flould have this government, you hould think of the means of taking it from him." This energetic anfwer was not difpleafing to the king, who was glad to be under the neceffity of promoting a general of the Proteftant perfuafion. Lefdigueres was, from this time, appointed lieu-tenant-general of the king's armies in Piedmont, Savoy, and Dauphine, and by his vigilauce and activity difap. pointed all attempts of the duke of Savoy, who was accuftomed to call him the fox of Dauphine. When that prince was conftructing a Arong fort on the French territory, Lefdigueres was reproached by the king for allowing it, to which he replied, "Your majelly has occafion for a good fortrefs 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 furnifhed with cannon and ammunition, to take it from him." He performed his promife, and his fervices were rewarded, in 1608 , with the itaff of a marfhal of France, and his eftate of Lefdigueres was erected into a dukedom and peerage. In the fucceeding reign' he faved his old antagonilt, 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 Calvinifts, to accept the poft of commander-in-chief, but he preferved his fidelity to the-king, and accompanied him into the field. Upon the death of the conftable of France, nothing but his religion ftood in the way of his fucceeding to the liigh office, and this obftacle he removed by abjuring the Calvinitic creed. The patent which conferred upon him the office, gave as a reafon for his appointment, that it was on account of "6 his having been always victorious, and never var. quifhed." Having apoltatized 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 againft his party, and was uniformly fuccefsful in the fervice, till his death, in 1626 , when he had attained to the age of eighty-four. Notwithftanding his defects, Lefdigueres had a great mind: while leader of the Calvinifts, his principal domeftic was bribed to affaffinate him : the plot was dif. covered, and taking the man afide, he ordered him to arm, at the fame time he armed himfelf: "Since you have promifed," faid he, "to kill me, try to do it now, and do note forfeit your character for valour by an act of cowardice." The man threw himfelf at his feet, confeffed his crime, and the general not only pardoned, but continued to employ him.

LESIGNA, in Geography, a town of France, in the department of the Aude; iI miles W. of Narbonne.

LESINA, anciently Pbaros, an ifland in the Adriatic, between Brazza and Corzola Nigra, about 44 miles long, and $5-8$ broad, lying from W. to E. in N. lat. $43^{\circ} 30^{\prime}$. In the higheft parts it is rocky and barren, but neverthelefs contains fome good land, yielding abundance of corn. Its principal productions are alfo wine, oil, figs, almonds, faffron, honey, aloes, oranges, wool, cheefe, and falt. Marble, in great quantities, is found on the ifland. Salt-fifh is the chief article of commerce. Its capital is Lefina; which is a fmall, fortified town, at the bottom of a bay near Cape Pellegrino, the fee of a bifhop, and refidence of a governor, with a capacious and fafe harbour. The number of inhabitants is reckoned about $1200 ; 20$ miles S . of Spalatro. N. lat. $43^{\circ} 5^{\prime}$. E. long. $16^{\circ} 50^{\prime}$--Alfo, a town of Naples, in Capitanata, the fee of a bilhop, fuffragan of Benevento, on a lake of the fame name communicating with the Adriatic; almolt totally deftroyed in 1627 by an earthquake; 26 miles N.W. of Manfredonia. N. lat. $41^{\circ} 59^{\prime}$. E. long. $14^{\circ} 30^{\prime}$.
LESKAU, a town of Bohemia, in the circle of Pilfen; 7 miles E. of Plau.

LESKEA, or Leskia, in Botany, an Hedwigian genus of moffes, named by its author in his Hift. Nat. Mufcorum Frondoforum, v. 2. 93, in memory of his friend Lefke, profeffor of Economy at Leipfic, and afterwards of Nat. Hilt. at Marburg, who died in 1786 , aged 35. This genus is by Britifh botanifts united to Hypnum, as agreeing therewith entirely in habit, and differing only in a very minute and uncertain character of the inner fringe, which is furnifhed with 16 fimple teeth, inftead of double or compound ones. See Fringe op Mosses, and Hypnumi.

LESKEN, in Geography, a town of Pruffia, in Pome. relia; 6 miles N.N.W. of Marienburg.

LESKIRCH, a town of Trantylvania; 14 miles W. of Fogaras.

LESKNITZ, or Lesnitz, a town of Silefia, in the principality of Oppeln; 18 miles S.E. of Oppelı. N. lat. $50^{\circ} 25^{\prime}$. E. long. $13^{\circ} 6^{\prime}$.

LESKO, a town of Auftrian Poland, in Gallicia; 48 miles $S$. of Lemberg.

LESKOVE'LZ, a town of European 'Turkey, in Bulgaria; $8+$ miles W.N.W. of Sophia.

LESLEY, Jonn, in Biograply, bihop of Rofs, 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 fome years at the French univerfities, 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 diocefe of Aberdeen. He took a moft active part againft 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 affume the reins of government, he was fent over by the Catholics to perfuade her to throw herfelf into the arms of the Popilh party. He embarked with her at Calais in 1561; and foon after her arrival was created one of the fenators of the college of juftice, 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 revife the fubfifting 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 commiffioners were appointed by queen Elizabeth to examine the difpute between her and her fubjects, the bifhop of Rofs was one of thofe whom Mary chofe for the defence of her caufe. When reafoning and argument were found to be ineffectual, he joined in confpiracies, for her deliverance, which were dangerous to the perfon and government of Elizabeth. He urged the duke of Norfolk to thofe defigns which proved his ruin, and was himfelf involved in confiderable danger: he was taken into cuftody, his papers fearched, himfelf committed to the Tower, treated with the utmoft rigour, threatened with capital punifhment, and, after a long confinement, fet at liberty, on condition that he fhould leave the kingdom. He accordingly went into the Netherlands, and employed himfelf in the moft preffing folicitations to the kings of France and Spain, the German princes, and at length to the pope, in order to obtain Mary's liberation. He publifhed feveral 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 archbifhopric of Rouen ; but on making his vifitation of the diocefe he was feized, imprifoned, and forced to purchafe his liberty by a high ranfom. In 1593, he was nominated to the bifhopric of Conftance. When there was no hope left him of returning to his own country, he retired to a monaftery near Bruffels, where he died in 1596 . He was a man of learning, an able ftatefman, and a faithful fervant and fubject of his lovereign: his principal works, as an author, are, r, his hifory, entitled "De origine, moribus, et rebus 'geftis Scotorum,'" in ten books: of thefe the laft three books are dedicated to the queen, to whom they were prefented in Englifh, before their publication in Latin: and, 2, a geographical work, entitled " Regionum et Infularum Vol. XX.

Scotix Defcriptio." Gen. Biog. Robertfon's Hilt. of Scotland.

LESLIE, Jonn, an Irifh 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 itudies. He afterwards vifited Spain, Italy, Germany, and France for farther improvement, and made a proficiency in polite literature, as well as in the abftrufe branches of lcarding. He was fo great a mafter of the Latin, that it was faid of him when in Spain "Solus Leflius Latine loquitur." He continued abroad twenty-two years, became converfant in courts, and procured the favour and friendfhip of many foreign priaces: 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 refloration. In the church of Scotland he was preferred to the bifhopric of Orkney, and was tranflated, in 1633 , to Raphoe, in Ircland. Here he built a fately palace in the form of a caftle, which was found of great utility in the civil wars, as it fuftained 3 liege, with the bifhop as a kind of commander, who was, in fact, the laft perfon who maintained the Atruggle in defence of the royal caufe in thofe parts. After the reftoration, he was preferred to the bifhopric 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 deftroyed, together with his valuable library and MSS., the fruits of many years collection, in the civil wars. Biog. Brit.

Leslie, Charles, fecond fon of the preceding, was educated in grammar-learning at Innifkilling, and, in 16064 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 himfelf of the Temple, at London. He foon abandoned the ftudy 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 diocefe of Connor. About this time he made himfelf extremely obnoxious to the Popifh party in Ireland, by a zealous oppofition to their doctrines, and by an earnelt attachment to the Proteftant 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 fpiritual offices; and a high-fheriff of their party was appointed for the county of Monaghan. Mr. Leflie, as a magiftrate, and as converfant with the law of the land, was applied to with regard to the legality of the appointment: he inftantly decided that it would be as illegal for the people to permit the fheriff to act, as it would be in him to attempt it. The magiftrates, at the next quarter-feffions, inquired if the fheriffs were legally qualified, to which he replied, that " he was appointed by the king, and was of the king's religion." The anfwer to this was, that they boldly agreed to commit him for intrufion and a contempt of the court. Mr. Leflie, notwithftanding his attachment to the law of the land, had imbibed the doctrines of paffive obedience and non-reliftance, which fo warped his underftanding, that, at the revolution, he refufed to take the oaths to William and Mary. He was, in confequence of this conduct, deprived of his preferments ; and in 1689 withdrew with his family into England. Here he employed his pen in fupport of the caufe and the party which he embraced, and was eiteemed one of the ableft champions which the non-jurors had. He publifhed an anfwer to the "State of the Proteftants in Ireland, under the late King James's Government," by bifhop, afterwards
archbifhop, King. He publifhed a weckly paper, entitled "s The Rehearfal," confiting of dialogues on the affairs of the times: this was continued fix or feven ycars, when the papers were collected and publifhed together ; and it was faid by bifhop Burnet, that the fame thread-of the argument is purfued through them all, againft the liwfulnefs of refift. ance in any cafe whatever, deriving the fource of government wholly from God. Mr. Leflie wrote againft Deifts, Jews, Papilts, Socinians, and Quakers: all his writings he afterwards collected, excepting an illiberal piece againft the learned Tillotion, and publifhed in two volumes folio. The frequent vifits which he made to the continent, rendered him obnoxious to the Britifh government; and the hatred of him was much increafed by a piece, entitled "The hereditary Right of the Crown of England aflerted,'" of which he was the reputed author. He went to Bar-le-Duc to attempt the converfion of the fon of James II. to the Proteftant religion, in the hope that he might one day be fettled on the throne. Towards the clofe 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. In 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 houfe in Glaflough, in the county of Monaghan. He was unqueftionably a man of extenfive learning and great merit, and diftinguifhed by his piety, humility, and integrity. Biog. Brit.

LESNEVEN, in Geography, a town of France, in the department of Finifterre, and chief place of a canton, in the diftrict of Breft ; 13 miles N.E. of Breft. The place contains 2030, and the canton 16,024 inhabitants, on a territory of $167 \frac{\pi}{2}$ kiliometres, in 10 communes. N. lat. $4^{8^{\circ}} 34^{\prime}$. W. long. $4^{\circ} 14^{\prime}$.

LESNICA, a town of Lithuania, in the palatinate of Minfk ; 48 miles N.E. of Mink.

LESNIOW, a town of Poland, in Volhynia; is miles S. of Lucko.

LESNO, a town in the duchy of Warfaw; 35 miles S. of Pofen.

LESOANDELOR, a town of Afratic Turkey, in Caramania; 40 miles S.S.W. of Cogni.

LESPARRE, a town of France, and principal place of a diftrict, in the department of the Gironde; 11 miles N.N.W. of Bourdeaux. The place contains 800 , and the canton 15,247 inhabitants, on a territory of $542 \frac{1}{2}$ kiliometres, in 18 communes. N. lat. $45^{\circ} 19^{\prime}$. W. long. $0^{\circ} 50^{\prime}$.

LESPEDEZA, in Botany, to 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 himfelf was a botanift. 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 morenver is faid to be capitate and fomewhat conical.-The leaves are moftly ternate, rarely fimple.-It appears to be a good genus, and merits further examination, for its fpecies will probably be found rather numerous. Examples are $L$. feffiiifora, (Hedyfarum junceum; Walter Carolin. 184. Medicago virginica; Linn. Sp. Pl. 1096.) a native of Virginia and Carolina: and L. polyfachya, Michaux, t. 40, (Hedyfarum hirtum; Linn. Sp. Pl. 1055.), found in Carolina and Georgia. The habir is flender and fhrubby. Flowers fmall, purplifh, in longifh italked fpikes.
LESSANITZ, in Geography, a town of Bohemia, in the sircle of Kaurzim ; cight miles S.E. of Prague.

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LESSAY, a town of France, in the department of the Channel, and chief place of a canton, in the diftrict 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 ufed by fportfmen for the dung of a wild boar.

LESSINES, in Gengraphy, a town of France, in the department of the Jemappe, and chief place of a canton, in the diftrict of Tournay; fituated on the river Dender, and celebrated for its linen manufacture ; 23 miles W.S.W. of Bruffels. The place contains 3037, and the canton 14,708 inhabitants, on a territory of 115 kiliometres, in 11 communes.

LESSING, Gotthold, Epiraim, 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 fchool, he was admitted, at the age of twelve, to the free-ichool of Meiffen, where he remained five years, and laid in a flock of Greek and Latin. Some odes of A nacreon, which he tranflated at this §chool, were afterwards publifhed in his works. His removal to the univerfity of Leiplic opened a new fcene to him; he paid little attention to the lectures of the profeffors, but ftudioufly fought out the company of the ftudents moft diftinguilhed for talents, and bold and fingular opinions. He became a frequenter of debating clubs, and was not furpaffed by any perfon in the focieties in the originality of his fentiments, and the acutenefs with which he defended them. After he had fpent three years at the univerfity, his father, who could ill bear the expence, urged him to take orders, or to purfue fome profeffion by which he might fupport himfelf. He declined this reafonable propofal, and fet about tranlating, and original compofitions for the ftage. After many changes, and much roaming about, he went to Gottenburg, where he took his degree of Mafter of Arts, with a view to a profefforfhip at Gottingen, but he ftill continued to find fupport by literary employment, which confilted in tranflations, compilations, and fome original pieces. He was a great proficient in the game of chefs, a circumftance that introduced him to the acquaintance of Mofes Mendelfohn; and the printer Nicolai made the third of a literary trio, who mutually fharpened each other's intellectual faculties, and influenced each other's opinions. Ramler the lyric poet, Sulzer the critic, and Suffimilch the flatiftic writer, were occafionally of their parties, and Germany perhaps could not then boaft of converfations more literary and colightened. 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 correfpondence. 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 Pruffia, 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 circumftances were fo narrow, that he was obliged to fell his library for fupport. At this critical juncture he met with a generous patron in Leopold, heir-apparent to the duke of Brunfivick, through whofe means he was appointed librarian at Wolfen.

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buttle. One of the fruits of this very defirable fituation was a periodical publication, entitled "Contributions to Literary Hifory," containing notices and extracts of the moft 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 Chriftian 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. In 1778 they were fuppreffed. Leffing, from his rifing fame, and connection with prince Leopold, with whom he went on a tour to Italy, was fo diftinguifhed 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 Brunfwick, who, by his acceffion in 1780 to the fovercignty, was enabled to augment his favours towards him. His latter publications were "Nathan the Wife;" a fecond part of the fame 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 inland of Denmark, in the Scaggerac, nine miles long; and from one to four wide; within are fome fmall villages, and about it fome inets; about 12 miles from the coaft of Jutland. N. lat $57^{\circ} 17^{\prime}$. E. long. II $^{\circ}$.

Lessoe, a town of Norway, in the province of Aggerhuus; 145 miles N.N.W. of Chrittiania.

LESSON, in the Manege, is ufed for any piece of initruction in that art, whether given to the fcholar or the horfe.

Lessons, among Ecclefiafical Writers, portions of the holy fcripture, read in Chriftian churches, at the time of divine fervice.

In the ancient church, reading the fcriptures was one part of the fervice of the catechumens, at which all perfons were allowed to be prefert, in order to obtain inftruction.

The charch of England, in the choice of leffons, proceeds as follows; for the firt leffon on ordinary days, he directs, to begin at the begianing of the year with Genefis, and fo continue on, till the books of the Old Teftament are read over, only omitting the Chronicles, which are for the moft part the fame with the books of Samuel and Kings, and other particular chapters in other books, either becaufe they contain names of perfons, places, or other matters lefs profitable to ordinary readers.

The courfe of the firlt leffons for Sundays is regulated after a different manner. From Advent to Septuagefima Sunday, fome particular chapters of Ifaiah are appointed to be read, becauife that book contains the cleareft prophecies concerning Chritt. Upon Septuagefima Sunday Genefis is begun, becaufe that book, which treats of the fall of man, and the fevere judgment of God inflicted on the world for fin, beft fuits with a time of repentance and mortification. After Genefis, follow chapters out of the books of the Old Teftament, as they lie in order ; only on feftival Sundays, fuch as Eafter, Whitfunday, \&c. the particular hiftory relating to that day is appointed to be read; and on the Saints days, the church appoints leffons out of the moral books, fuch as Proverbs, Ecclefiaftes, Ecclefiafticus, \&c. as containing excellent initructions for the conduct of life,

As to the fecond leffons, the church obferves che fame courfe both on Sundays and week-days; reading the gofpels and Acts of the Apofles in the morning, and the epittles in the evening, in the order they fland in the New Tefta-
ment; excepting on faints days and holy dayz, when fuch leffons are appointed, as either explain the myftery, relate the hiftory, or apply the example to us.
Lessows for the Virginal, Spinet, and Ilarpfichord, have undergone great changes in the denomination and arrangement of their movements, from the time of queen Elizabeth to the prefent. In that princefs's virginal book, now in the poffeflion of vifcount Fitzwilliam, we find pavana in general to be the flow movement, and galliarda the quick. Now and then a fantafia, a coranto, and a gigg; but as fingle movements, not parts of a fuite of leffons. Praludium, or prelude, frequently occurs without leading to any other movement; as does paffamerzo, alman, toccata, once; but the reft are chiefly old tunes with variations. Thefe pieces are all written on a ftaff of fix lines.
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 compofition. They are admirably tranfcribed by John Baldwayne, a finging-man of Windfor, and a celebrated copyift 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 leflons of voluntaire, all neatly written on four-ftaved paper of fix lines.
Thus far all our mufic for keyed-inftruments was in MS. But in the reign of James I the following book appeared in print, ftill on fix-lined paper. "Parthenia, or the Maydenhead of the firft Muficke that ever was printed for the Virginalls; compofed by three famous Mafters; William Byrde, Dr. John Bull, and Orlando Gibbons, Gentlemen of his Majefty's moft illuftrious Chapel. Dedicated to all the Mafters and Lovers of Mufick." "The pieces in this collection feem to follow in fuits, of which the firft is of Bird's compofition; as preludium, pavana, galliardo, all in G minor; then a prelude, and a galliardo in $\mathbf{C}$; and a pavan, and two galliardos in $\mathbf{G}$, by the fame.
The next author in the collection is mafter doctor Bull, whofe 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 galliarda in C natural; a fantafia in four parts, in A minor; a pavan in do.; the queen's command in $\mathbf{C}$, 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 firlt 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 thofe of the firf, as the firt and third fet of Corelli's fonatas are called "Suonate da Chiefa," and the fecond and fourth fets, "Suonate da Caméfa."

Scarlatti's leffons are almolt all fingle pieces, and we believe Alberti's were the firlt harpfichord leffons publifhed in England, that were called fonatas, "Suonate da Cimbalo," which, without accompaniments, is fill the general title of what ufed to be called leffons.

LESSOR, a legal term applied to the landlord, proprietor, or perfon who lets the land. See Lease.
LESTANO, in Ceography, a town of Italy, in the Friuli; 15 miles W: of Udina.
${ }_{4} \mathrm{E}_{2}$
LESTI,

## L E T

LESTI, a town of Sweden, in the government of Wafa; 54 miles E. of Jacobltadt.

LESTIBUDESIA, in Botany, named in honour of M. Leltiboudois, a French naturalilt. Aub. du Petit 'Ihouars, Plant. Ins. Afric. v. 1. 53. t. 16. Brown, Prodr. Nov. Holl. v. 1. $4^{13}$.

This genus is feparated from Celofia only on account of its ftigmas, which are three or four, flender and recurved, inftead of being capitate or two-lobed. It includes Celofia paniculata and trigyna of Linneus, with fome others, but Mr. Brown hints that it is probably not a natural genus, nor eftablifhed on fufficient grounds. His L. arborefcens, the only fpecies mentioned as found in New Holland, was gathered by fir Jofeph Banks in the Tropical part of that country. It has a !arubby twining Item; elliptic-oblong, fomewhat pointed, finooth leaves; terminal as well as axillary panicles; and three Itigmas, which, according to Dr. Solander's remarks, are deeply emarginate. The manner in which the fruit burfts has not been oblerved.

LESTIGUANO, in Geography, atown of Etruria; 27 miles W. of Volterra.

LESTOFF. See Lavestoff.
L'ESTR ANGE, Sir Roger, in Biozrapby, was a great lover of mulic, and a performer. His family, one of the molt ancient in Norfolk, were always great patrons of mulic, and mulicians. Jenkins was frequently an inmate at Hunfton, where, during the feventeenth century, when times were tranquil, profeffors and dilettanti frequently affembled to ling madrigals, and make ufe of feveral chelts of viols in the performance of fancies in fix parts, by the beft compofers of the times.

LESTRIGONS, in Ancient Geograply and Fabulous Hifory, inhabitants of Sicily towards the S.E., who are reprefented to have been a ferocious people. It is reportcd that they took Elpe, the daughter of Polyphemus the Cyclop, by force from Ulyffes, who had feized her and was running away with her, and returned her to her father. If we may credit the poets, both the Leftrigons 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 Leftrigons were anciently called Leontini, a name derived from their barbarous and cruel manners; "à Leontinis moribus."

LESTWITHIAL, in Geography. See Lcestwithial.
LESZAISKO, a town of Aultrian Poland, in Galicia; 28 miles N.W. of Przemy 1 l.

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 flricken down, then the fail is loofed below, before they hoift the yard.

Let-fall is not properly faid of top-fails, becaufe 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 trietness the term let-fall belongs only to the main-fail, fure-fail, and fpritfail, when their yards are hoifted up aloft.

Let-in, in Ship Building, is the letting of one thing into another for fupport or fecurity, as the beams into the clamps, carlings into the beams, \&c. by fcores being cut to receive them.

LETAC, in Geography, a cape on the W. coaft of the ifland of Jerfey; fix 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; yo miles N. of Anarghia.

## L. E T'

LEIHAM, a town of Scotland, with a market, in the county of Fergus; five miles E. of Forfar.

LETHARGY, in Medicine, $\lambda n \theta \alpha \rho \gamma \sigma \rho, ~ \lambda \eta \theta \alpha \xi \gamma^{\prime} \alpha$, fignifying literally an indolent forgetfulnefs, (defidia obliviofa, from $\lambda r, \$$ n and xiygor, is commonly ufed to denote an inceflant and irrefiftible fleepinefs, accompanied by an impaired ftate of the memory, but without delirium.

The lethargy is, in fact, a minor degree of apoplexy, and originates from the fame caufes, and implies a fimilar ftate of preflure on the brain, the common centre of the nervous energy, as occafions that difeafe. Various denominations have been given to lethargic complaints, according to the difference of the degree of feverity, and fome nofologitts have treated of thefe varicties as diftinct fpecies of difeafe. Sauvages, for inftance, has three genera of fleepy affections, Letbargus, Cataphora, and Carus. The cataphora be defines, a fate of fomnolency, from which the patient may be eafily roufed, without fever, delirium, or lofs of memory : the lethargy, a foporofe ftate, from which the patient may be eafily roufed, accompanied with the greateft torpor of the memory and imagination, and with fever; and carus, a profound fopor without froring; for when the fnoring is prefent, he denominates it apoplexy. (See his Nofol. Method. Claifs iv. Ord. 5:) But it is obvious, as Dr. Cullen long ago obferved, that thefe various appellations and definitions defignate the fame difeafe, in different degrecs of feverity ; we may, therefore, refer to the article Aroplexy for a general view of the nature of the malady. We may obferve, at prefent, that it originates from fome compreffion upon the fubftance of the brain, by which its functions are impeded, and its influence on the fyitem at large, through the medium of the nerves, obitructed; that fuch compreffion may be occafioned by fractures of the fkull, when the fractured portion of the bone is depreffed inwards; from tumours within the head; from over-diftention of the blood-veffels of the brain; or from fluids effufed in or upon the brain ; but that the moft frequent of all thefe caufes of compreffion is a plethoric ftate, or an accumulation and congeftion of blood in the venous veffels of the head, operating, according to its degree, in producing over-dittention or effufion.

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 progrefs in the outfet, before a rupture of the veffels of the brain, or actual effufion, takes place, muft be obvious; for, however impracticable it may be to remove the fluids fo effufed, or to occalion their abforption, fo as to preferve the life of the patient, or to fave him from an incurable palfy, if hefurvive; yet, in the previous itate of mere plethora of the veffels of the brain, the proper remedies may be employed with every profpect of removing the lethargic fymptoms, and warding off the impend. ing 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, fcarification, and cupping, blifters, or iffues, where the danger is lefs imminent. At the fame time, the alvine excretions fhould be promoted by proper laxative medicines, the diet fhould be light, and rather fpare, and unftimulating, confilting of a large proportion of vegetable matter; and fermented liquors of all kinds fhould be very fparingly taken, or altogether difcarded. Exercife in the open air fhould be regularly perfifted in, and the hours appropriated to fleep fhortened, In a word, a lethargy is to be confidered as an impending apoplexy, or an apoplexy already begun, and to betreated accordingly. Sce Apoplexy.

LETHE, $\Delta i \theta n$, in the Anciont Mythology, one of the
rivers of hell，fignifying oblivion or forgetfulnefs；its wa－ ters．according to poetic fiction，having the peculiar quality of making thofe who drank them entirely forget every thing that was palt ；or，according to Virgil，＂longa potant ob．＂ livia vite．＂

Lethe．Letb，or Lathe，a meafure or portion of land， making one of the ancient divifions in England．

King Alfred divided England iato counties，as it ttands at prefent ；thofe counties he fubdivided into hundreds or tith－ ings．The hundred was a divilion，wherein were a hundred officers to fecure the peace；the lethe or lathe comprehended three or four of thefe hundreds．

Lethe was alfo the jurifdiction of a vifcount：or a kind of affize，held once a year in cach village，about Michael－ mas．Whether this was inflituted by Alfred，or not，is a queftion．

LETHERS，in Geography，a town of Hindooftan，in the circar of Sumbulpour； 16 miles W．N．W．of Sumbul－ pour．

LETHRABERG，or Ladreborg，a town of Den－ mark，in the ifland of Zealand；four miles S．W．of Roef． child．

LETHUM，in Ancient ATythology，was diftinguifhed 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 fup－ pofed to have its proper refidence in hell；and by mors，or zwortes，the immediate caufe of each particular inftance of moriality 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 beaits，within his toils．They re－ prefent Lethum as nearly related to Sleep；and Valerius Flaccus，in particular，acquaints us that they wese bro－ thers．Val．Flac．viii．ser．74．Spence＇s Polymetis，p．261． 263.

LETI，Gregory，in Biography，was born at Milan in 1630. He received his education at the Jefuits＇college at Cofenza， and afterwards paffed fome years in an unfettled ita $e$ e，manifert－ ing a ftrong repugnance to the ecclefialtical profeffion，which was propofed to him by his uncle the bifhop of Aquapen－ dente．Falling in company，at Genoa，with an officer of the Calviniltic perfuafion，he became a convert to the re－ formed religion，and openly arowed it at Laufanne．He went to Genera in 1660，married there，and fettled as a man of letters．His talents were held in fuch eltimation，that the right of citizenfhip was prefented to him gratuitoully； but his temper was fo farcaltic，as to involve him in great troubles，and in 1680 be retired to England．Here he was favourably received；a penfion was granted him，and he was promifed the office of hiftoriographer；but before he obtained it，he was ordered to quit the kingdom on account of fome freedom which he had exercifed in a work entitled＂Teatro Britannico．＂He went to Amfterdam，became acquainted with the celebrated Le Clerc，who married his daughter， and obtained the title of hiftoriographer of that city．Leti was a moft indultrious writer；his works are faid to amount to a hundred volumes．Molt of them are hittorical，but they are frequently deflitute of truth，and cannot be relied on unlefs fupported by other authority than the dictum of the writer．All his works are written in Italian，in a lively ftyle，but diffufe and void of talte．His beft productions are the lives of Sixtus $V$ ．；Charles V. ；queen Elizabeth； Philip II．；and Cromwell．He died fuddenly in the year 1701．
Letr，in Geograpby，a fmall inland in the Eaft Indian

Fea，near the idand of Timor．N．lat．8： $28^{\circ}$ ．E．lung． $127^{\circ} 15^{\prime}$ ．
LETLING，a town of Brandenburg，in the New Mark； five miles E．of Cultrin．

LETNA，a river of Ruffia，which runs into the Viatka， at Podrelikoi．
LETSCHKOM，or ODISEH，a town of Afiatic Turkey， and capital of Mingrelia；the refidence of the chief and fee of a Greek archbifhop ；$G o$ miles N．of Cotatis．

LETTER，or Letterbach，a town of Bavaria；is miles N．of Bamberg．
LETTER，Litera，a character either in print or writing， by which any people have agreed to exprefs one of the founds，ufed in convesing their thoughts to each other in fpeech．

Letter is by fome defined a fimple uncompounded found of the voice，that cannot be fubdivided into any more fimple， and generally marked with a particular character．
But it mult be owned that，Atrictly fpeaking，a letter is not the found itfelf，but rather the fign of a Yound；for $\gamma_{i} x_{\mu} \mu \nu$ ，
 litera is formed from litus，the particip＇e of linere，to fmear，or mark；whence obliterare fignifies ta blot out．

Where a lign or character does not exprefs a found en－ tirely fimple，but one refolvable into feveral，it is not fo properly a letter as an abbreviation，containing in itfelf as many letters as its power does fimple founds．This is evident in the Latin $\mathcal{E}, x$ ，and the Greek $\xi, \dot{\psi}, 5, \hat{\alpha}$ c．which are compofed of $e, t, k, s, v \sigma, \pi \tau, \sigma, S \mathrm{SC}$ ．

On the contrary，a fimple found，though expreifed by feveral characters，is yet to be efteemed one letter；for $t h$ ， $p h$ ，are fingle letters；as much as $\phi, \theta$ ，and $f$ ．

The letters，$f, g, b, k, q, x, y, z$ ，were unknown to the anctent Romans，as is proved by Daufquius in his Orthogra－ phy，where he traces the origin of the feveral letters．See $\mathrm{F}, \mathrm{G}, \mathrm{H}$, \＆c．
Grammarians diftinguifh letters into vozuels and confonants ； into mutes，dipbthongs，liquids，and cbaralerifics．See each of thefe terms refpectively．
The Hebrews divide their letters into guttural，as $a, b, c b$ ， $g n$ ，aleph，he，cheth，hain，expreffed by yño；dental， as $z, s, t s, r, s b$ ，zain，famech，tfade，refch，fchin，ex－ preffed by $\cup$ ？ phe，exprefled by the word 7 Ian ；lingual，or thofe chiefly formed by the tongue，as $d, t, l, n, t h$ ，daleth，teth，lamed， nun，thau，expreffed by תגל：ר－；and palatal，as $g, i, c, k$ ， ghimel，jod，caph，koph，expreffed by P⿳亠丷厂⿰㇒⿻コ一⿰⿷匚一亅⿱一𧰨刂灬．
Printers diftinguifh their letters into capital，majufcule， initial，or upper－cafe letters，which ferve for the titles of books，proper names，scc．；and minufcule，fmall，or under－ cafe letters；which are again divided，according to their fize，into pearl，nonparcil，pica，greatprimer，cannon，\＆c．
They have allo their flourihed letters，engraven on wood or metal，which take place of the illumined letters of the an－ cient manufcripts．

There are letters of various fizes，or bodies；each of which，again，are fometimes calt with the Roman，fometimes an Italic，and fometimes an Englifh，or Black letter face． There are alfo bodies with Greek，Hebrew，Arabic，the mulic face，\＆c．

Letters make the firlt parts or elements of grammar，con－ ftitutiag the fubject of crtbograpply；an affemblage of thefe compofes fyllables，of thofe zuards，and of thefe fentences． See each under their titles．

## LETTER.

The alphabet of every language confifts of a cextain number of thefe letters, which ought to have a different found, figure, and fignification. See Alpifabet.

As the difference of articulate founds was intended to exprefs the different ideas of the mind, fo one letter was originally intended to fignify only one found, and not, as at prefent, to exprefs fometimes one found, and fometimes another: which practice has brought a great deal of confufion into the languares, and rendered the learning of the modern tongues infinitely more difficult than it would otherwife have been. This confideration, together with the poverty of all the known alphabets, and their want of fome letters to exprefs certain founds by, has occafioned feveral attempts towards an univerfal alphabet, to contain one enumeration of all fuch fingle founds or letters as are ufed in any language. A thing of very confiderable ufe; a fpecimen of which is given us by Mr. Lodwick, in the Philofophical Tranfactions. See Univerfal Cilaracter.

According to Crinitus, Mofes invented the Hebrew letters; Abraham the Syriac and Chaldee; the Pheenicians thofe of Attica, brought into Greece by Cadmus, and thence by the Pelafgians into Italy ; Nicoftrata the Latin; Ifis the Egyptian: and Ulphilas, about three hundred and feventy years after our Saviour, thofe of the Goths. Yet as to the firlt letters, what they were, who firlt invented them, and among what people they were firft in ufe, there is ftill room to doubt; however, fetting afide conjectures and prejudice, the bufinefs of antiquity feems to lie between the Egyptians and Chinefe. Philo attributes the firft invention of letters to Abraham; Jofephus, St. Irenxus, and others, to Enoch; Bibliander, to Adam; Eufebius, Clement Alexandrinus, Corn. Agrippa, \&c. to Mofes; Pomponius Mela, Herodian, Rufus Feftus, Pliny, Lucan, \&c. to the Phoenicians; St. Cyprian, to Saturn; Tacitus to the Egyptians ; and fome to the Ethiopians.

The Egyptian mummies and obelifks prove a great antiquity on the fide of the hieroglyphics; but if the Chinefe chronology may be credited, their characters are much more ancient than thofe of the Egyptians. The Chinefe make Fohi, the firlt of their kings, fuppofed 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 thoufand nine hundred and fifty years before Chrift, during all which time they pretend to have certain and written accounts in their books. If this holds true, their character mult be older than Mofes by fourteen hundred years, and even prior to Menes, the firft king of Egypt, by five hundred years; fo that the Chinefe letters appear to be the molt ancient of that kind; and the book Yekim, faid to be written by Fohi, the molt ancient book.

But as China is fo remote, and had fo little communication with thefe parts of the world, we may reafonably make another enquiry into the original of letters in the hither parts of Afia, Egypt, and Europe. Here, indeed, the Egyptians feem to have the belt title. It is more than probable, from the obelifks, \&cc. that their hieroglyphics were the firlt manner of writing, and the original characters in thefe parts, as being prior to Mofes; and were made, at leaft in great meafure, while the Ifraelites were flaves among them, and confequently not well qualified for inventions fo very curions and judicious.

To this fource the learned bifhop Warburton afcribes the origin of alphabetical writing among the Egyptians: for as philofophy advanced, and their learned men wrote much, the exact delineation of hieroglyphic figures 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 charaters, which being at firtt 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 bieroglyphical, and led to the compendious ufe of letters by an alphaber, which method of writing, as the ancients inform us, was invented by the fecretary of an Egyptian king, and firlt ufed for fecrecy in the conveyance of letters of ftate, whence it was called cpiftolary writing: but afterwards letters became common, and, as he obferves, hieroglyphics fecret and myfterious. This political alphabet, he adds, foon occafioned the invention of a facred one, ufed by the prietts, and called bierogrammatical. But the precife time of the inverition of Egyptian letters cannot be fo much as guefled at, becaufe hieroglyphics continued in ufe long after letters had been found out: it is certain that they were very early, becaufe the invention of them was afcribed to their gods. Bilhop Warburton farther conjectures, that Mofes brought letters with the relt of his learning from Egypt, and that he both enlarged the alphabet, becaufe the Hebrew alphabet which he employed in the compofition of the Pentateuch is confiderably fuller than that which Cadmus brought into Greece; and altered the fhapes of the letters, reducing them into fomething like thofe fimple forms in which we now find them, in order to prevent the abufe 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, Mofes would have recorded the hiftory of their in vention, as the beft fanction to their ufe and beft 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. I. 124, \&c. See alfo on this fubject 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 fupernaturally imparted to our firft parents, or difcovered very foon after the Creation by the effort of their own powers. Others have fuppofed that alphabetical letters were introduced very early after the deluge, about the time of the difperfion of mankind, to which period the records of the Chaldean aftronomy very nearly extend. Mr. Shuckford, who fuppofes 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 firft 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. Hift. vol. I. P. 248.
But to thefe conjectures it may be replied, that we have no authentic relation of any alphabetic character before the flood; the account of the infcription upon pillars by the firt Mercury from Manetho, or of Seth mentioned by Jofephus, being too fabulous to deferve credit. Be. fides, if they had been in ufe among the patriarchs after the deluge, many occafions occur, in which they would not have been omitted: and aspwe have no account of the ufe of alphabetic characters in epiftles or contracts, or for other purpofes to which they would naturally be applied, we may infer that they were not known. T'o 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 afcribed the invention of letters to the

Arabs,
＇Arabs，before the time of Mofes；but when we confider the rudenefs of their lives and manners，this opinion is by no means probable：and，therefore，the greater number of writers among Jews and Chriltians，both ancient and modern， have contented themfelves with tracing their origin to Mofes， fuppofed to be the fame with the Egyptian Thoth or Hermes，mentioned in the hiflory of that nation ；alleging that God taught him the uie 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 underitood to mean only that they were written by a divine order and direc－ tion，as is evident by comparing Exod．xxxiv．2\％，28．and ch．x．4．It has been faid by fome of the advocates of this opinion，that the elements of language were thus fuperna． turally revealed to Mofes upon the firft arrival of the If－ raelites before Horeb，but that their characters，with the arriangement of them，might be left to his difcretion．But it feems more probable，that letters were at this time well known to the Irraelites，as God thought fit to deliver the firt elements of their religion in that kind of writing：more efpecially as the hiftory of fo momentous a circumitance is not recorded；a circumftance，the memory of which would have been one of the greateft barricrs againft idolatry．From the Ifraelites，it is fuppofed this art of alphabetical writing paffed to the Syrians，and from them it was communicated to the Phonicians and Egyp－ tians：though it feems probable that it was of a more an． cient 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 Midian－ ites，fprung from Abraham by his concubine Keturah，to have inftructed Mofes in the knowledge of writing．

Neverthelefs，whether Cadmus and the Phoenicians learnt letters from the Egyptians，or from their nearer neighbours of Judea and Samaria，is a queftion；fince fome of the books of the Old Teftament，being written in letters，is more likely to have given them the hint，than the hieroglyphics of Egypt．But when or wherefoever the Phoenicians learnt this art，it is generally agreed，that Cadmus，the fon of Agenor，firft brought letters to Greece；whence，in the following ages，they fpread over the reft of Europe．

Herodotus，in his fifth book intitled Terpfichore，informs iss，that thofe Phoenicians who accompanied Cadmus into Greece，and fettled there，among many other arts and fci－ ences，introduced into that country the knowledge of letters， which the Greeks，in his opinion，were ignorant of till that time：their firit letters were fuch as were in ufe among the Phornicians；but fome time after they altered them a little， both with regard to their make and found ；which alteration fome have fuppofed to have been the change of the Hebrew charaEters into thofe that were afterwards called the Sama－ ritan ；and as at that time many of the neighbouring parts were inhabited by fuch as were originally Ionians，who alfo had received their letters from the Phœsicians，they mixed the one with the other；and hence thofe characters were termed Phœenician，becaufe they were brought out of Phæ－ nicia into Grecce．Herodotus alfo adds，that he faw at Thebes，in Bootia，in the temple of Ifmenian Apollo，three tripods，that had inferiptions upon them in Cadmean let－ ters，which very much refembled the Ionic．The time of this expedition of Cadmus into Greece，is fixed by fir Ifaac Newton to about the 1045 th year before Chrift．The num－ ber of letters which Cadmus brought into Greece，accord－ ing to Arillotle，as cited by Pliny，was eighteen；but ac－ cording to Plutarch and Pliny himfelf，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 altcrations and improvements introduced into Greece have led fome writers to afcribe the invention of the alphabet to the Greeks：thus，Voffus de Arte Gram．lib．i．cap．10．afferts，that Cecrops，who was much older than Cadmus，was the firft author of the Greek let－ ters；and others afcribe 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 Phœenicians and Egyptians．Dio－ dorus（lib．v．）fays exprefsly，that they were invented by the Syrians，and communicated by them to the Phœ⿱㇒日勺心㇒icians，who changed the form of the characters brought into Europe by Cadmus．Pliny，（Nat．Hilt．lib．vii．cap．56．）fays，that he is of opinion，that they were Affyrian，though he acknow－ ledges that others thought they were invented by the Egyp－ tians，and that Mercury was their firlt author．Diodorus， （lib．ii．）afcribes the invention of them to the fame perfon；and likewife Plutarch Sympof．lib．xx．cap．3．and Cicero de Natura Deorum，lib．iii．And the era of this invention is com－ puted 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． $\mathrm{T}, \Delta, \mathrm{H}, \mathrm{K}, \Lambda, \mathrm{P}, \mathrm{T}$ ，whofe original figures were retained by the Grecks with little va－ riation．As to the Latins，all writers agree，that they received their letters from the Greeks，being firlt taught the ufe of them by fome of the followers of Pelaigus，who came into Italy about 150 years after Cadmus came into Greece；or by the Arcadians，whom Evander led into thefe parts about 60 years after Pelafgus．Pliny（iib．vii．cap． 56 ） and Solinus imagined the Pelafgi to have been the firft authors of the Latin letters；but Tacitus（lib．xi．p．131．） was of opinion，that the firft Italians were taught letters by the Arcadians；and Dionyfus Halicarnaffus（lib．iii．）ex－ prefsly affirms the fame thing．That the Latin letters were derived from the Greek feems very probable from the fimi－ litude which the ancient letters of each nation bore to one another．Tacitus（Annal．lib．xi．）obferves，that the fhape of the Latin letters refembled that of the moft ancient Greek ones；and the fame obfervation was made by Pliny， lib．vii．cap．58．and confirmed from an ancient table of brafs infcribed to Minerva．Scaliger Digreff．ad Arnum Eufeb． 1617，and Voffus，lib．i．cap．24，25，have adopted and fup－ ported the fame opinions．See thole citations in Shuckford＇s Conn．vol．i．p．223，\＆c．
Thus we find，that Greece was the centre from which the rays of fcience fhot into the weftern world；and the barbarous nations which penetrated into Italy towards the clofe of the Roman empire，carried arts and learning back into the North；or the knowledge of letters might be in－ troduced among the northern nations from the borders of Afra，in an earlier age．（Sharpe＇s original Powers of Let． ters．Obfervations on Alphabetical Writing，1772．）Rud－ becks，who，in his Atlantica，claims the glory of all in－ ventions，from all other rations，for the Swedes，maintains， that the Ionians had letters before Cadmus；that at the time of the liege of Troy，the Greeks had but fixteen letters，whereas the Phonicians had twenty－two ；whence he concludes，that it was not either Cadmus，or the Phoeni－ cians，who taught this art to the Greeks．But，becaufe the arcient northern nations had juft fixteen letters，like the Greeks，he concludes the Greeks muft either have taught them to the people of the North，or have learnt them of them．But becaufe the form and make of the Runic let－ ters is mere artlefs and coarfe than that of the Greek letters， he concludes，that thefe laft muft be derived from the former；
1.3ing it as a principle, that thofe who derive any thing from another. polifh and improve it. He even afferts, that by the goiden apples, which Hercules was obliged to fteal, want be underftood the letters in ufe among the Hyperboreans.

There are few things on which there has been fo much written as on the original Hebrew letters. Origen, Eufebius Cæfarienfis, St. Jerom, \&ec. have made it the fubjeEt 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 Chinefe. Intlead of the alphabetical letters, they at firf, like the Egyptians, ufed hieroglyphics; they painted, rather than wrote; ftriving, by the natural images of things drawn on paper, to exprefs and communicate their ideas to one another.

To remedy the inconveniences of this method, they ehanged, by little and little, their manner of writing, making it more fimple, though lefs natural. They even invented feveral characters, to exprefs things that did not come within the reach of painting to reprefent: as voice, fmell, thoughts, paffions, and a thoufand other objects that have no body or figure. From feveral fimple ftrokes 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 Chinefe; their whole lives being fpent in learning their letters, they have no time to apply themfelves to the ftudy of things, but think themfelves very learned when they are able to read. There are fcarcely any of them that know all their letters; they think it is a great progrefs they have made, when, after forty or fifty years hard itudy, they are able to underftand fifteen or twenty thoufand. But the generality of their learned men come fhort of this. Father Le Compte is of opinion, that the greatef doctor among them never underftood half of their letters well; for the whole number he reckons eighty thoufand. 'This is a prodigious inconvenience to foreigners, of which the miflionaries in that country make loud complaints.

Among the Chinefe letters, there are fome now almoft worn out of ufe, and only preferved out of refpect to antiquity. There is a fecond clafs, much lefs ancient than the former, only ufed in public infcriptions. A third, much more regular and beautiful, ufed in printing, and even in ordinary writing. However, as the ftrokes are to be diftinctly formed, they cannot be written with any expedition. For this reafon, they have invented a fourth kind, where the ftrokes, being clofer, and lef8 diftant from each other, allow them to be written with more eafe and readinefs; and this they call the ranning letter. See Chinese Tongue.
The Americans had no letters before the difcovery of that country by the Spaniards. The Acaanibas engrave their memorable events and epochs on flones and metals; their fongs fupply the reft. 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 recourfe to certain knots of wool; which, by the variety of their colours and ties, ferve intead of characters, and writing. The knowledge of thefe knots, which they call quipos, is one of their great fciences; but which is always kept as a fecret, and never revealed to the children, till the fathers think themfelves at the end of their days. Sec on the fubject of this article Langeage, Grammar, and Writing.

Letters, or Literal Notation, in Mufic. The Greeks
ufed all the twenty-four letters of their alphabet as mufical characters; and thefe not fufficing for all their modes and genera in their natural flate, were fometimes ufed as capitals, fometimes fmall ; fome entire, fome mutilated ; fome doubled, and fome inverted; to the amount of 1620 notes. See Alysius, and Notation.

## Lettre, Dominical. See Dominical.

Letter, Double. See Double.
Letter, Final. See Final.
Letter, Gutural. See Guttural.
Letter Foundery, See Foundehy.
Letter Founders' Furnace. See Furnace.
Letter Founders' Mould. Sce Mould.
Letter, Labial. See Labial.
Letters, Numeral, are thofe ufed, inftead of ciphers, to exprefs numbers.

The Roman numerals are, C, D, I, L, M, V, X ; whick are all formed by defcribing a circle, and drawing two lines through it, croffing each other at right angles in the centre. Soe Character.

Letter, Nundinal. See Nundinal.
Letter is alfo a writing addreffed and fent to one. See Epistle.

By. 9 Geo. I. cap. 22. amended by ${ }_{7} 7 \mathrm{Geo}$. II. cap. 15 . knowingly to fend any letter without name, or with a fictitious name, demanding money, \&cc, or threatening, without any demand, to kill or fire the houfe of any perfon, is made felony without benefit of clergy. And by 30 Geo. II. cap. 24. perfons fending letters with or without a name, or with a fictitious name, threatening to accufe any one of a crime punifhable by law with death, tranfportation, pillory, or any other infamous punifhment, in order to extort money or goods, fhall be punifhed at the difcretion of the court by fine and imprifonment, pillory, whipping, or tranfportation for feven years.

Letters of abfolution were formerly granted by an abbot, to releafe any of his brethren from the obligation of fubjection and obedience, and to make them capable of entering 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 feifin of lands, to receive debts, to fue a third perfon, \&c. And letters of attorney are either general or fpecizl. Weft. Symb. par. I. ftat. $7^{\circ}$ R. II. cap. I3.

The nature of this influment is to give the attorney the full power and authority of the maker, to accomplifh the act intended to be performed. Sometimes thefe writings are revocable, and fometimes not fo; but when they are revocable, it is ufually a bare authority only ; and they are irrevocable, when debts, \&c. are affigned to another; in which cafe the word irrevocable is inferted.

Letters claus, or clofe, are oppofed to letters patenf. See Close Rolls.

Letter of credit, among Merchants. See Credit.
Letters communicatory. See Literde communicatoric.
Letter of exchange. See Bill and Eychange.
Letter of licince, in Trade, an inftrument or writing granted to a man who has failed, or broke, figned and fealed by his creditors; which letter ufually gives a longer time for payment: fo that the debtor, having fuch an affurance, may go about his bufinefs, without fearing an arreit.
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 fubjects of fome other ftate, contrary to the law of mart. Letters of marque, in the Britifh dominions, are to
he granted by the admiralty; and they cmpower the commander of a merchant fhip or privateer to cruife ayaint and make prizes of the enemies fluips and veffels, either at fea, or in their harbours. See Marques.
Letrer mifirue, in the Elefion of a Bijbop. Sce Bishor.
Lemtern mijifue, in Chancory. If a peer is defendant in this court the lord chancellor lends a letter mifitive to him, to requelt his appcarance, together with the copy of the lill: if he neglects to appear, then he may be ferved with a fubpena; if he continues ftill in contempt, a fequeftration i inues out iumnediately againft his lands and goods, without any of the meffice procefs of attachments, \&c. which are directed only ayaint the perfon, and therefore cannot affect a lord of partiament. The fame procefs iffues againft a member of the hourf of cormmns, except that the lord chancellor doss not fend hima any letter mififive.
Lertens 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 himfelf he could not do. They are fo called, on account of their form ; as being open with the feal afired, ready to be flewn for the confirmation of the authority ziven by them ; and ufually directed or addreffed by the king to all lus fubjects at large, thus, and in fome other refpects, differing from clofe leterers. See Close Rolls.
Common perfons may grant letters patent : but they are rather called patents, than letters patent: yet for diitinction, thofe granted by the king, are fonietimes called letters patent royal.
Letters patent conclude with tofle meiffo: charters with biis tefiliur. See Patest.
Letrens of refpite, letters iffued out by a prince, in favour of honeft unfortunate debtors, againit too rigorons creditors, whereby payment is delayed for a certain term.

The ufe of thefe letters is very ancient. Caffidorus obferves, they were in ufe in the time of Thicodoric, king of the Goths; others will have them introduced towards the end of the eleventh century, by pope Urban II. in favour of thofe who went on the croifades.
They are fill in ufe in France and fome other countries, and take their name, à refpirando, becaufe they give the debtor a breathing time.
St. Louis granted three years refpita to all who made the voyage of the Holy Land with him.
Letters circular, dimilorry, frank, monitors, pacifc, paf. chal. Sce the feveral adjectives.

Letters of fafecconduc. See Safe-conduc.
Lettere, in Geograpby, a town of Naples, in Prin. cipato Citra, the fee of a bithop, fuffragan of Amali; ; 12 mies W.N.W. of Salerno. N. lat. $40^{\circ} 43^{\prime}$. E. long. $14^{\circ}$ $20^{\prime}$.

## lettered, Letrados. See Literati.

Letterkenny, in Georreppby, a towninip of America, in Franklin county, Penniylvania; containing 1497 inlabitants.
Lettenkenny, a pont-town of the county of Donegal, Ireland, fituated on the river Swilly, over which it has a bridge. It is Irg miles N.W. from Dublin.

LETTERN, from Ledrimum, the reading defk in ancient churches, \&cc., from which the epiltles and gofpels of the liturgy were read. Thie defss for the former frequently reprefented the prophet Mofes with his horned countenance, thofe for the latter an eagle, the well-known emblem of St. John the Evangeliit.

LETTES, a people of Ruffia, derived from the Slavi and evincing a near affnity with the Vendi. Originally they were one people with the Lithuanians; as is evident from Vol. XX.

## I. E T

the identity of their language and even of their names. In the midalle ages the following denominations are ufed withan out dittinction ; viz. Letthnia, Letthovia, Lithavia, Litfonia, Lottavi, Litthvini, Letthovini, Ictithvani, Letzonce, \&ic. Probably, fays Tooke, the Lettes ubtained their particular name from their firt hometlead. In the circle of Valk. not far from the town of Vendra, a river named Lecta takes its rife; this river is called in Lettifh "ta Latte," and a Latte is in their languare Latvis, a man living by t! river Latte. 'I'll towards the end of the twelfth centut: Lisonia or Lettland was entirely unknown to the Germe: hititorians; it is mentioned only by Danes, Swedes, and Ruflians. Dy the two former on occalion of their piracie: and by the Rufitans for denoting their dominion cover that country. Athough Neftor, the oidelt and moit authemtic Ruffian amalift, does not exprefsly mention the Leiter; this may poflibly be owing to their not being at that time a particular nation diftinct from the lithuanianso It appears unqueftionable from many teftimona:s, that the diftrict inhabited by the Lettes on the Latic already belonged to Rufita in the earliest periods of its monarchy; it nesertheleis appears that Livonia had then no fettled conititution, nor was bound to the parmet date by any firm political tie. (See Livonht.) 'ithe homellead of the Lettes is not the whole of Livonia, but only a part of it which is called Leteland, confiling of four of the nine diftricts or circles into which Livonia, or the prefent viccroyalty of Riga, is divided; the remaining five circles being inhabited by Etthonians. Befides, the Krures in Couriand, Semigallia, and the bilhopric of Pilten are true Lettes; by whom, in part, the Lettifh language is fpoken in the greateit purity; and thefe people are moftly degenerated in Polifi Livonia, where they are mized with Poles and Rufo fians. The number of them at prefent cannot be properly afcertained; but in the vice-royalty of Riga alone, there were upwards of 226,000 Lettes, according to the batt cenfus. At prefent they are no longer known as a feparate people; they were mingled by imperceptible degrees, and at lait blended with the Lettes, the Efthes, and the Coures, as they are ufually called, the Lettonians, the Efthoniars, and Courlanders. The Lettes, or Lettonians, are reprefented as a people always peaceable, induitrious, hof pitable, frugal, and of a fomewhat better difpolition than the Efthonians; and they inhabited the greater part of the Venden ditrict, and extended themfelves cuen 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 affnity with the Courlanders, or Coures, and that they are properly of Lithuanian, or in general of Slavonian origin. At prefent they occupy two ditricts, which botk 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 Ethonians, they are more numerous than thoy were in the twelfth century. The Lettes call themfelves Latwertis.

Both Efthonians and Lettonians, admitting many exceptions, are addicted to intemperance. Without beer and brandy they have no conception of pleafure. 'The arged in particular are hard drinkers, and contimally fmoke tobacco. They derive alfo a great part of their pleafure from fanging and mulic. At their work in the fielh, as well as at thenr play, the girls are always finging. The moit ufual inftrument with both nations is the bag-pipe, made by themfcives, and founded in proper time, in two keys, with great dexterity. The miferable horizontal harp, and the fiddle,
which

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which the Lettes are very fond of at all their feflivals, were firt introduced among thera by the Germans. They are alfo very fond of dancing. Among their favourite fummer paitimes is the fwing; and this diverfion, for which there is ascommodation in every village at every houfe of entertain. ment, is in high vogue in Eafter. In hot weather fwimming is much practifed by perfons of all ages and fexes; and the boors without exception are paffionately ford of fcalding hot-baths. Infidelity towards their malters, diftruft, a difpofition to cheat and fleal, and fuch like, are the vices to which they are addited, 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 devifing means to impofe upon their malters. Againtt them they have frequently rifen in rebellion. Lying, curfing, and fwearing are very current among them. Of their religion we thall only fay, that when they were heathens, they were inuch given to fupertition. Their paganifm, it is faid, was very fimilar to that of the Celts and ancient Germans. They Jad 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 lipring, or under the fhade of a tree; and reckoned thefe places facred. They believed in inferior deities, to whofe care and government certain regions were allotted, and whom they much feared to offend. They had a god Thou, to whofe infiuence they afcribed all aerial phenomena. Of the places and groves, where the ancient Lieflanders, as well Elthonians as Lettonians, were accuftomed to perform the holy rites of paganifm, many, notwithftanding the ftrict orders that have been iffued for their demolition, ftill remain, and they teflify towards them an awful reverence. Offerings of wood, wax, yarn, bread, \&c. are ftill in ufe among them, by laying them on the holy places, or cramming them in the hollows of aged trecs. Springs and rivers likewife have their thares of thefe unbloody facrifices. At their fecret idolatrous affemblies, the keeping up of the fire, into which they throw all forts of offerings, is ftill 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 Eithes many remains of heathenilm are fill oblervable; although in the twelfth century the Liefs, and afterwards the Lettes, were brought to the profeffion of Chriltianity by the Germans; and a part of the Ethes by the Danes. 'Tooke's View, \&ic. 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 diftricts, as by prirate agreements, by propofals, and by public auction, to the highelt bidder; all of which are liable to objections in fome degree, but the firlt of thefe modes probably the leart of any. See Farm.

LETTONIA, in Geograpby, a province of Ruffia, now included in the government of Riga. See Letres, Livonia, and Riga.

LETTOWITZ, a town of Moravia, in the circle of Brunn; 20 miles N.N.W. of Brumn.

LET'TUCE, in Botany and Gardening. See Lactuca.
Lettuce, Hare's. See Sow's Thiffle.
Lettuce, Lamb. See Valeriana.
Lettuce, Wild. See Prenantues.
Lettuce, in Agriculture, the name of a plant of the efculent kind, cultivated in the field in fome diftricts for its ufe in feeding fows and pigs in the fummer feafon. It is ftated in the Calendar of Hufbandry, that the writer firft obferved: the fowing of lettuces for hogs practifed in a pretty regu.
lar Fy.fem, 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 fivine are very fond of it.". And he fuggetts, that "the economical farmer, who keeps many hogs, fhould take care to have a fucceffion of crops for thefe animals, that his carts may not be for ever on the road for purchafed grains, or his granary opened for corn oftener than is neceflary." To raife this fort of crop, "the land flould have been ploughed before the winter frofts, 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 horfe-hoes, fo that in this month (March) nothing more may be neceffary than to fcarify the land, and to drill the feed at one foot equi-diftant, 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 fuppofed, 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 alfo fcufled in February and March, and well harrowed, repeating it before drilling. And at this period "the crop which was drilled in March (a fucceffion being effentially necelfary) fhould be thinned in the rows by hand, to about nine or ten inches afunder. If this neceflary attention be neglected, the plants draw themfeives up weak and poor, and will not recover it. Womien do this bulinefs as well as men. When about fix inches high, they fhould be horfe-hoed with a fcarifier or fcuffer," having the hoe aboutfour inches, or at molt five inches, in width. With this fort of green food fome kind of meal, or other dry meat, fhould. be combined, as without it, it is apt to prove very laxative, and of courfe injurious to the animals. See Hoc and SWine.
LETZKAW, in Geography, a town of Pruffia, on the Viltula; 13 miles S.E. of Dantzic.

LETZNIG, a town of the duchy of Hollein; fix miles S.S.W. of Segeberg.

## LEVANDIS Aililium Expenfis. See Expessis.

LEVANGHE, in Geograply, a rmall ifland near the E. coalt of Ittria. N. lat. $45{ }^{\prime} \mathbf{1}^{\prime}$. E. long. $155^{\prime} 52^{\prime}$.

LEVANT fignifies any country fituate to the eaft of us, or the ealtern fide of any continent or country, or that on which the fun rifes.

Levant, or Titas, one of the Hieres iffands, on the Mediterranean, near the coalt of France. N. lat. $43^{\circ} 4^{\prime}$. E. long. $6^{\circ} 34^{\prime}$.

Levant, in Mafters of Commerce, \&c. is generally reAtrained to the Mediterranean feas; or, rather, to the country on the eaftern part of it; or the coafts of Afia, and efpecially Afatic Turkey, from Alexandria in Egypt to the Black fea, including the iflands of Cyprus, Rhodes, and the Archipelago.

IIence, our trade thither is cailed the Levant trade; and a wind that blows from thence, out of the Straits mouth, is called a Levant suind.

France was the firlt nation that made treaties of commerce with 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 ene joyed, until the Venetians, the Englifh, the Hollanders, and at length the Genoefe, likewife obtained particular privileges for themfelves.

Levant Merfures. See Measure.<br>levany, Bole of tbe. See Bole.

## L E V

Levant and Couchant, in Lazv, is, when cattle have becu 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 lealt. See Distress.

Levantine Valley, or Valle Leventina, in Geography, a valley of Helvetia, fubject to the canton of Uri, and fituated S. of St. Gothard, watered by the T'efino, and inhabited chiefly by Italians. It is fuppofed to retain by its name, traces of the "Leportii," the ancient inhabitants of the furrounding regions. Its length, from the fummit of the paffage on the St. Gothard, is about eight leagues ; the breadth is very inconfiderable. The lower part is extremely populous, rich in palturage, and produces much hemp and flax. In the vicinity of the lofty moantains adjacent to it, the climate is various, and the country fubject to much rain. To prevent the rain from damaging the crops, the inhabitants fufpend and dry the corn and grafs, on bars fupported by two high poles about 15 feet afunder. The houfes are entirely of wood, and exterrally appear like Swifs cottages ; but a neglect of cleanline $\int$ s 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 Vogeliberg, 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 courfe fubject to violent inundations; the few villages are feattered on the fides of the fteep mountains; all below is defolate. Offogne, the refidence of the bailiff, confifss only of a few houfes.

LEVANTO, a town of the Ligurian republic, on the coaft of the Mediterranean; eight miles W. of Spezza.

LEVANZO, a fmall inand in the Mediterranean, near the W. coaft of Sicily ; about nine miles W. of Trapani. N. lat. $38^{\circ} 5^{\prime}$. E. long. $12^{\circ} 24^{\prime}$.

Levare, Antiphonum, in the Mufic of the Romifh Church, is to begia or open the firlt 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 oo the plaintiff: but this writ has now given way to the remedy by elegit. There is alfo a levari facias damna diffeifitoribus, for the levying of damages, wherein the diffeifur has been formerly condemned to the difeifee; 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 Ruffia, in the government of Olonetz, on the W. coalt 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 mufcle connected with the inferior extremity of the inteftinal canal. See Intestine.

Levator anguli oris, is a mufcie of the lips, defcribed under Deglutition.

Levator communis labiorum, is the fame with the levator anguli oris.

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Levatores coflarum, are the commencements of the external itrata of intercoital mufcles. Sec Intencostal.
Levator labii fuperioris et ale nafi, a mufcle commora to the upper lip and the wing of the nofe. Sce Deglutition.
Levator labii fuperioris proprius, is a portion of the former, fometimes deferibed as a diftinct mufcle.
Levator labii inferioris, is the fame with the levator menti.
Levator menti, is a fmall mufcle fituated in the chin, and defcribed with the mufcles of the lips in the article Deglutition.

Levator oculi. a name fometimes given to the fuperior ftraight mufcle of the eye. See Eye.
Levator palati mollis, a mufcle of the foft palate defcribed in the article Drglutition.
Levator palpebre fuperioris, a mufcle of the orbit belonging to the upper eye-lid. See Eye.
Levator fapule, a mufcle of the fcapula, called alfo angularis, and, by Dumas, trachelo-fcapulien. It is fituated in the upper part of the back, and on the lateral and pofterior part of the neck ; it extends from the fuperior angle of the fcapula to the tranfverfe proceffes of the four firit cervical vertebre. It is elongated, flattened, and broader below than above. Its external furface is covered below by the trapezius, above by the fterno-cleido-maltoideus, and in the middle by the fkin. The internal furface covers the ferratus fuperior pofticus, the facro-lumbalis, the tranfverfalis colli, and the fplenius. The edges prefent nothing remarkable; the pofterior 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 bafis, and to the internal portion of its upper edge. From this point the mufcle paffes upwards and forwards; it grows narrower, and is foon divided into four portions, which are at firf united together by cellular tiffue, but afterwards feparate to be attached to the points of the tranfverfe proceffes of the four firft cervical vertebrix. There portions are often connected to the fplenius and fcalenus potterior. Sometimes the levator fcapulx has only three portions fixed to the three firit vertebræ of the neck; that which is attached to the atlas is larger and longer than the others, which diminifh fucceffively in fize and length downwards.
It is tendinous at its attachments, and flefhy in other parts. The pofterior fibres are longer than the anterior; a fafciculus of fibres is fometimes added to its front edge from the firtt rib.

The name of this mufcle has led to a notion that it elevates the fhoulder; and it has been called mufculus patientix, from the fuppofition, that it acted in fhrugging the fhoulders. In truth it rather depreffes than elevates this part; it draws the fuperior angle of the fcapula upwards and forwards, but then the bone is rotated in fuch a way that its anterior angle, forming the fhoulder joint, is depreffed. It is affifted by the pectoralis minor. If the trapezius act in conjunction with it, the fhoulder will be elevated.' Suppofing the fhoulder to be fixed, it will incline the head and neck backwards, and towards its own fide.

LEVATUM. See Terris $\mathfrak{F}$ Catalis tentis ultra debitum.

LEUBITZ, in Geograpby, 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

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abbey, founded at the commencement of the rith century; nine miles S.W. of Wohlen.

LEUCA, in Ancient Geograply, a fmall town of Italy, in the country of the Salentins, and in the vicinity of the Japygian promontory. Strabo- Alfo, a town of Afra Minor, on the confines of Ionia and Nulia. Pomponius Mela places it near.Phocra, in the gulf of Smyrna; and Pliny places it near Phocxa, on a promontory which was formerly an ifland. Diodorus Siculus fays, that Leuca was fituated between Cumx and Clazomenu.

LEUCACANTHA, in Botany, a name ufed by Diofcorides, and the other Greek writers, for the oacia tree, which produces the gum arabic, but it was allo ufed for a kind of prickly plant, called allo anmaila by fome of the Arabians; as being a plant whofe roots were knotted and jointed. Thefe joints were feparated and dried, and then ured in modicine as cardiacs and carminatives, under the names of bunk or bunken. They were of a very agreeable aromatic fmell, and very little tafte; and the ancients always preferred fuch of them as were yellow and light, rejecting thofe which were heavy and white, and which wanted fmell. It is not well known at this time what thefe roots were; but it is neceflary, in order to the right undertanding 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 Hilfory of the Ancients, the name of an agate, not a peculiar ipecies, but cily a particular appearance of the lead-coloured agate, called prafachates.

LEUCADENDRON, in Bolany, from $\lambda$ avera, white, and $\delta=\delta_{g} g_{0}$, a tree, expreffive of the hoary or filvery whitenefs for which the firlt and finelt of the fpecies is remarkable. The name feems to have originated with Hermann, who conmminated to Plukenet the Silver-tree of the Cape, under the appellation of Leucadcndros Africana, for which Limneus, in his Claffes Plantarum, adopted it; but he afterwards, in his Genera, applied this name to another tribe of the fame order, and fubfequently funk both in Protca. Mr. Brown has rettored the original Letucadendron. Silvertree. Brown Tr. of Linn. Soc. v. 10. 50. (Conocarpodendra; Boerb. Lugd.-Bat. ed. 2. t. 195. 197. 200. 202-4.) - Clafs and order, Diocia Tetrandria. Nat. Ord. Aggregote, Linn. Proter, JuIf. Proteacee, Brown.

Gei. 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. Stans. Filaments four, fhort, inferted into the petals; anthers linear, of two cells, buriting lengthwife. Pif. imperfect, or none.

Female, Cal. like the male; its fcales permanent, dilated and hardened. Cor. like the male; bearing abortive itamens. Pijf. Germen fuperior, fifile; ftyle fimple, itraight, rigid, terminal; ftigma oblique, club-fhaped, ernarginate, rather hifpid. Peric. none, except the permanent woody calyx, whofe fcales are fometimes confluent. Nut folitary, concealed by the fcales of one feed.

Eif. Ch. Male, Calyx imbricated; its fcales fingleflowered. Petals four, bearing the ftamens.

Female, Calyx imbricated, permanent. Petals four. Stigma oblique, club-fhaped, emarginate, rather hifpid. Nut of one feed, concealed by the hardened fcales of the calyx.

Thirty-eight fpecies of this noble genus are defined by Mr. Brown, all natives of fouthern Africa, near the Cape of Good Hope, where they ufully grow in moit fony or
fandy places, about rivers, and, as far as we know, in no other part of the world. A few of them have long beera cultivated in the greenhoufes of Europe, but the greater part are only known in the herbariums of the curious. One of the fineft collections of this whole natural order was procured from the Cape by Mr. Niven, for his patron G. Hibbert, efq. to whofe liberality we are indebted for fpecimens of the whole.

The habit of Letucaddadron is arboreous or fhrubby, but fometimes tortuous and depreffed. Leaves flat, liricar, lanceolate, or obovate. Heads of flowers often yellow, not large, but frequently accompanied by very large, fpreading, dilated, palifh bratcas, which are highly ornamental.Examples are
L. argenteunt. (Protea argentea; Linn. Sp. Pl. 1.37. Gxitn. t. 5I. Lamarck Illuitr. t. 53. f. I. Conocarpondendrun; Boeril. t. 195-Argyrodendros africana, foliis fericeis et argenteis ; Commel. Hort. v. 2. 51. \$. 26.) - Arboreous. Leaves lanceolate, filvery; their edges, as well as the branches, hairy. Inner bracteas flarter, downy. Corolla of the male tilky.-This fplendid tree, growing about the bafes and fides of mountains at the Cape, foon attracted the notice of the firt European vifitors, and was brought into the Dutch gardens, from wherice probably it came to England early in king William's reign. The fiozucrs are not ornamental, nor are they fearcely ever feen here, but the filvery fiplendour of the leaves is unixivalled; 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 fyle is permanent in this and four other fpecies only.
L. Levijanus. Brown n. 9. Berg. Cap. 20. (Brunia Levifanus; Linn. Sp. Pl. 2Sy. B. foliis oblongis incanis, \& co ; Burm. Afric. 267. t. 100. f. 2, male plant. Protea Levifanus; Willd. Sp. Pl.v. 1. 526.)-Leaves obovate or fpatulate, very blunt; fmooth when full grown. Branches hairy. Heads of male flowers feffile. Seeds pointlefs, invefted with long hairs.-Grows in fandy heathy plains near the Care. The flem is abruptly branched. Leaves numerous, upright, about half an inch long, entire. Flowers in little round yellow heads, without any prominent bralieas.
L. corymbo/um. Berg. Cap. 21, male plant. (Protea corymboia; Thunb. Diff. de Proteá, n. 28. t. 2, male plant. Andr. Repof. t. 495, female.) - Leaves linear-awlfhaped, imbricated, fmooth. Scales when in fruit acute, recurved at the points. Seeds fonewhat comprefed, inverfcly heart-Ahapod, 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 narrow foliage of an Erica or Diofma. The young branches are purplin, whence it ufed to be called by gardeners, before it blofiomed, Protea purpurea. Mr. Brown obferves that each fex has four glands, or nectaries, at the bafe of the. germen, which oar lalt-defcribed wants.
L. concolor. Brown n. 15. (Protea globofa; Andr. Repof, t. 30\%. Sims in Curt. Mag. t. 878 , both male plants. P. throbilina: Schrad. Sert. Hannov, t. I, 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.-Fourd near the Cape. Said to have been firt raifed in England by Meffrso Lee and Kennedy. This belongs to a handfome tribe of frecies, whofe large heads of yellow flowers are encompafled by large ipreading floral leaves or bradeas, which in molt are coloured, but in this agree in hue with the foliage, and like that are aboust

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two inches long, and nearly one broad, with red callous tips.
L. grandiforum. Brown n. 16. (Euryfpermum grandiflorum; salif. Parad. t. 105.)-Leaves obovate-ublong, with a calloms point; fmooth when full grown; the foral ones coloured. Branches very minutely downy. Scales of bo:h fexes ovate, bluntifh, fmooth, coloured.-Gathered on nount WYnberg at the Cape, by Mr. Niven, who fent it to Mr. H.bbert. It is larger and handfomer than the latt, having fplendid whitifh brateas, refembling the pctals of fome fine polyandrous flower.
L. Arifum. Brown n. 21. (Euryfpermum falicifolium; Salif. Parad. t. 75. Protea conifera ; Andr. Repor. t. 541.) -Leaves fmooth, lincar, with an awl-fhaped point. Bracteas ovaie, acute, coloured, longer than the flowers. Scales of the fruit dilated, rounded, fmooth. Sceds without wings, dotted. - Native of moilt ftony places, about rivers, at the Cape, according to Dr. Roxburgh. Mr, tisen feems to have introduced this pretty fpecies to our gardens, which is diltinguifhed by its narrow lexves, copious and ornamental, though firall, $f_{2}$ wers, whofe bralleas are white aud pointed -This fpecies is nearly allied to Protea pallens and conifira of Linnæus and other authors, the former of which appears to be the male, and the latter the female, of Mr. Drown's L. adfcendins.
L. abictinum. Brown n. 3 I. (Protea teretifolia; Andr. Repof. t. 46..)-Leaves all thread fhaped, channelled, buntifh, fmooth, fpreading, curved flightly inwards. Scales of the fruit united by their lower part; diltinct and twolobed above. - Frequent about the Cape. A humble flbrub, with numerous fpreading fir-like green leaves, the uppermoft of which, unchanged, encompafs the little yellow heads of female $f_{\theta}$ wers, inftead of brazeas. The heads of male fowers are fmaller, and more elevated.

LeUCADIA, St. Maure, in Ancient Geography, an inand, or rather a peninfula which was attached to Epirus by a itraight ithmus, about 100 paces long and 600 broad. Upon it was fituated the town of Leucas, on the fummit of a mountain towarls the N.E. Homer places here three towns, viz. Neriton, Crocylea, and Agylipa. On the fcie of the firt of thefe towns the Corinthiais built that already mentioned; Loucas is now an illand, the ifthmus having been feparated from the coatinent. Thus Ovid deferibes it :

## " Lencada continuam veteres habuere coloni Nunc fre:a circumeunt."

It was a tradition that unfortunate lovers made choice of this promontory for precipitating themr. Tves mito the fea. On this promontory Apollo had a terrale. Sea St. Malef.

LEUCANTHEMUM, in Botany, from ג:yyo, wbitit, and $\alpha v s p^{5 y y}$, a fows, has been the appellation of feveral plants of the compound radiated kind, whofe rays are white; and now remains as the fpecific name of the common Englih Cbryyantbenum Lcucantbernum, Greai Ox-eje, or Moon Daify.
LEUCARUM, in Ancieat Goography, a place of Great Britain, on the roate from Caleva to Urioconiam, according to the Itinerary of Antonine. It is fuppofed to be the fame with the Leucomagns of the anonym. of Ravenna. It lies betwee. Scadum Nunniorum and Bomiun, and is fuppoled to be near Gaitenbury. Camden, Gale, and Baxter, imagine that Leucarum was fit:lated where the village of Locharnum or Lechorltands, on lie bank of the river Luchor in Glamorganfhire. But this feemz to be at much too great a diftance from the other ftations of Chifeiborough and A xbridg.
LiLUCAS, in Bqtanja, fo named by Burman and Brown,
in allufion to the downy whitencfs of its flowers, $2 \cdot 0 \times x$, being an ancient Greck nainc ${ }^{\text {is }} \mathrm{r}$ fume horb, now unknown to us, fo called on account of its whitenefs. Burm. Zeyl. 140. Brown. Prudr. Nov. Hoil. v. I. ;of. Ait. Hort. Kew. ed. 2. Y. 3. 409.-Clafs and order, Didjnamia (ijm. nofprmia. Nat. Ord. Verticillase, Linn. Labiata, Julf.
Brown. Brown.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, oblong, with ten ribs, pernanent; its orifice unequally toothed. with from fix to ten teeth. Cor. of one petal, ringent; tube cylindrical; upper lip vallted, bearded, undivided; lower longer, in three fegments, the middie one largeft, often nothed. Stam. Filaments four, concealed by the upper lip, two of them longer than the reft, anthers of two oblonct divaricated lobes, Pif. Germen fuperior, four-cleft; fyle the length and polition of the Hamers: Atigma cioven, acute, its upper figment faortelt. P'riá. none, except the permanent calyx. Sies's four, obloug, triangular.
EIT. Ch. Calyx with ten ribs; unequally toothed. Upper lip of the corolla bearded, undivided; lower ionger, threecleft; the niddle fegment largett. Lobes of the anthers. disaricated. Upper fegment of the lligma fhorteit.

1. I. zeylaricia. Ceylon Leucas. (1hlomis zeylanica ; Litn. Sp. I'l. S2o. Jacq. Ic. Rar. t. in ? Herba ad irationis ; Rumph. Amboin. v. 6. 39. t. 16. f. 1.)-I.cavis lanceolate, dightly ferrated. Whorls nearly teraxinal. Bracieas frinjed. Calyx oblique, with ten nearly equal teeth.-Native of the ifland of Mauritias; as well as of Java, and other parts of the Eait Indies. The root is annual. Stem fquare, downy, leafy, about a foot high, branched from the bottom in a corymbofe bulhy manner. Leaves oppofite, about an inch and half long, fearcely half an inch broad, lanceolate, bluntifh, finely downy, veiny, wavy, or blunly ferrated, tapering at the bafe into a fhort footilalk. Whorls denfe, axillary, one or two at the top of each ite:n or branch, furmounted by leaves, and accompanid by feveral linear-lanceolate, acute, downy, ftrongly fringed braakas. Calyx downy, fwelling upwards, its orto fice ublique, fringed with ten, nearly equal, fmall fpinous teeth. Corcl'a twice as long as the cally, white, hairy estcrnally, efpecially the upper lip.
2. L.- lavardulifoha. Lavender-leaved Leucas. (Leon!:rus indiens; Lina. Sp. Pl. $8_{1}$. Phlemis zeylanica 8 ; Syft. Ve.g. ed 13. 45 . Willd Sp. Pl. v. 3. 123.)-Leascs linear-lanceulte, nearly entirc. Brateas hnear, downy. Calyx oblique, with feven teeth; the uppermon largeit.Native of the Eol Indics. Linnxers had it from Eurmann. He firit defcribed it as a Leonarus, but afterwards confounded it wilh his Phlomis zeglanica, of which lat he had but a very imperfect fpecimen. The prefent is cilltinguifhed by itsmuch tonger, and nearly, if not quite, entire leaves; the whorls are more numerous; bradsas more inear, downy, but not frioged; and the cally $x$ is effentially different, having but feven, and thofe very unequal, teeth. Corolla muct like the lalt. It is hard to fay whether Jacquin's and Rumphius"s fynonyms belong to this or the zoylanica, for they neither of then teach any thing elfen ial, bui Jacquin's leaves certainly moft refemble the prefent. The three fizures of Plakenet, cited doubtingly by Linnxus, do not well accord with either.
3. L. martinicenfis. Welt Indian Leucas. (Phlomis martinicenfis; Swariz. Prodr. S8. Willd. Sp. Pl. v. 3.123. Ph. caribeas Jacq. Ic. Rar. t. 110. Swartz. Ind. Occ. v. 2. 1009.)-Leaves ovate-oblong, ferrated, downy. Bratea3 britte-haped, fringed. Whorls globofe. Calyx incur ed, with ten tee:h; the uppermolt longe?,-Native of Bralil,
and the Weft Indies, from whence Mr. Maffon fent feeds to Kew in 1781. Root annual. Stem branched, two or three feet high. Leaves ttalked, an inch and half long, oblong, more or lefs ovate, hairy above, more downy and paler beneath, bluntifh, ftrongly ferrated; entire and tapering at their bafe. Whorls numerous, axillary, denfe, manyflowered, and nearly globofe, with narrow, Arongly fringed or briltly bracteas. Calyx curved forward, downy, with frong green ribs and white reticulated fpaces between; its orifiee bordered with ten fpinous, all rather unequal, teeth, of which the upper one is twice or thrice as long as the reft. Corolla fmall, white, brown in decay.
4. L. urticifolia. Nettle-leaved Levcas. (Phlomis urticifolia; Vahl. Symb. v. 3. 76. Willden.)-" Leaves ovate, ferrated, hoary. Bracteas awl-haped., Calyx obliquely truncate, membranous, with nine teeth."-Native of Arabia Felix, and the Ealt Indies.-" Root annual. The plant refembles $P b$. indica of Linnæus (our Leutas indica), but the fem, as well as leaves, are not downy, but hoary with extremely minute hairs. The leaves are of the fame colour on both fides, deeply ferrated, flat not rugged, downy underneath. Calyx rather fmall."-We know this merely from the above authority.
5. L. indica. Eaft Indian Leucas. (Phlomis indica; Linn. Sp. Pl. S20.)-Leaves ovate, forrated, very downy beneath. Bracteas linear, hairy. Whorls globofe. Calyx oblique, with one three-toothed lip.-Native of the Eaft Indies. The feeds were fent to England by M. Thouin in 1789. Root annual. Leaves flalked, ovate, two inches long and ons broad, ferrated, downy above, but whiter and fofier beneath. Corolla very hairy. Calyx much enlarged and elongated after flowering, its forepart extended into an upright, oblong, ribbed and reticulated lip, with three fpinous teeth at the extremity; the oppofite or upper fide of the orifice being fhort, with three or four very minute teeth.
6. L. dicemdentata. Ten-toothed Leucas. (Stachys decemdentata; Forlt. Prodr. 91. Phlomis decemdentata; Willd. Sp. Pl. v. 3. 124.) -" Leaves oblong, ferrated; contracted at the bate. Whorls without bracteas. Calyx with ten teeth."-Native of the Society Inands. "Stem therbaceous, downy. Leaves ftalked, an inch long, rather acute, ferrated, downy. Whorls fomewhat ftalked, deftitute of brafeas. Caly.x bell-fhaped, with ten furrows, and ten awl-haped teeth, alternately fmaller. Tube of the corolla rather longer than the calyx; upper lip erect, undivided, very hairy; lower fmooth, in three deep fegments." Willdenow.
7. L. biffora. Two-flowered Leucas. (L. foliis rotundis ferratis, flore albo; Burm. Zeyl. 140. t. 63. f. I. Phlomis biflora; Vahl. Symb. v. 3. 77. Willd. Sp. Pl. v. 3. 124.)-Leaves ovate, ferrated. Flowers axillary, folitary, oppofite. Calyx with ten regular teeth.-Native of the Ealt Indies. A flender downy or rather hairy plant, with the habit of a Stachys or Sideritis. Leaives about half an inch long, ftalked, ovate, bluntifh, with five or fix ferzatures at each fide. Flowers nearly feffile, without braifeas. Calyx funne!--fhaped, hairy, tirongly ribbed, with ten fharp taper tecth, of which the five intermediate ones are rather fhorier 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.) .s6 Leaves ovate, ferrated, clothed with filky down. Flowers whorled, Italked. Calyx with ten teeth."-Native of China. "The flem is flarubby, with fquare hifpid brauches. Leaves oppolite, ovate and fomewhat heart-lhaped, falked, fer-
rated, clothed with filky dorn. Whorls axillary, of five or fix flowers, on ftalks. Calyx funnel-fhaped, with ten furrows and ten awned teeth. Corolla white, its upper lip compreffed, hairy externally, efpecially the margin; lower thrce-lobed, nearly naked.' -Retzius.-It is to be prefumed the calyx-teeth are regular, probably five rather the fhorteft as in the laft. We have never feen this feecies, and it flands here on Mr. Brown's authority. Retzius's account of the comprelfed upper lip fhould, however, make it 2 Phlomis.
9. L. moluccoides. Wing-flowered Leucas. (Phlomis moluccoides ; Vahi. Symb. v. 1. 42. t. 14. Willd. Sp. Pl. v. 3. 125. Clinopodium fruticofum ; Fork. A.gypt.-Arab. 107.) - Leaves ovate, ferrated, finely downy. Flowers whorled, ftalked. Bracteas linear-lanceolate. Lower fegment of the calyx dilated, rounded, membranous, ribbed, obfcurely toothed.-Gathered by Forfkall in Arabia, on the hills of Hadie. One of his fpecimens in ripe feed, and Vahl's figure in flower, furely authorife us in referring this plant alfo to Leutas, though Mr. Brown has not mentioned it. The flem is flrubby, five or fix feet high, with roundifh downy branches. Leaves ftaiked, ftrongly ferrated; rough and punctate above; paler and very downy beneath; an inch or more in length. Whorls many-flowered, flalked, with downy brafteas, cut into many deep, linear, or fomewhat lanceolate, fegments. Flowers white, the fize of Lamium album, hairy, their lower lip, according to Forfkall, convex, three-lobed, the middle lobe broad, long, and heartfhaped, which agrees with the generic character, but is not properly reprefented in Vahl's plate, though indicated in his defcription. The calyzi is very peculiar, and really twolipped ; the upper lip imall, ovate and acute ; the lower very large, efpecially when in feed, fpreading, 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 defcription and figure, to have been bewildered between the lower lip of the caly x and that of the corolla.
10. L. glabrata. Smooth Leucas. (Phlomis glabrata; Vahl. Symb. v. I. 42. Willd. Sp. Pl, v. 3. 126.)-Leaves ovate, Serrated, nightly hairy. Flowers whorled. BraEteas minute, brifle-fhaped, fmooth. Lower fegment of the calyx elongated, three-toothed. Hairs of the flem de-flexed.-Gathered in Arabia by Forkall, amongft whofe plants it was found without a name. Vahl defcribes it as "herbaceous, the fem acutely angular, its angles and joints rough with reveried hairs. Leaves flalked, fpreading, ovate, bluntly ferrated, entire at the bafe, acute, flightly hairy, about an inch long. Whorls remote, of fix or eight fowérs. Bragieas minute, in four deep, briflle-fhaped, rather pungent, fmooth fegments, yellowifh at the extremity, but one-fourth fo long as the calyw; which is bell-fhaped, fmooth, with ten furrows, its orifice oblique, the lower lip being elongated, with three equal briftle-fhaped teeth, the upper with feven teeth. Corolla like the latt."
11. L. flaecida. Flaccid Leucas. Brown. Prodr. Nov. Hoil. v. I. 505.-" Leaves ovate, membranous, nearly fmooth, as well as the calyx, which has ten equal tecth. Whorls many-flowered."-Gathered by fir Jofeph Banks in the Tropical part of New Holland.

It will readily be perceived that the great diverfity and irregularity of shape in the caly $x$ of the different fpecies, directly militate againft the Linnæan divifion of Didysiamia Angiofermia, into genera whofe calyx is more or his exactly fire-cleft, and others in which it is two-lipped; but

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Leutas is not on that account the lefs natural a genus, and this very irregularity is its flriking character. How far it might be poffible or eligible to feparate from it the fpecies with a ftrictly regular calyx, may be worthy of future confideration. Mean while it had beft ftand in the firf of the above fections, as not being regularly or properly two. lipped, as well as on account of ite affinities.-Pblomis alba, Vahl. Symb. vo 1. 43, fhould feem alfo to belong to Leucas, though the calyx has but five teeth, but we have never had an opportunity of examining it.

Levcas Delphinus. See Delpuinus.
LEUCASJA, in Ancient Geography, an inland of the Tyrrhenian fea, upon the weftern coatt of Italy, in the gulf of Pxflum, according to Strabo and Mela.

LEUCASPIS, a port of Africa, in the gulf of Libya. Ptolemy.

LEUCATA, a promontory of Gaul, in the Mediterranean; now called "Cap de la Franqui."

LEUC 1 TE, or Levcatas, a promontory of Afia, in Bithyria, and one of thofe which formed the gulf called " 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 fame name; 17 miles S. of Narbonne. N. lat. $42^{3}$ $54^{\prime}$. E. long. $3^{\circ} 7^{\prime}$.

LEUCE, or Achillis Insula, in Ancient Geography, an ifland in the Euxine fea, at the mouth of the Bory thenes. Strabo fays, that it was confecrated to Achilles. Salluft, in his Fragments, fays that it was of fmall extent and defert; and that it was famous for a temple, and for the ftatue and burying-place of Achilles.

Levce, a fmall ifland on the N. coait of the ifle of Crete; according to Diodorus Siculus.

Leuces, $\lambda$ civ\%, in Medicine, a term nearly fynonymous with the vitiligo of the Latins, fignifies a leprous affection of the fkin, of a white colour, with a lofs of fenfibility in the parts affected, the hair at the fame time becoming white, and falling off.

The lateft Greek phyficians confider the alphos and leucè as the fame difeafes effentially, differing only in degree, and not in kind. The alphos they defcribe as a fuperficial difeafe, in which the furface of the fkin becomes white, but no farther change takes place: whereas the leuce penetrates below the furface, affecting the fleh, and being much more difficult to heal. They afcribe it to an error in the affimilatory powers, in confequence of which a phlegmy or pituitous and vifcous blood is generated, which is incapable of being converted into a proper red fefh, but produces a fort of flefh like that of locults, and other cruftaceous animals: the hairs, at the fame time, turn white, and fall off, and the fkin becomes fmooth and bright, and the parts lofe their fentibility; fo that they may be pricked with needles, without fuffering any uneafinefs. In a word, the difeafe, thus defcribed, is a fpecies of elephantiafis, and appears to have been the fame thing with the leprofy of the Jews. The Arabians properly call it the wbite albaras: neverthelefs, with the later Greeks, they confider it as differing only in degree from the white albobak, (or morpbiva, as it has been called by the Latin tranflators,) which is the alphos of the Greeks. Hippocrates, however, feems to diftinguifh the leuce from the alphos: for he obferves that the latter fhould be confidered as an external blemifh, rather than as a difeafe; but he fpeaks of the leucè as a diftemper of the moft fatal kind. (De Affection. fect. 5.) It would appear, therefore, that the word alphos denotes a modification of the fcaly difeafe, the lepra Grecorum, and perhaps alfo an incipient leucè; and that leucè is a variety, a precurfor, or a

Atage of the elephantiafis. In this light Dr. Willan, in his able treatife on cutaneous difeafes, confiders them. (Sce that work, P. 124-126.) Celfus has claffed the alphos and leuce, together with the melas, (which differs from the alphos only in the blackifh colour of the fcaly fpots,) under one generic term, vitiligo: at the fame time, he points out the affinity of the alphos and melas, and the peculiar and diftinct features of the leucè. The two former, he fays, are commonly a little rough, and not continuous, but difo perfed in drops, as it were, here and there: fometimes, indeed, it fpreads more extenfively, but leaves interfices of the fkin unaffected. They are the fame in all refpects, with the exception of colour. "The leuce," he adds, "has fome refemblance to the alphos; but it is whiter, penctrates deeper, and the hairs are white and downy. They all three fpread, but with different degrees of rapidity in different individuals. The alphos and the melas appear and difappear in fome perfons at irregular periods; but the leuce does not readily quit a perfon whom it has once attacked. The two firft are not very difficult of cure: but the lall is fcarcely ever removed; and if it is at any time alle viated, yet the natural colour of the fkin is never entirely reftored:" (Celfus, de Re Med. lib. v. cap. xxviii.) He then ltates the obfervations in regard to the prognofis, which are repeated by the Greek phylicians; namely, that if we would afcertain whether the difeafe be curable or not, we fhould 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 mult make no fuch attempt." (Loc. cit. Compare alfo Aetius, Tetrabib. ivo ferm. i. cap. cxxxiii. Actuarius, Meth. Med. lib. ii. cap. xi. Paul. Ægineta, de Re Med. lib. iv. cap. v.) The impaired fenfe of feeling in the parts is mentioned as an additional fymptom of the irremediable ftate of leucè, by the lait named authors. See alfo Foreftus Obf. Chirurg. lib. vo obf. iii.

The appellation of leuce is derived eitber from $\lambda$ evzo; leucos, white, or from $\lambda: u n n$, leuce, the subite poplar tree, the whitenefs of the bark and leaves of which has perhaps been fuppofed to refemble the condition of the fkin in the difeafe above defcribed. See Gorter. Definit. Med. See alfo Leprosy.

LEUCELECTRUM, a name given by fome authors to that fort of amber which is white and opaque, and ufuatly of a fatty look.

LEUCHARS, in Geography, a town of Scotland, in Fifeflire, near the German ocean. Int 1 Soi the number of inhabitants was 1657 ; 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. $49^{\circ} 35^{\prime}=$ E. long. $12^{\circ} 11^{\prime}$.

LEUCHTERSHAUSEN, a town of Germany, in the marggravate of Aufpach, on the Altmuhl; g miles W. of An!pach.

LEUCI, in Ancient Grograpby, a long chain of mountains in the ifle of Crete, fo called from their whitenefs, being covered for a great part. of the year with fnow. They are now known by the names of Madura and Specia.

LEUCISCUS, in Icbebyology. See Dace.
LEUCITE, Leuzit, Wern. Amphigène, Haüy. Vefuvian or cubite garnet, Kirw. Vulcanit, leucolite, granatine florl of fome mineralogitts.

Its colour is commonly greyifh or yellowihh-white, feldom afh-grey, milk-white, or greenifh and reddiß-white, paffing into flefh and tile-red.

It occurs in grains, but moolt frequently in round cryftals
of twenty-four trapezoidal planes, (Amphigine trapezoidal, Haüy, p. 147. f. 62.) or, as the form is defined by Werner, low double eight-fided pyramids, in which the lateral plares of the one are fet on the lateral planes of the other, while the fummits are flatly acuminated cach by four planes placed on the alternate edges. They are more or lefs regular; fometimes perfecily fo, at other times rather rounded on the edres. They are crytallized all around, and imbedded. Their fize varies from very fmall to middle-fized: cryflals of more than one inch in diameter arc, however, feldom feen. No other modification than the trapezoidal has been hitherto obferved.

The furface of the grains is rough, and dull or weakly glimmering; that of the cryitals gliitening and fmooth, not friated, as in the garnets of the fame form: there are, however, fometimes minute rents feen to run parallel to the flort diagonal of the trapezoidal planes. Externally they are gliflening, internally fhining, with vitreous luftre rather inclining to refinous.

Fracture imperfectly and flat conchoidal, fometimes inclining to foliated; fragments indeterininately angular, more or lefs fharp-edged.

It occurs commonly flightly tranflucent, but alfo nearly tranfparent, and rarely with perfect tranfparency.

The leucite is hard in a low degree, feratching olfafs with difficulty: it is brittle, and cafily frangible. Specitic gravity, 2,461 , Karften; 2,464 , Kirwan; 2,468 , Brifion; $=, 45$; (from Vefuvius), and 2,490 (fromAlbano near Rome,) Flaproth.

It is infufible before the blowpipe without addition: with borax it melts into a light brown, tranfparent glafs.

The leucite was firft analyfed by Klaproth, who dif. covered in it a confiderable portion of vegetable alkali; a iubfance till then unfufpected to form a conltituent of mineral fubltances. Vauquelin's fubfequent analy fis completcly agrees with that given by Klaproth.

| Mcan of different | Analyfes. |  | Klaproth. | Vauquelin. |
| :---: | :---: | :---: | :---: | :---: |
| Silica | - | - | 54 | 56 |
| Alumine | - | - | 24 | 20 |
| Potafl | - - | - | 21 | 20 |
| Lime | - | - |  | 2 |
| Lofs | - | - | I | 12 |
|  |  |  | 100 | 100 |

Leucite occurs particularly in lava, and alfo in rocks belonging to the fletz trapformation of Weruer. It fhould however be obferved, that what has been defcribed by feveral authers as leucite in bafalt, trapp, \&c. is nothing but cubic zsolite (analcime of Haïy). Faujas, Efinark, and others have fallen into this error.

Many places have been mentioned where leucite is found; but the beft authenticated locality is that of the neighbourhood of Naples, and of Rome. They are found in immenfe quantities in the mountains of Albano, Tivoli, Caprarola, Viterbo, Aquapendente, Civita Caftellana, and Borghetto, where they are feen enveloped in lava, often accompanied by mica, vefuvian, and hornblende.

Von Buch, Salmon, Patrin, and others, are of opinion, that the leucite crytals were formed in the lava when flill in a Huid flate; Dolomieu and Werner, on the other hand, coulider them as having pre-exifted in the rocks that were afterwards converted into lava. The idea of other mineralogical writers, who look upon thefe cryltals as being garnets altered by volcanic fire, is now defervedly expioded.

Haily's name of amphigine is derived from the double origin
of the leucite, with regard to its primitive form, which may be either the cube or the thomboidal dodecahedron. LEUCOCROTTA, in A'atural Hiflory, the name given by many authors to a bealt, fuppofed to be the fwiftett of all creatures in the world: others have called it leucrocotta, but the true name is leocrocotta.

IEUCOGRA, a name by which fome authors have called the fubitance, more ufually known by the name of morochthus, and called in Englifh, French chalk, or Brianfon chalk.

LEUCOGRAPHIS, the name ufed by fome of the ancient writers, for the fubitance commonly called morochthus, or French chalk.

LEUCOIUM, in Botany, a name adopted from the ancient Greek authors, who neverthelefs differ about their 2esxno\% That of Theophraftus appears to be the Linnean Galunthus, whillt that of Diofcor:des is doubtlefs, from his fhort account, the Cbeiranthus, or Stock. The prefent genus is nearly alied to Galantbus, and having been called Narcifo-Leucoiam by Tournefort, Linnxus adopted the above generic name. Snow. Flake. - I inn. Gen. 16 c . Schreb. 215 . Willd. Sp. Pl. v. 2. 30. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 352. Ait. Hort. Kew. ed. 2. vo 2. 21 I. Juff. 55. Lamarck. Hantr, t. 230. (Narciffo-Lencoium; Tournef. t. 20S.) -Clafs and order, Hexandria Mongyria. Nat. Ord. Spubbacea, Linn. Narciff; Juff.

Gen. Ch. Cal. Spatha oblong, obtufe, compreffed, opening at the fat fide, withering. . Cor bell-fhaped, fpreading; petals fix, equal, ovate, flat, coalefcing at the bafe; their tips thickifl and Atraight. Stam. Filaments fix, briftle-flaped, very thort; anthers oblong, obtufe, quadrangular, erect, diftant, burfing in the upper part. Pi/f. Germen inferior, roundifh; Atyle moftly club-fhaped, obtufe; lligma fetaceous, erect, acute, longer than the flamens. Peric. Capfule turbinate, of three cells and three valves. Sceds-numerous, roundifh.

Obf. Leuceiuns autumnale and tricophyllum have a threadglaped ftyle.
Eff. Ch. Corol'a fuperior, bell-fhaped, of fix equal petals, thickened at their fummit. Stigma fimple. Stamens equal.

1. L. vernum. Spring Snow-flake. Linn. Sp. Pl. 4 r4. Curt. Mag. t. 46. Jacq. Fl. Auftr. t. 312 -Spatha fingle-flowered. Style club-fhaped. - A native of moit woods and flady places in various parts of Italy, Switzerland, Germany, and the fouth of France. It flowers in the early fpring ; its fpecific name indeed is indicative of this circumitance. Bulb oblong, fmaller than that of the Daffodil. Lcaves flat, darkifh-green, about four or five in number, broader and longer than thofe of the Snow-drop. Stalk radical, angular, hollow and channelled, furnifhed towards the top with a whitim fpatha, opering at the fide, from whence the flower proceeds. Corolla rather large, its petals white, tipped with green. The plant has an agreeable fragrancy, fomething like Hawthor:1.
2. L. aflivum. Summer Snow-flake. I.inn. Sp. Pl. 4140 Engl. Bot. t. 621 . Curt. Lond. fafe. 5. t. 23. Jacq. Auttr. to 203.-Spatha many-flowered. Style club-fhaped. -Firlt determined to be a native of this inland by Mr. Curtis, who found it growing between Greenwich and Woolwich, as well as in the Ifte of Dogs. It has fince been gathered in many other parts of England, particularly Weltmoreland, Suffolk, and Berkfhire, flowering in May. Root a roundifh bulb. Leajes numerons, erect, a foot and half in length, obtufe, keeled, bright-green. Stalk radical, as long as the leaves, compreffed. Spatba lanceolate, erect. Partial falk folitary and fingle-flowered. Flowers pendulous, white; petals

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petals tipped with green. Anthers obtufe, burfing by two pores at the fummit. Capfule elliptical, threc-celled. Seeds globular, large.

The plant is entirely without fmell, but is extremely ornamental, and may be often feen in rultic gardens.
3. L. autumnale. Autumnal Snow-flake. Linn. Sp. Pl. 414. Curt. Mag. t. 960. Redouté Liliac. to 150. f. 2.-Spatha many-flowered. Style thread-fhaped. - A native of Spain and Portugal, flowering, as its name imports, in the autumn. Bulb thickifh, of many glutinous coats, covered with a white membrane. Stalk radical, about fix inches in height, reddifl-brown, moftly bearing two or three white, pendulous, inodorous flowers, red at their bafe. Leaves capillary, fpringing up after the plarit has flowered. Curtis however fays that in fpecimens which were fent from Gibraltar, the leaves appeared at the fame time with the flowers, though confiderably fhorter than they afterwards grew.
4. L. trichophyllum. Briftle-leaved Snow-flake. Brot. Lufit. p. I. 552. Redouté Liliac. t. 150. f. I.-Spatha two-leaved, many-flowered. Style thread-fhaped.- Gathered on the fandy plains of Barbary, flowering in the midit of winter. Leaves thread-fhaped, membranaceous. Stalk radical, fheathed by the leaves at its bafe, thread-fhaped, five or fix inches high. Flowers from two to four, pendulous, white, occafionally tinted with red on the outfide.

Redouté regrets that he could not call this hyenale, as the name of trichophyllum had previoully been applied by Renealmius to the laft fpecies, to which indeed this is clofely allied. The fpecific name of byemale would have been particularly defirable on account of carrying on the analogy of nomenclature with the three other fpecies. It is greatly to be wifhed that botanifts who give new names to plants would well confider fuch analogies.

For L. Arumofum, Ait. Hort. Kew. ed. I. 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 ipring fnow-drop (L. ver. num) ; the fummer fnow-drop (L. xftivum) ; the autumnal fnow-drop (L. autumnale); and the many-flowered Cape leucoium (L. ftrumofum). The firt has an oblong bulb, fhaped like that of the daffodil, but fmaller; the leaves are flat, deep green, four or five in number, broader and longer than thofe of the common fnow-drop; the fcape angular, near a foot high, hollow, and channelled; towards the top comes out a whitifh fheath, opening on the fide, 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 thofe of the hawthorn.

The flowers, which at firft fight refemble thofe of the common fnow-drop, are eafily dittinguifhed by the abfence of the three-leaved nettary. They do not come out fo foon by a month. The firlt is called by Mr. Curtis the fpring fnow-flake.

In order to diftinguilh the fecond fort from the galanthus, Mr. Curtis names it the fummer now-flake; and in gardens it is commonly known by the name of the great fummer fnow-flake, and the late or tall fnow-drop.

Method of Culture.-Thefe plants are readily increafed by off-fets from the roots, which fhould be feparated 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 alfo capable of being increafed by feeds, which Vol. XX.

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fhould be fown in the latter end of Auguft, in a border of light bog-earth. The plants fhould remain in this fituation till the fecond fummer, and be then taken up at the proper period, and planted in beds, till they begin to flower, when they fhould be removed into the borders. In this way they are three or four years before they flower. But by much the beft method is to procure the roots from the nurferymen, and plant them in the beginning of the autumn, in an caftern 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 fhould 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 molt fuited to their healthy growth. The laft fort requires protection in the houfe, with other Cape bulbs.

By planting them in the different afpects mentioned, a longer fucceffion 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 houfe, or other public fituations.

Leucoium Indicum ct lutcum. See Stock Gilly Flower.
Leucoium Bulbofam. See Leucoium, Jupra.
LEUCOLIBANON, in the Materia Mcdica of the Ancients, a name given to the white olibanum, or frankincenfe, which they carefully diftinguifh from the reddifh or yellowifh olibanum. This was alfo called argyolibanum, or the filver-coloured olibanum; and the yellow one chalcolibanum. This latter word is ufed in the Apocalypfe of St. John, and is mifunderftood fo far, as to be tranflated brafs, and fuppofed to be a kind of brafs from Mount Lebanon. See Chalcolibanon and Frankincense.

LEUCOLITHOS, in Natural Hi/fory, a name given by fome of the Greek writers to the pyrites argenteus, or filvery pyrites. The ancients had a great opinion of thefe foffils in difeafes of the eyes; they ufed all the kinds of pyrites, or marcafite, after calcination, for this purpofe; but as they diftinguifhed four kinds of them, they attributed thefe virtues, in different degrees, to the different kinds; therefore they had recourfe to fo many peculiar names for diftinguifhing them; and the white kind was called leucolithos, to diftinguifh it from the dufky one called the iron pyrites, and the deeper and paler yellow kinds, called the gold and braffy marcafites.

LEUCOMA, $\Lambda_{\varepsilon \cup \chi \alpha \mu} \alpha$, among the Athenians, fignified a public regifter 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 $\lambda$ euxos, rubite, fignifies, in Surgery, a whitifh opacity of the cornea. Profeffor Scarpa, of Pavia, has made fome interefting remarks on this cafe 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 varicofe flate of the veins, and an extravafation of a thin milky ferum into the texture of the delicate layer of the conjunctiva fpread orer the cornea; but are either produced by a violent acute phthalmy, wherein a denfe coagulable lymph is effufed fuperficially or deeply into the fubftance of the cornea itfelf, or elfe are occafioned by wounds, or ulcers attended with lofs of fubftance. Albugo ftrictly denotes the firft of thefe cafes; leucoma the laft, particularly when the fcar, or opaque fpot, occupies the whole or a confiderable portion of the cornea.

A recent albugo, remaining after the fubfidence of a 4 C violent

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violent actute 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 vafcular connection with the relt of the cornea, occafioning no ureafnefs, and being incapable of being abforbed.

Prorided the testure of the cornea be not diforganized by the coagulable lymph extravafated in a cafe of recent albugo, the opacity may often be difperfed by employing, in the firf Atage, general and local bleeding, internal antiphlogiftic medicines, and emollient applications; and in the fecond ftage, mild aftringents and corroborants. Thefe laf, as foon as the inflammation is fubdued, excite the action of the abforbents, by which veffels the opaque extravafated lymph, forming the albugo, is to be removed.

But although a recent albugo may often be difperfed, this object cannot be. fo eafily effected when the difeafe has exifted a long while, in which cafe the abforbents have frequently loft their activity, and the fructure of the cornea become fo diforganized, that this membrane mult for ever remain opaque at the part affected. According to Scarpa, the circumftances favourable to the cure are a recent ftate of the difeafe without diforganization of the cornea, or of the delicate layer of the conjunctiva fpread over jt, and the patient being young, as at this period of life the abforbents are molt capable of action. Scarpa affures us, that he has feen many examples in children, where the \{pecks, left on the eye after a violent ophthalny, have fpontaneoully difappeared in the courle of a few months.

The following local remedies Scarpa has found moft ferviceable, both to recent and inveterate cafes of albugo. A collyrium, compofed of two fcruples of fal ammon., four grains of rerugo, and eight ounces of aqua calcis. Thefe are to ftand for twenty-four hours, and the liquor then be filtered for ufe. An ointment, confifting of the fubfequent iengredients. W Tutix f. p. 3 i Aloes f. p. Calom. 玉 $\overline{\text { a }}$ grij. Butyr. recent. ©is. M. Janin's ophthalmia ointment, and the gall of ox, fheep, pike, and barbel, applied to the cornea with a hair-pencil, are alfo favourably fpoken of. When the eye was too irritable to bear the preceding application, Scarpa fometimes ufed 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 unpromining foever things may feem, the furgeon is to perfit in the trial of remedies, at lealt three or four months, before the cafe is to be fet 'down as ablolutely incurable.

Scraping and perforating the cornea, and forming an artificial ulcer upon it, are all unavailing expedients in cafes where the albugo or leucoma is in a ftate that Scarpa terms inveterate and coriaceous, fuch meafures being the invention of perfons quite ignorant of the ftructure of the cornea, and the principles upon which its tranfparency is to be reftored.

LEUCOM IENAS, in Ichtbyology, a name by which fome bave called the fmaris, a fmall fifl caught in great plenty in the Mediterranean.

LEUCOPETALOS, in Natural Hilory, the name of a beautiful ftone defcribed by 'Pliny, as being of a fine gold yellow, variegated with white.

LEUCOPETRIANS, in Ecclefiafical Hifory, the name of a fanatical feet which fprang up in the Greek and Eaftern churches towards the clofe of the twelfth century: the fanatics of this denomination profeffed to believe in a double Trinity, rejected wedlock, abtained from felh, treated with
the utmoft contempt t'ce facraments of baptifm and the Lord's fupper, and all the various branches of external worhip, placed the effence of religion in internal prayer alone, and maintained, as it is faid, that an evil being, or genius, divelt in the brealk 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 enthulialtical fect is faid to have been a perfon called Leucopetrus, and his chief difciple Tychicus, who corrupted, by fanatical intcrpretations, feveral books of fcripture, and particularly St. Matthew's gofpel. Mofheim.

LeUCOPHÆA Antelope, in Zoology. See Antelope Lencophaa.

LEUCOPHAGIUM, a name given by fome phyficians to a fort of medical aliment good in confumptions, and other general decays. It is compofed of fweet almonds ma. cerated in rofe-water with the tender flefh of a capon, all being finally boiled together to a pulp, capable of being paffed through a fieve.
LEUCOPHLEGMATIA, in Medicine, from $\lambda$ euxos, cubite, and ${ }^{2} \lambda \mathrm{sy} \mu \mathrm{z}$, pifuita, phlegm, a term applied to the dropfy of the flin, or anafarca, in confequence of the very pallid hue of the fkin and complexion under fuch circumflances.
Dr. Cullen remarks, that the terms anafarca and leucophlegrmatia have been commonly confidered as fynonymous: buc fome authors have propofed to conider them as denoting diftinet difeafes. The authors who are of this laft 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 ap. pears to be a greater deficiency of the blood; fuch as occurs after profule hxmorhagies, or other great evacuations. The diftinction, however, is principally verbal. See Ana. sarca, and Dropsy.

LEUCOPHRA, in Zoology, a genus of the clafs Vermes, and order Infuforia: this worm is invifible to the naked eye, and every where ciliate. There are eight \{pecies, of which four are found in the waters or marhes of our own country.

## Species.

Conflicror. Spherical, fub-opaque, with moveable inteflines; it is found in clear water; is of a ycllowifh colour, with dark edges, and filled with very minute molecules in perpetually violent agitation. This animalcule is defcribed and figured in Adams' Effays on the Microfcope. It is faid to be rather a heap of animalcules than a fingle individual, is larger than moit fpecies of the vorticella, perfectly fpherical, and femi-tranfparent. It rolls at intervals from right to left, but feldom removes from the fpot where it is firft found. In proportion to the number of moleculcs above-mentioned, which are accumulated on one fide or the other, the whole mafs rolls cither to the right or left; it is then sranquil for a fhort time, but the conflict becomes more violent, and the fphere moves the contrary way in a fpixal line. It is a fine object for the microfcope, but requires to be obferved with much attention. When the water begins to fail, the little creatures affume an oblong, oval, and even cylindrical figure ; the hind part of fome being compreffed into a triangular fhape, and the tranfparent part efcaping as it were from the inteftines, which continue to move with the fame violence till the water wholly fails, when the molecules are fpread intu a thapelefs mafs, which foon vanifhes,

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and the whole fhoot into a form, having the appearance of cryftals of fal-ammoniac. See Adams, p. 500.
Vesicutifera is ovate with veficular inteftines. 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 veficles or bladders. The middle frequently appears blue, and the vefickes feem as if fet in a ground of that colour. The accounts given of this animalcule by Spallanzani and Müller differ in fome refpects; the latter, however, admits that he once faw an individual like thofe defcribed by Spallanzani.

Acuta. The oval leucophra, which is round, with a black point at the edge.
Fluxa. Simate, kidney-fhaped; body oblong, jellowiff, obtufe 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 fpecies of the vorticella, and requires to be obferved fome time before its peculiar characters can be afcertained : the body is compofed of molecular veficles, of a dark green colour, for the moft part it is like an inverted cone, the fore-part being wide and trun. cated, with a little prominent horn, or hook, on both fides; the hind-part is conical, ciliated, the hairs exceedingly minute; thofe in the fore-part are three times longer than the others, and nuve in a circular direction. The hinder part is pellucid, and fometimes terminates in two or three obtufe 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 marhy grounds. See Adams, $\mathrm{Pl}_{0} 25$.

Heteroclita. Cylindricab, obtufe on the fore-part, the hind-part furnifled with a double crefted organ, which it can thruft out and draw in at pleafure. To the naked eve it appears like a white point; inteftines vifible 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 fmaller than the upper part. With a lens of pretty high power the whole body is found to be ciliated.

Nodulata. Ovate oblong; deprefled, with a double row of tubercles. This fpecies is found in the inteftines of the Lumbricus terreltris, and Nais littoralis; it is very pellucid, fhining like filver, and is propagated by a tranfverfe divifion; it is of an oval fhape when young, and growing more oblong with age ; it is truncate at the tip.

IEUCOPIPER, in the Materia Medica, a name by which fome authors have diftinguifhed the white pepper.

LEUCOPOGON, in Botany, fo named by Mr. Brown, from גevxos, whbite, and $\pi$ wywv, a beard, on account of the white erect hairs on the upper fide of the fegments of the corolla, very confpicuous even in dried fpecimens. Brown. Prodr. Nov. Holl. v. 5+1. Ait. Hort. Kew. ed. 2. v. 1. 323. (Perojoa; Cavan. Ic. v. 4. 29.)-Clafs and order, Pentandria Monogynia. Nat. Ord. Epacrider, Brown.

Gen. Ch. Cal. Perianth interior, of feven leaves, erect, permanent; the five innermolt equal, lanceolate, concave; two outer ones ovate, oppofite, much fhorter. Cor. of one petal, fumnel-fhaped, limb in five fpreading equal fegments, longitudinally bearded on the upper fide, with denfe, erect hairs. Neftary glandular, furrounding the bafe of the germen. Stam. Filaments five, thread-fhaped, equal, inferted into the tube ; anthers incumbent, oblong, burting length-
wife, rifing jut above the tube. $p_{i f 2}$. Germen fuperior, roundifh; ftyle flort, columnar; fligma obtufe. Peric. Drupa more or leff fucculent, or fometimes dry when ripe, fometimes cruftaceous. Nut of from two to five cells, with one or two pendulous feeds in each.

Eff. Ch. Outer calyx of two leaves. Corolla funnes. fhaped, its limb fpreading, longitudinally bearded. Filaments included in the tube. Drupa of from two to five cells.

In the Prodromus of Mr. Brown, fo rich in hotanical novelties, we find the definitions of forty-eight fpecies of this new genus, which he has feparated from the Stypbelia 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 interral 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 fhall give fome examples.

1. Spikes axillary, many-fowered. Drupa juicy. Six fpecies.
L. lanceolutus. Brown n. I. (Strpbelia lanceolata; Smith Bot. of New Holland, 49 ; excluding the fynonyms from both authors.)-Spikes drooping, a argregate. Fruit oval, of two cells. Leaves lanceolate, flat; many-ribbed beneath; with three furrows above. Branches fmooth.Sent dried from Port Jack fon, New South Wales, by Dr. White, in 1793. The living plant we believe has never been brouglit to this country; $L$. lanseolatus of the new edition of Hort. Kew. being certainly Stypbelia parsiffora of Andr. Repol. t. 287 ; S. Gnidium, Venten. Malmar. t. 23 , which appears to us a very different fpecies, rath.er agreeing with the characters of L. apiculatus, Brown n. \%.The true lanceolatus is a larger flrub, with copious, fender, leafy, round branches, ufually quite fmooth, fometimes very minutely downy; the young ones reddifh, "becoming angular and ftriated when dried. Leaves fcattered, llightly fpreading, feffile, lanceolate, flat, fharp-pointed, entire, fmooth, 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 bafe to the middle; the under fide paler, with nurferous, branching, parallel ribs, Stipulas none. Spikes clutlered about the ends of the branches, fpreading or drooping, nearly the length of the leaves, flender, loofe, many-flowered, the common ftalk flightly downy. Flowers fmall, white, feffile. Bralicas folitary under each Hower, ovate, concave, ribbed, downy-edged, of the fize and exact appearance of the two outer calyx-leaves, placed contrary to them, permanent. Inner caly,x-leaves twice as long as the outer, and fmoother, rather fhorter than the tube of the corolla, whofe limb is reflexed, with a tolerably denfe, but not very white beard, at leaft in the dried fpecimen. Drupa of two cells, oval, twice as long as the inner calyxleaves, crowned by the fylle, which is about a third of its length.
L. verticillatus. Brown n. 6.-Spikes mofly terminal, aggregate ; drooping when in fruit. Drupa of five cells, five-lided. Leaves interruptedly cluftered, fomewhat whorled, oblong-lanceolate, taper-pointed. Gathered by Mr. Brown on the fouthern coaft of New Holland. We have what anfwers to his defcription from King George's found, on the weft coaft, 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 roughiih to the touch, marked on both fides with five ribs, befides innumerable oblique lateral ones beneath:

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four or five growing together in a fort of whorls. The lateral branches are alfo often whorled. Spikes much as in the laft, but longer. Bralleas ribbed, fmooth, twice as large as the outer calyx-leaves.
2. Spikes avillary, fometimes terminal, of thrce or more flowers. Calyx and bradeas coloured. Drupa rather dry. Leaves not beart-floped. Fourteen fpecies.
L. apiculatus. Brown n. 7. (Styphelia parviflora; Andr. Repof, t. 287? S. Gnidium ; Venten. Malmaif. t. 23 ?)Spikes terminal, fomewhat aggregate, of five to feven flowers. Bracteas lanceolate, rather larger than the outer calyx-fcales. Leaves lanceolate-oblong, erect, flightly concave, calloustipped, fmooth at the edges. Drupa cruftaceous, turbinate, depreffed, fhorter than the calyx.-Gathered by Mr. Brown on the fouth coalt of Naw Holland. He obferved a fmooth variety and a downy one, which he fufpects may be diftinct fecies.-The above characters moft minutely anfwer to the above plant of Andrews, raifed from New Holland feeds, and to be feen in feveral greenhoufes, flowering in May. It is a fmall /hrub, with apparently deciduous, rather glaucous leaves, hardly an inch long, fmooth, with little, denfe, upright, ufually folitary, terminal fpikes, of pretty fnew-white flowers.
L. revolutus. Brown n. 13.-Spikes moftly 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; fmooth and furrowed beneath; the edges reflexed and naked. Branches finely downy. Drupa dry, obovate, with five cells. -Found by Mr. Brown on the fouth coaft of New Holland, and by Mr. Menzies at King George's found. It is not very unlike the laft, but the leaves are fmaller, more fpreading, and rough on the upper fide with minute points. The fowers are larger, and very confpicuous for the long white hairinefs of their fegments.
L. ericoides. Brown n. 17. (Styphelia ericoides; Smith Bot. of New Holl. 48. Epacris fpuria; 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; roughifh above. Bracteas pointlefs. Inner calyx-leaves membranous. Drupa dry, angular.-Native of New South Wales, and of Van Diemen's land. A bufhy / $b r u b$, with leaves fcarcely half an inch long, almoft every one of which is accompanied by a much fhorter axillary fjike of three or four flowers. The fegments of the corolla are ftraight and fharp, looking reddifh (as Cavanilles defcribes them) when dry, elegantly bearded with white hairs, which, as the flowers open, feem to form a denfe web in the mouth of each.
'To this fection alfo belong, among others, the Stypbelia, tab. $64,65,66,67$, of Labillardiere.
3. Spikes axillary or terminal. Leaves heart-faped. Calyx and bradeas membranous or leafy. Five fpecies.
L. amplexicaulis. Brown. 21. (Styphelia amplexicaulis; Rudge Tr. of Linn. Soc. v. 8. 292. t. 8.)-Spikes axillary and terminal, [preading, ftalked, longer than the leaves, which are heart-fhaped, pointlefs, clafping the ftem; minutely downy beneath; recurved and fringed at the edge. Branches hairy. Drupa lenticular, of two cells.-Found near Port Jackfon. The Alems are feveral from one root, moftly fimple, round, reddifh, clothed with fine horizontal hairs. Leaves fpreading, near an inch long, half an inch wide, with many ribs. Caly.x and brateas finooth, acute. Segments of the corolla recurved, very hairy. Drupa comprefled, oblique.
L. difans. Brown n. 23,-Spikes terminal, aggregate,
zigzag. Flowers diftant. Leaves ovate, fomewhat heartfhaped, deflexed, pointlefs, minute; convex above; downy beneath. Drupa cruftaceous, obovate, flat-topped, of five cells.-Gathered at King George's found by Mr. Menzies, to whom Mr. Brown, like ourfelves, was indebted for fpecimens. The branches are long, clothed with numerous little reflexed convex leaves. Spikes very peculiar, being long, flender, with remarkably zigzag, downy ftalks. Brazeas heart-fhaped, concave, ribbed, permanent. Calyxleaves very broad. Segments of the corolla recurved, very denfely bearded.
4. Spikes terminal. Calyx and bratteas ratber leafy. Drupa
dry. Leaves not heart-_baped. Eight fpecies.
L. microphyllus. Brown n. 26. (Perojoa microphylla; Cavan. Ic. v. 4. 29. t. 349. f. 2.)-Spikes cluftered, of few flowers. Leaves of the calyx pointed, half membranous. Bracteas leafy, ribbed. Leaves oval, flat, obtufe, pointlefs; of the fame colour on both fides. Drupa cruftaceous, of one or two cells.-Native of the neighbourhood of Port Jackfon. A pretty little /brub, with minute, rather imbricated, fmooth, thickifh leaves. The little fpikes of flowers, cluffered about the ends of each branch, form round heads. The inner leaves of the calye are narrow, acute, finooth, and thin. Segments of the corolla thick, recurved, very denfely covered with white hairs, as in L. difans, and indeed the generality of the fecies.
5. Stalks axillary, two-flowered; bere and there only fingleflowered; in which cafe there, are feveral brädeas. Drupa dry. Fifteen fpecies.
L. acuminatus. Brown n. 37.-Stalks very fhort, erect, moftly two-flowered. Leaves nearly upright, linear-lanceolate, very fharp, 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, $L$. rufaifolius, having been difcovered there by fir Jofeph Banks. Moft of the reft are natives of Port Jackfon, but none of them have come under our infpection.
This is, on the whole, a very elegant as well as natural genus, and it is to be regretted that only one of the fpecies has hitherto been made known to our cultivators of curious plants. The plumy whitenefs of the flowers gives a friking and peculiar afpect to the whole.
LEUCOPSIS, in Zoology, a genus of the Hymenoptera order, of the clafs $\ln$ fecta. The mouth is horny with fhort 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, fhort, equal, and filiform; antenne fhort and clavate; thorax with a long lanceolate fcale beneath; wings folded; fting reflexed and concealed in a groove of the abdomen. There are four fpecies, all foreign infects; three found in the fouth of Europe, and one in Tranqliebar.

## Species.

Gigas. Black ; thorax with two dorfal yellow dots ; abdomen feffite, with four yellow bands. It inhabits France; the wings are dufky; hind-thighs with numerous teeth:

Dorsigera. Abdomen feffle, 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 tranfverfe yellow line; abdomen compreffed and grooved on the back; fting double, as long as the abdomen, and reflexed back into the abdominal groove; legs yellov, fpotted with black; hind legs toothed, with a black fpot. This beautiful infect is figured in Adams' work on the microfcope; the drawing was taken from a fpecimen in her prefent majefty's cabinet of infects.

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There is one alfo in the cabinet of Linnrus, now in the poffefion of our very able coadjutor, Dr. Smith, P. L. S. It appears at firft fight like a wafp, to which genus the folded wings would have referred it, had not the remarkable fting or tube on the back have prevented it. It is thought to be a fpecies between, and uniting the fphex and wafp, in fome degree partaking of the characters of both. The antenne are black and cylindrical, increafing in thicknefs towards the extremity ; the joint neareft the head is yellow ; the head is black; fo alfo is the thorax, encompaffed with a round yellow line, and furnifhed with a crofs one of the fame colour near the head. The fcutellum 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 magnificr, 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.

Cglogaster. Abdomen feffile; fcale of the thorax half as long as the abdomen. It is found in fome parts of Germany. The thorax has a yellow band behind, and the eyes are black.

LEUCORRHAA, in ATedicine, $\lambda . s x z z_{5} 5^{5} s x$, literally fignifying fluor albus, or white fux, is a diforder of the uterus or its paffages, from which a whitifh or pale coloured fluid is difcharged, accompanied by pain in the loins, confiderable lofs of ftrength, and a wan fickly arpect. It is commonly expreffed by the appellation of "the whites" by the patients, or is fimply called " a weaknefs."

Every ferous or puriform difcharge from the vagina has been comprehended under this appellation: it is obvious, however, that fuch difcharges may be various, and may proceed from various fources. They may proceed more efpecially from the veffels of the uterus itfelf, or from thofe of the vagina only. In the latter cafe, which is probably not a very common occurrence, the caufe of the excretion mult be purely local: it fometimes happens during the period of pregnancy. In thefe inftances, there mult be either a local weaknefs and relaxation of the parts, or fome irritation may exift or have been applied, fo as to excite the mucous glands, the fecretion from which ferves to lubricate the parts, to pour out their fluids in an unufual quantity. The exiftence of little aphthous ulcerations within the labia fometimes gives rife to fuch a difcharge, in which cafe there is alfo a confiderable degree of forenefs and tendernefs in the parts; and the ufe of thofe inftruments, called peflaries, has been faid to produce a fluor albus, from the pain and irritation which they occafion.

In general, however, the difcharge of leucorrhæa proceeds from the fame veffels of the uterus itfelf which pour out the catamenia. This inference may be deduced from the following circumitances. In the firt place, the leucorrhæa is moft common in thofe women who are fubject to an immoderate flow of the menfes. Secondly, it appears principally, and often exclufively, a little time preceding, and again pofterior to the menfrual difcharge ; the latter diminifing in proportion as the leucorrhæa is increafed, or feeming to be converted into the leucorrhæa. Thirdly, the leucorrhra often continues after the period when the catamenia have altogether ceafed, and frequently fhews a confiderable tendency to a periodical recurrence. And laftly,
it is commonly accompanied with the fame local and conflitutional fymptoms as an exceflive flow of the menfes; fuch as pale:ipfs of the countenance, a feeble pulfe, an un. ufual debility on taking exercife, a hurry of the breathing from even moderate exertion; and at the fame time the back bccomes pained by any continuance in the erect poflure, the extremities are frequently cold, and fome œedema affects the feet in the evening. The debility alfo manifefts itfelf by affections of the ftumach; fuch as lofs of appetite, flatulence, and other fymptoms of indigeltion ; by palpitations of the heart, with frequent fenfations of finking and fluttering about the epigaftric region, and even actual fyncope; and by a depreffion of fpirits, and a weaknefs of mind liable to ftrong emotions from flight caufes, efpecially when operating fuddenly ; in a word, by all the train of diftreffing fymptoms which have been denominated nervous. The inference, that the difcharge is uterine, is farther confirmed, when it is obferved, 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 perfon who might be fufpected of giving infection; nor had, from the firlt appearance, been accompanied with any iaffammatory affection of the pudenda

The laft obfervation applies particularly to the diagnofis between the difcharge of leucorrhæa and that arifing from venereal infection; a point which is worthy of more particular confideration. It is very eafy to dintinguifh a fimple leucorrhæa from a recent gonorrhæa; for befides the general debility, and the nervous fymptoms above-mentioned, which frequently accompany the former, the colourlefs nature of the difcharge, which only ftiffens, without ftaining the linen, and the abtence of all heat and fcalding on paffing the urine, together with the ceffation of the difcharge at the time of menftruation, fufficiently characterize the leucorrhæa; whillt in the gonorrhæa there is itching, inflammation, and heat of urine, the orifice of the urinary paffage is prominent and painful, there is frequent irritation to make water, and the difcharge ftains the linen of a yellow or greenifh colour. But it mult be remembered, that the difcharges from the vagina, which have been denominated leucorrhæa, are fometimes opaque and of a yellowifh colour, and fometimes accompanied with a degree of ardor urinæ 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 thefe cafes the difcharge is of a fanious nature, and very offenfive; 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 difcharge is fometimes fo acrimonious, in thefe inftances, as to inflame and excoriate the paffages. In the herpetic or aphthous affection of the orifice of the pudendum, there is heat of urine with the difcharge ; but the difcharge is very fcanty, and the labia extremely tender and fore, fo as fcarcely 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 cafes, the circumitances of the patient, which render it either impofible or in the higheft degree improbable that any infectious connection cart have taken place, will of courfe admit of no hefitation in the decifion; and it is often upon thefe circumltances alone that the practitioner is obliged to depend in forming his opinion.

The caufes of leucorrhra are chiefly to be fought for among thofe agents and carcumitances, which tend to produce a debility of the fyitem in general, or of the uterus in particular. Of the former kind, are imperfect diet, fatigue, anxiety, and much watching; the practice of fuck-

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ling children too long; damp, clofe, and uncleanly habitations; caufes which chiefly operate among women of the lower clafs. To thefe may be added, the almoft total want of proper exercife, living too much in warm chambers, and drinking much of avarm enervating liquors, fuch as tea and coffee, which influence principally women of better ftations. The fources of local debility to the uterine fyltem itfelf are many ; fuch as blows, bruifes, and falls; frequent abortions, or frequent child-bearing without nurfing, difficult and tedious labours, profule difcharge of the catamenia, or of the lochia after delivery; venus immodica; \&c.

On the other hand, the effect of leucorthea, efpecially when it has continued long, is, in many cafes, to prevent conception and occafion barrennefs; or, if conception take place, to produce a fucceffion of mifcarriages: not to mention the conftitutional and nervous derangement already deferibed. However, if the leucorrhxa be moderate, and be not accompanied with any confiderable overflow of the catamenia, it may often continue long without inducing any great degree of debility; and it is only when the difcharge has been very copious, as well as conftant, that its effects in that way are very remarkable.

The means of cure will confift of thofe expedients which contribute to ftrengthen the general habit, and the uterine fyftem locally. The fytem generally is to be fupported by all thofe means which regimen, diet, and medicine contribute; namely, by light and nutritious diet; by moderate exercife, by fome means of geftation, as in a carriage, on horfeback, or failing (the exercife of walking, both from the conftant crect pofture, and the action of the mufcles, being liable to produce irritation, and to augment the uterine difcharge) ; by the ufe of the tepid or cold bath, according to the ftrength of the patient, and the feafon of the year; by drinking the chalybeate mineral waters ; or by taking fome of the preparations of iron in the way of medicine, efpecially the muriated tincture, or the fulphate, together with the cinchona, or other vegetable tonics. The mineral acids are fometimes beneficial under the fame circumftances.

The uterus itfelf and its cornections may be flrengthened either by dircet local applications, or by internal medicines, which are commonly determired to the urinary paffages, and from the vicinity of thefe are often communicated to the uterus. Thefe laft mentioned medicines are cantharides, turpentine, and balfans of a fimilar nature; by which the difeafe has often been relieved or even cured. The former clafs includes a variety of aftringent lotions and injections, by which the difcharge may alfo be often diminihhed, and in young women, when the complaint is recent, entirely cured. Thus the parts may be wafhed twice or three times a day with a weak folution of the acetite of lead, or of alum, in rofe water; or an infulfion of rofe leaves, or of green tea, or the chalybeate mineral waters, make very proper lotions: or thefe liquors may be thrown into the vagina twice a day, through an ivory pipe, by means of the elaftic gum. But in general injections are unwillingly ufed, unlefs when the difeale is inveterate. When the matter difcharged is acrimonious, and inflames and excoriates the parts, or excites very tronblefome and painful itching, the greatelt relief is ubtained 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 liquors.

Dr. Hamilton remarks, that women lhave, in many inflances, been cured of the molt obftinate habitual fuor albus by giving fuck. See his Treatife on Midwifery, pto io.

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clap. i. p. 68. See alfo Cullen, Firt 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 fork or heron.

LEUCORYX, Antilope or Aniclope leneory:, in Zoo. logy, the Gazella Indica, having fingular horns, of Nov. Com. Petrop. xiii. 470.1. ro. f. 5.Oryx of Op flian, Cyneg.ii. v. 445 , leucoryx of Pennant, is a fpecies of Antelope, which has very long, flender, upright; taper, flarp-pointed horn3, very flightly bent backwards and annulated at the bafe; the body being of a milk-white colour. It inhabits the inland of Gow Bahreia, in the buttom of the Perfian gulf, near Baffora. It is about the fize of a Welih runt or Imall cow ; the head is large and broad, with a thick broad mofe, 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 longifh, and is tufted at the end with a brufh of hairs; the horns are of a black colour. Dr. Pallas mentions a horn, apparently belonging to this animal, or fome feccies nearly refembling it, which was found in a foffile ftate, 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 $\lambda_{\text {evoo }}$;, white, and sknempon, a fceptre, on account of its elegant fceptre-fhaped fpike of white flowers. The author of this genus remarks that "it has the habit of a Buddleia, but belongs to the fecond fection of $V_{\text {itices }}$ in Juffieu, near $V$ crbena; and fhould, along with Verbena, Itand near Mentba in the Linnzan fyttem."-Sm. Exot. Bot. vo 2. 113.-Clafs and order, Didjnamia Gymnofpermia. Nat. Ord. fee above.
Eff. Ch. Corolla unequal, in four fegments; the upper. mof deeply cloven. Calys five-cleft. Stamens declining, much longer than the corolla, parallel. Seeds four.

1. L. canum. Hoary Leucofceptrum. Sm. Exot. Bot. t. 116.- This is the only feecies known, and was gathered by Dr. Buchanan in the woods of Upper Nepal, where it flowers in December, and is called Mrutfola by the Nawars. The brancbes are obtufely quadrangular, compreffed, clothed with fine, denfe, whitifh pubefcence. Leaves on fhortifh, downy footitalks, oppofite, elliptical, pointed and tapering at both ends, bluntly ferrated, veiny ; green and naked above; white and downy beneath. Spike terminal, folitary, feffile, erect, cylindrical, denfe, many-flowered. Brateas fmall, in four rows, oppofite, each common to many flowers. Calyx tubular, downy; its margin obtufe, unequally fivecleft. Corolla longer than the calyx, with a fhort tube; the limb in four, very unequal, obtufe fegments, of which the uppermoft is deeply divided; the lowermolt, or lip, large, concave, and entire. Stamens declining, parallel, threadfhaped, fmooth; the two longelt double the length of the lip. Anthers roundifh, two-lobed, yellowifh. Germen fuperior, 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 fplendid plants fent by Dr. Buchanan, from the mountains of Nepal, to Dr. Smith, which fo greatly enrich the work whence the above defcription is chiefly taken.

LEUCOSPERMUM, fo named by Mr. Brown, from גeuvo;, qubite, and $\sigma \pi \underline{\rho} \mu \dot{\alpha}$, the feed. Brown Tr. of Linn. Soc. v. 10. 95. Ait. Hort. Kew. ed. 2. v. 1. 195. (Leucadendron ; Salif. Parad. t. ir6. Protex, fect. 3, piltillis capitatic ; Linn. Mant. 2. 198.)-Clafs aud order, Tetrandria Monogynia.
iilonogyrid. Nat. Ord. Agzregati, Linn. Protix, Jult. Proo traces, Brown.

Gen. Ch. Cal. Common Perianth of numerous fingleflowered fcales, collected into a head, cither permanent and hardened, or membranous and deciduous. Cor Petals four, irregular, lincar; three of them cohering by their lower part; the fourth feparate and narrower. Stum. Filaments four, fhort, infurted into the petals; anthers linear, concealed by the petals, of two cells, burking lengthwife. Pij2. Germen fuperior, feffile, roundifh; itigma cylindrical, rigid, deciduous; ftigma fwelling, fmouth, fomewhat obliquc. Peric. Nut tumid, fmooth, fingle-fecded.

Eff. 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 fwelling, fmooth. Nut fuperior, feffile, tumid, fmooth.

Eighteen fpecies are defined by Mr. Brown, all natives of fouthern Africa, about the Cape of Good Hope, growing for the moft 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 firt having a rounder head of flowers, whofe calyx-fcalcs are permanent, becoming fomewhat hardened, of which defeription are fourteen fpecies; the remaining four have a flatter common receptacle, with narrow deciduous fcales, of which the innermolt are very thin and chaffy. All are forubs of rather humble growth, rarely arborefcent; many of them downy or hairy. Leaves either entire, or furnifhed with callous teeth at the extremity. Flowers yellow, in terminal heads.

An interefting fpecimen of this genus is
L. tomentofium. Brown. n. 13. Ait. Hort. Kew. n. 7. (Protea tomentofa; Willd. Sp. Pl. v. 1. 5 14. Limn. Suppl. 118. P. candicans; Andr. Repof. t. 29+.)-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 ralfed it from feed the year following. The whole $/ b r u b$ is clothed with fine fhort down of a glancous hue, the flem 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 Auguft and September, terminal, foiltary, feffile, about the fize of a walnut, variegated with orange and ycllow, their fcales tipped with dark brown. Few of the Proteaceous tribe are more difficult to increafe by cuttings.
LEUCOSTAPHYLOS, a name given by fome authors to the water-elder, or opulus.

LEVE', Fr. in Mufic, the $u p$, an unaccented part of a bar in beating time. Sce Arsis, and Accent, in Muffe.

LEVEL, a mathematical inftrument ufed 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 diference of afcent or defcent between feveral places, for conveying water, draining fens, placing the furfaces of floors, acc. level, and for various other purpofes in agriculture, architecture, hydraulics, furveying, \&c.

The word comes from the Latin libella, the crofs beam that forms the brachia of a balance, which, to be jult, mult ftand horizontally.
There is a great variety of inftruments of this kind, differently conftructed, and conftituted of different materials, according to the particular purpofes to which they are ap-

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plied, as the carpenters' level, mafons' level, balance Icvelt, mercurial levels, furveying and fpiral levels. But, however their conttruction may vary, they may be all referred to the following three clafes: viz. is. Thofe in which a vertical line is determined by a fufpended plumb-line, or a balance weight, and the horizontal pofition is fhewn by a line perpendicular to it. 2. Thofe 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 glafs tube. For the purpofes of agricellture, thofe of the improved water, air, fpirit, and foot kinds are moit commonly ufed.

Thofe of the firlt kind, depending upon the plumb-line, are very common, but not very accurate: the fimplett form is that of two rulers, united together in the form of the letter L ; they mult be exactly perpendicular to cach other : then if a plumb-line is fufpended from the top of the vertical ruler, and the edge thereof be made to coincide with the plumb-line, the other ruler mult be horizontal. This, when applied to the top of a wall, a beam, or floor, will thew if they are horizontal. This is the kind of level ufed by artificers: fometimes it is found like the letter $A$, of threc rulers, the plumb-line being fufpended from the vertex, and the two legs fet on the furface to be levelled. The line hangs opppofite to a mark, made on the middle of the crofs ruler, when the feet are on the fame level. Befides thefe there are many other forms. For an inftrument of this kind, fee Plate IV. Surveying, fig. 5.

Levex, Plumb, or Pendulum, that which fhews the horizontal line by means of anothe: line perpendicular to that defcribed 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 paffes is hollow, that it may hang free every where but towards the bottom, where there is a little blade of filver, whercon is drawn a line perpendicular to the telefcope. The faid cavity is covered by two pieces of brafs, making, as it were, a kind of cafe, left the wind fhould agitate the thread; fer which reafon the filver blade is covered with a glafs $G$, to the end that it may be feen when the thread and plummet play upon the perpendicular. The telefcope I is faftened to the other branch, or leg, of the inftrument, and is about two feet long, having a hair placed horizontally acrofs the focus of the object-glafs, which determines the point of level, when the ftring and plummet hang againit the line on the filver. blade.

All the accuracy of this inftrument depends on the telefcope's being fitted at right angles to the perpendicular. It has a ball and focket, by which it is faftened to its foot: and is faid to have been the invention of M. Picard.

Here we may introduce an account of other levels conAructed on the fame general principle. For the foot-lcoel; fee Foot-livel.

Level, Artillery-foot, is in form of a fquare, 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 fog. 6.

This inttrument may be ufed on other occafions, by placing the end of its two branches on a plane; for when the thread.

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ithread plays perpendicularly over the middle divifion of the quadrant, that plane is affuredly level.

To ufe it in gunnery, place the two ends on the picce of artillery, which you may raife to any propofed height by means of the plummet, whofe 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 faftened a line with a plumnet; which, when it hangs over a fiducial line at right angles with the bafe, fhews that the faid bafe is horizontal.
'This and the mafons' level, though very common, are elteemed the beit for the practice of building, though the operations by them can only be fhort.

Level, Gunners', for levelling cannons and mortars, is an inftrument reprefented 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 $45^{\circ}$, which number is fufficient for the higheft elevation of cannons and mortars, and for giving fhot the greateft range. On the centre of this fegment of a circle is fcrewed a piece of brafs, by means of which it may be fixed, or moved, at pleafure. The end of this piece of brafs is made fo as to ferve for a plummet and index, in order to fhew the different degrees of elevation of pieces of artillery. This inftrument has alfo a brafs foot to fet upon cannon or mortars, fo as when thofe pieces are horizontal, the whole inftrument will be perpendicular.

The ufe of this level is obvious, and confifts 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 cail levelling the piece.

The moft curious inftrument for the ufe of the artillerift, was lately invented by the very ingenious colonel Congreve, of the royal artillery; having the following qualifications viz.-I. 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 depreffion may be given to the 6 oth part of a degree, with lefs trouble than the common gunners' quadrant, which only gives to the 4 th 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 ufual way. 6. It anfwers all the purpofes of a pair of callipers, with the advantage of knowing (to the roodth 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 inftrument are the following lines, viz. equal parts, folids, planes, and polygons, logarithms, tangents, verfed fines, fines and numbers, plotting fcales, and diagonal fcale of inches for cutting fuzes by. 8. In the lid of the inftrument-cafe is a pendulum to vibrate half feconds. It is likewife of fingular ufe in furveying; as, I. It takes hocizontal angles to the 6 oth part of a degree. 2. Vertical angles. 3. Levels. 4. Solves right-angled plane triangles. 5. Oblique-angled plane triangles. 6. Anfwers all the purpofes of a protractor, with the advantage of laying down angles exactly as taken in the field. N. B. Captain Jordane's ingenious inftrument anfwers nearly the fame purpofes.

Level, Majons'; is compofed of three rules, fo joined as
to form an ifofceles tringle, fomewhat like a Roman A; ac the vertex whereof is faftened a thread, from which hangs a plummet, which pafies over a fiducial line marked in the middle of the bafe, 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 telefcope 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 fcale beam, and the weight of the vertical leg makes the fights or telefcope affume the horizontal pofition. Its advantage is, that it adjuits itfelf to the level line, which can be transferred to any diftant object, by obferving it through the fights or telefcope. It is neceffary to enclofe it in a box or cafe to avoid ofcillation from the wind. This inftrument is convenient, but not very accurate.

Another balance level, called the "reflecting level," is of French invention, afcribed to M. Caffini. A telefcope or ruler, with plain fights, is fufpended vertically ; a mirror is fixed juft before the object glafs, being inclined at an angle of $45^{\circ}$ with the axis of the telefcope. Now as the telefcope hangs vertical, and the mirror bends the rays at a right angle, they will of courfe be horizontal. The telefcope mult be provided with a diagonal eye-piece, to bend the rays again horizontal, for the convenience of obfervation. 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 defcribed in the $25^{\text {th }}$ volume of the Tranfactions of the Society of Arts. It confints of a tube, provided with fights at both ends, and fufpended from a point confiderably above its centre of gravity. It has a fliding weight, adjuftable by a fcrew, to place the tube truly horizontal. This is, perhaps, the beft kind of balance level which has appeared.

To the fecond clafs of levels belongs the water level. This fhews the horizontal line by means of a furface of water, or other liquid : founded on this principle, that water always naturally places itfelf level.
The moft fimple is made of a long wooden trough, or canal, whofe fides are parallel to its bafe; fo that being equally filled with water, the furface thereof fhews the line of level. This is the chorobates of the ancients, defcribed by Vitruvius, lib. viii. cap. 6 .

The mafons frequently employ this, where they would make the top or courfes of a wall truly level: they form the trough by a ridge of mortar or clay ftuck round on all fides on the top furface of the wall; and filling the trough, thus formed, with water, they can meafure if it is equally deep in all parts.

This fort of level is allo made with two cups fitted 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 ftand, 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 inftrument, inftead of cups, may alfo be made with two fhort cylinders of glafs, three or four inches long, faftened to each extreme of the pipe with wax or maltic. Into the pipe is filied fome common or coloured water, which fhews itfelf through the cylinders, by means of which the line of level is determined ; the height of the water, with refpect to the centre of the earth, being always the fame in both cylinders.

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linders. This level, though very fimple, is yet very commodious for levelling fmall diftances:

Another water level is a glafs tube, bent into the form of U, having a cup at the top of each leg. This being mounted on a pedeftal, and filled with water, or other fluid, it will, from the principles of hydroftatics, ftand at the fame level in both cups; and by looking through the glafs, any diltant objects which appear to coincide with the furface of the water, in both cups, will be on the fame level with them.
A refleling level is, that made by means of a pretty long furface of water, reprefenting the fame object inverted, which we fee crect by the eye; fo that the point where thofe 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 furnifhed with two fmall fights, provided with crofs-hairs: thefe float upon the furfaces of the fluid in the cups, the crofs-hairs of each being equally diifant from the furface. A line feen through the fights will be parallel thereto, and confequently horizontal. One of thefe by Alexander Keith, efq. is defcribed and illultrated by drawings in the 2 d volume of the Edinburgh Tranfactions, p. 14, \&c. from which we fhall here fubjoin the following extract. Fig. S. (Plate IV. Surveying,) is a fection of the inftrument formed of mahogany or boxwood. A, A, are two oblong fquare cavities connected together by a narrow clofe channel, running from the bottom of the one to the other. $\mathrm{B}, \mathrm{B}$, are two grooves hollowed out of the wood, in order to contain the lights, Scc. They are fhut up by a lid, which turns upon a fcrew-nail at the centre C, as may be feen more diftinctly from fig. II.

Fig. 9. D, D, are the two fights, the one with a fmall hole, the other with a crofs-hair. Thefe fights are erected upon two pieces of ivory or hard wood, which are flaped nearly of the dimenfions of the cavities $A, A$, but fo much fmaller as to enter, without touching or rubbing on the fides. Mercury is poured into the two holes A, A, till they are about half full; the two pieces of ivory which fupport the fights are put into the cavities, and float on the furface of the mercury.

Fig. 10. is a perfpective view of the inftrument when the fights are floating upon the mercury; and fig. y. is another view of it, when the fights 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 line of level; and conlequently, if the two fights are once accurately adjufted, they will ever after point out the true level, without requiring any after adjultment.

When this inftrument is to be ufed, it may be laid on any horizontal furface, and the fights will immediately become an exact level. It may alfo be fixed on a tripod as the firit-level; or it will anfwer equally well, if it is affixed to the top of a fingle flake, which is Charpened at the point fo as to be puhhed into the ground. If it is to be ufed as a pocket-inftrument, it may be made of feven inches length, being about double the dimenfions of the annexed draught. A common walking cane forms a very convenient fupport. It is affixed to the cane by means of a brafs pin E, which paffes through the hole G, and through the eye or bole of the walking ftick; and a brafs nut F , fcrewing to the male-ferew of the brafs pin, keeps them firm together. The two grooves $B ; B$, contain the two fights and brafs pin, when not in ufe. Two corks, covered

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with thin leather, fited into the holes $A, A$, confine the mer cury, when the inftrument is to be tranfpurted; or, in cale the mercury is found to efcape, it may be poured into a fmall cafe, made of lignum vitx, like a tooth-pick cafe; and this may be ftopped with a cork, and made to fit into one of the grooves.
The advantages of this inftrument over the firit-level are: Ift, It requires no adjuftement, coufequently two obfervers, though otherwife not equally aceurate, mult make the fame obfervation. 2dly, With this, the level of iwenty different places may be taken during the time required to adjatt the fpirit-level for one obfervation. 3 dly, The micety of the fpirit-level depends upon the fmall curve of the glafs-tube, in the doice of which no rute can be laid down; ncither is any thing gained, in point of exactuefs, by leng thenimg the fpirit-tube above three or four inches. But every inftrament of this kind is of one ftandard; and the further the two fights are removed from one another, the more any crror is diminifhed. 4thly, This inftrument can be made perfectly juft, without taking any obfervation, or comparing it with another level. In order to do this, let the floats on which the fights reft, be of the fame dimenfion and weight, and let the crofs-hair and eye-lole be of one height, and without farther adjuftment, they will point ous the true level.

To the third clafs of levels belongs the fpirit level, called alfo the "air level," which is more accurate than any other kind, and is moft extenfively ufed. The invention of this inftrument has been afcribed to M. 'Thevenot. Others have attributed this application of a bubble of air to Dr. Hooke. The inltrument confifts of a cylindrical glafs tube filled with fpirits of wine, except leaving in it a fmall bubble of air: its ends are hermetically fealed to keep in the fluid. This bubble, being the lighteft of the contents of the tube, will, by the laws of hydroftatics, always run towards that end of the tube which is molt elevated; but when the tube is perfectly horizontal, the bubble will have no tendency towards either end. The tube is not flrietly cylindrical withinfide, though it bears that appearance ; it is flightly curved, the convex fide being upwards, and by this means the bubble will reft in the middle of the tube when it is horizontal, but approaches either end which is elevated above the other. The fimpleit form of a fpirit level for fixing any plane truly horizontal, confilts of a glafs tube of the above defcription, called a bubble tube, fixed into a block of wood, as at A B, fot . r. of Plate V. Surveying. The lower furface D E of the block is made flat ; and when the bubble C tlands between two fcratches marked on the glafs at $a b$, the line D E is horizontal. The method of making it correct is this; the tube is firit fitted into the block, the lower edge, D E, of which is placed on a bench or table as nearly horizontal as can be detcrmined, fo that the bubble ftands between the fcratches $a, b$. The level is now reverfed, that is, the end D is put where E was at firft. In this pofition, if the bubble Itands in the middie, it proves the level to be correct, and the table horizontal ; but if it runs to cither end of the tube, it fhews that end to be too much elevated: fuppofe it B, for inftance; this end of the tube muft therefore be let deeper into the wood, or the furface DE rectified to produce-the fame effect: one-halt the error mult be compenfated by this means, and the other half by rectifying the table or fupport; for $\mathcal{D} \mathcal{E}$, the level, mult now be reverfed again to verify thefe corrections; and when they are fo made that the bubble flands at $a b$, either way, the level is correct.
To illuttrate this more plannly, fee fy. 2, wiich reprefents. a fection of a bubble tube; but, for elucidation, is fhewn as
if curved much more than they are ever made. Suppofe the convex or upper furface of the tube to be a fegment of a large circle 13 CD , from the laws of hydroflatics it is plain, that the bubble of air, being the lighteft body in the sube, will certainly occupy the higheft point of the circle at C ; and the two points $13, \mathrm{D}$, being equally diflant therefrom, will be in the fame horizontal line B ED. The larger the radius of the circle D B , fo will the level be the more fenfible of any deviation from the horizontal, becaufe the bubble will have to traverle a greater diftance along the tube, in proportion to any partial clevation of either end. The numerous dipit levels applied to the delicate aftronomical inftruments made by Mr. Troughton, and defrribed in our articles Circie, Equatonal, 'Transit, \&c. are, in general, forned by grinding the inlide 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 I-20th of an inch, and may be determined to the greatelt precifion. For common purpofes, the bubble tubes have a much more rapid curvature, and are proportionably lefs fenfible, which is very proper, becaufe the bubbles of fuch delicate levels can never, in common ufe, be brought to fland at all fteady, from the bending of the floors, and tremors of the fupports they are applied to. The application of the bubble tube has been thewn in numerous inftances in the articles above-mentioned; but the inftrument denominated the fpirit-level, for furveying, remains to be defcribed here. The moft fimple 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 obferver views any diftant object, whofe level is to be afcertained. This inflrument is fitted upon a fupport 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 fhews it to be horizontal. The inftrument in this form, which is the original, is fo extremely inconvemient for ufe, that it is totally unfit for the delicate obfervations neceffary for fetting out canals, and other works, where the conveyance of water is concerned, and is therefore but very little ufed, except in levelling for roads, where an error is of light importance. After having deferibed fome progreflive improvements in this inftrument, we fhall proceed to the defcription of the level with telefcopic fights, which is univerfally employed for the above purpofes.

The air-level, with fights, is an improvement of the fimple airlevel already defcribed; which, by the addition of more apparatus, becomes more commodions and exact.

It confilts of an air-level (Plate VI. Surveying, fig. 1.) about eight inches long, and feven or eight inclies in diameter, fet in a brafs tube, with an aperture in the middle. The tubes are carried in a ttrong, flraight ruler, a foot long, at whofe 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, crofing each other at right angles; in the middle whereof is drilled a very little hole, through which a point on a level with the inftrument is defcribed. The brafs tube is faftened on the ruler by means of two fcrews; one whereof, marked 4 , ferves to raife or deprefs the tube at pleafure, 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. fattened with ferews. to the great ruler, and the other end has a fcrew 5, ferving to raife and deprefs the inftrument, when nearly level.

This inftrument is yet lefs commodious than the following one, becaufe, though the holes be ever fo fmall, yet
they will Atll take in too great a face to detcrmine the point of level precifely.

Level', Air, with telefopic fighis. This level, reprefented in Plate VI. Surveging, fig: 2, is like the latt; with this difference, that, initead of plain fights, it carries a telefcope, to determine exactly a point of level at a good diftance.

The telefcope is in a little brafs tube, about fifteen inches long, fattened 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 drawn. out, or pufhed into the great one, for adjufting the telefcope to different fights. At the other end of the telefcope is placed the object-glafs; the fcrew 3 is for raifing or lowering the little fork carrying the hair, and malsing it agree with the bubble of air when the inftrument is level; and the fcrew 4 is for making the bubble of air agree with the telefcope. The whole is fitted to a baill 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 telefcope half round; and if then, the hair cut the fame point that it did before the turn, it is a proof the operation is juft.

It may be obferved, that one may ald a telefcope to any kind of level, by applying it upon, or parallel to, the hafe, or ruler, when there is occafion to take the level of remote objects.

For the method of adapting al level to the meridian telefcope, fee Telyscore.

Mr. Hadley has contrived a fpirit-level to be fixed to a quadrant for taking a meridional alitude at fea, when the horizon is not vifble. See the defcription and figure of it in the Phil. Tranf. $\mathrm{N}^{\circ} 430, \mathrm{p} .167,8 \mathrm{cc}$. or Martyn's Abridg. vol. viii. p. 358 , \&c. See alfo the method of preparing and ufing a water leveh, and a mercurial level, annexed to Davis's quadrant, for the fame purpofe, by MiLeigh, in Phil. Tranf. N $45^{\text {I }}$. p. 413 or Abr. vol. viii. p. 360 , \&c.

Level of M. Hay'sens's Invension confifts of a telefcopes, a, (Plate VI. Surveriug, fis. 3.) in form of a cylinder: going through a ferril, in which it is faftened by the middle. $T h i s ~ f e r r i l ~ h a s ~ t w o ~ f l a t ~ b r a a c h e s, ~ b . ~ b, ~ o n e ~ a b o v e ~ a n d ~ t h e ~$ other below ; at the ends of which are faftened little moving: pieces, which carry two rings, by one of which the telefcope is fufpended to a hook at the ead of the frew 3 ; and by the other, a pretty heavy weight is fufpended in order to keep the telefcope in equilibrio. This weight hangs in thebox 5 , which is almoft tilled with linfeed oil, oit of walnuts, or other matter that will not eably coagulate, for more aptly fetting the balance of the weight and telefrope. The inftrument carries two telefcopes, clofe and veny parallel to each other, the eye-glafs of the one being againit the ob; ject-glafs of the other, that one may fee each way withoit turning the level. In the focus of the object-glafs of each. telefcope, muft a little hair be ftrained horizontally, to be raifed or lowered as occafion requires, by a little fcrew. If the tube of the telefcope be not found level when fuff pended, a ferril or ring, 4 , is put on it, and is to be flid along till it \&xes to a level. The hook on which the initrument 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 telefcope from too much agitation in ufing, or in carriage a To the faid flat crofs is applied another hollow: crofs, that ferves as accafe for the initrument ; but the two ends-areleft open, that the telefcope may be fecured from the wea-

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ther, and arways in a condition to ufe. The foot of this inftrument is a round brafs plate, to which are faltened three brais reerils, moveable by means of joints, whercin are put ftaves: and on this foot is placed the box.

In the portable fpirit-level, the tube is properly fet in brafs, and fixed by means of fcrews in a fmall brafs trough, the bottom of which is ground very ftraight. The fcrews are ufeful to place the bubble in fuch a pofition that the lower furface of the trough may be parallel to a tangent fuppofed to be applied to the middle point of the curve of the level. The adjut ment is effected without much difficulty, by placing the level on an adjuttable plane, and then reverfing it. If the bubble itand accurately in the fame pofition betwcen two marks made on the tube in both fituations 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 tands in the pofition here mentioned, is horizontal.

This eafy praxis may be effected in various ways, according to the nature and figure of the inftrument of which the pofition is to be determined; but the accuracy of the refult will depend upon the fenlibility of the level; that is to fay, the fpace pafted over by the bubble for every minute or fecond of the quadrant, and the certainty with which, under circumftances precifely fimilar, it fhall arrive at the fame pofition. In the belt levels the curve muit be circular ; for in fuch the bubble will move with more activity, fettle itfelf with more certainty, and defcribe equal fpaces by equal changes of inchnation. An ordinary good Cpirit-level will exhibit a movement of upwards of half an inch for each minute of inclivation, and alter the pofition 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 extraordinary levels are much more delicate. De Lalande fpeaks of a level filled with ether, the bubble of which paffed over fourteen inches by equal fpaces 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 fpirit-levels are felected by trial. If a long piece of tube be uearly filled with ardent fpirit, and corked at the end, the run of the bubble may be tried with a fuitable inftrument 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 purpofes of filling and clofing. It is remarkable that thefe 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 unferviceable. A refpectable mathematical inftrumentmaker affures us, that he finds it a good practice to go to the glafs-houfe and caufe the tubes to be drawn without fuffering them to be turned round.

But the molt regular and accurate levels are obtained by grinding the infide of the tube. For this purpofe, 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 ufual way. As foon as the polifh has by this means difappeared on one fide, the tube is cleaned, filled, and tried; and accordingly as its figure proves to be more or lefs ftraight or curved, the granding is either repeated or difcontinued. Some operators polifh the infide again after grinding; but this has not been found to increafe their fenfibility:

From the great delicacy of the fpirit-level, compared with the few obfervations here prefented on the plumb-line,
the former inftrument may appear greatly to deferve the preference. Aftronomers are not however agreed on this point. When a fpirit-level is adjulted by reverling, at a certain temperature, and both ends of the bubble marked, it may be allowed that the inftrument may be fucceffully applied to ufe. But if the temperature be raifed, the fpirit will expand, ard of courfe the bubble will become fhorter. Whence it appears neceflary that a divifion and adjulting piece fhould be applied, from experiment, to afcertain the true ftation of the bubble at different temperatures; and even this application feems fcarcely adcquate to fupply the place of repeated adjutlments. The variation of the bubble will differ according to the quantity of fpirit contained in the tube. In two grod levels, of nearly the fame magnitude and figure, we found it amount to oncfifth of an iuch for every ten degrees of Fahrenleit. 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 fpirit-level will alfo vary from unequal temperature; fuch, for example, as may arife 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 thefe caufes may amount to feveral minutes, as is eafily fhewn by trial ; but we do not find that the prefence or abfence of funflime caufes any perceptible difference. It is probable that the rays may not \{peedily alter the temperature, on account of the tranfparency. And with regard to thefe three latt fources of error, it muft be allowed that they are eafy to be avoided, and indeed not likely to be prefent in the operations of accurate obfervers.

We have, in Plate V. Surveying, given figures of two levels by the moft celebrated makers, the late Mr. Jeffe Ramiden, and another by Mr. Troughton: of the former, A B, fg. 3 , is the telefcope, having the fpirit-level C D fitted in a brafs tube, fixed benearh it. The telefcope is fupported at its ends by refting on angular notches in two pieces of brafs, Y I, Y 2, called the zyyes, from their refemblance to that letter. It is keld in the angles of the wyes by a clip $r$ r, fhutting down over each and pinned faft. The wyes are fupported on a brals bar E E, the middle of which has a large circular aperture in it, to receive a compafs needle. A bottor plate $a \mathfrak{a}$, being forewed under this aperture in the bar, and a glafs cover fitted over it, forms the compals-box $F$, in which the magnetic needle turns round. The bottom $a$ a of the compafs-box has a long axis faltened to it, which is fitted into the dome of the circular plate G, and alfo pafies through a \{pherical ball, fhewn by the dotted lines to be fcrewed faft to the underfide of the dome of the plate. Upon this axis, the telefcope-level and compafs-box turn round horizontally: the ball, jult mentioned, is received in a correfponding 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) pafs 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 fupported on three legs fet on the ground, and may therefore partake of its inclination. The legs are not fhewn in fog. 1, but are the fame as thofe feen in fig. 3 , at LMN: they are all jointed into the fame piece of brafs $O$, which has a large fcrew on the top of it, entering a female fcrew in the interior of the projecting part R, fig. 3, of the plate H. When ${ }_{4} \mathrm{H}_{2}$
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Ghut up, the three legs form one round flaff, and are fecured for carriage by rings put on them: when opened out, they make a very firm ftand on the ground, though it be ever fo uncren. Thefe being the chief parts of the inftrument, we have wily to notice the contrivances for adjulting every part to perform accurately. The mill-headed nut $d$, at the top of the telefcope, being turned, thrufts forth a tube e, contained within the external tube of the telefoope, and carrying the object glafs, which is by this means adjufted to its focal ditance, fo as to fee an objeet diftinelly at any diftance. The telefcope has two wires in the eyeend at $f g$ croffing each other perpendicularly: it is by interfecting thefe the object is viewed. The eye-piece, $L$, of the telefcope flides in its tube to adjut the focal dittance of the eye-glaftes. That thefe wires may be feen diftinctly, the lesel is fufpended from the telefcope at one end by a ferew D, which adjuits it parallcl to the axis or line of fight of the telefcope. At the oppofite end $\mathbb{C}$ is another fcrew adjutment, to make it parallel in the direction fideways, that is, in the fame veritcal plane with the axis of the telefcope. The $\mathrm{Y} \mathbf{z}$ is fupported in a focket M, and can be raifed or lowered by the ferew 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 telefcope to any object: it operates upon a ring or clump of brafs P , which enclofes, and is fixed to, the axis when the icrew $S$ is turned, but when this fcrew is flack, the clump telcafes the axis, that the telefcope may be turned round readily, to bring the defircd object into the field of view: then by ferewing S the telefcope is made falt, but may ftill be turned a fmall quantity by the forew O to direct it exaetly to the object.

The compals contained in the bar E E is for taking bearings of any olject; but as its ufe is not connected with the operations of levelling, and has been fully defcribed under the articie Circumferentor, we refer to that article.

Previous to taking any levels by this inferument, the adjuitments fhould ali be verified by the obferver; for though they are ever fo accurately done by the maker, they are not to be depended upon after the inftrument has been carried about, or ufed; and for this reafon they are all fo contrived, as to be done with care in the open air. The procefs 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 gueffec.

IIt. Adjuft the level C D to be parallel to the telefcope in the following manner: Open the clips $r, r$, which confine the telefcupe in the wyes, and turn the fcrew N till the bubble comes into the middle, as is fhewn by two fcratches on the glafs tube. Now lift the telefcope gently out of the wyes, and reverfe or turn it end for end, and if the bubble flands where it did before, all is right; if it goes to either end, obferve how much it is from the centre, and by turning the fcrew N deprefs the end towards which the bubble runs, (or, what has the fame effect, elevate the other end,) until the bubble returns oue-half the quantity of its error. Now by the fcrew D alter the level the other half the error ; if thefe halves were correctly ellimated, it will be right, as is proved by the bubble flanding right on returning the telefcope to its original pofition. If not right now, the adjultment mult be repeated till the bubble tands right either way, which proves the level and the telefcope to be exactly parallel ; the two cylindrical parts of the telefcope, where the wyes receive it, being made precifely the fame diameter.

2dly. To make the crofs-wires in the telefoope interfeat eactr other in the axis or line of collimation thercof.- The eye-piece L being drawn out to fee the wires diftinctly, direct the telefcope to any dittant object, and by the nut $d$ adjuft the focal diftance to fee it clearly: felect fome flraight line in the diftant object, as the fide of a window, \&c. Then by the fcrews N or O , one elevating the telefcope, the other moving it fideways, and by turning the telefcope in its wyes, bring one of the crofs-wires to coincide with the Atraight line of the diftant object, without regarding the level. Now turn the telefcope 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 pofition; but if it has, the wire mult be moved, by turning an oppofite hair of the four fcrews at $f g$ : by thefe move the wire acrofs the field of view one-half of the error, and by the fcrews N or O turn the telefcope back the other half. The other wire is now done in the fame manner, by obferving its coincidence with a diftant object, and then turning the telefcope half round on its own axis; and both wires may be proved by obferving a fmall object, as a circular chalk mark, \&c., to be in the interfection of hoth wires; and turning the tube round on its axis, it will, if right, appear in the interfection in all pofitions. The inftrument is now prepared for taking levels in the manner explained under Levelline; and, if carefully ufed, need not be re-adjufted for many days.

The level above defcribed, is that which is in the moot general ufe, great numbers having been made by Mr. Ramfden, and fince his deceafe by his numerous pupils. It is certainly an excellent inftrument in the hands of thofe who are ready and expert in the manupilation of the adjuftments jult defcribed, and who are caretul to repeat them when necefflary.

The initrument delineated in fog. 4. has lately been brought forwards by Mr. Edward Troughton. Its contruction is fo compact, that the parts are little liable to derangement, and therefore do not need fo many provifions for adjufting, by which the inflrument is fimplified and rendered more portable. $A B$ is the telefcope, and $D E$ the lesel ; its brafs tube being partly received into the telefcope, and foldered falt thereto, fo as to be in no danger of altering its pofition: the telefcope is fcrewed to a ftrong brals bar FF, which fcrews faft to the top of a conical focket $G$, that turns upon a vertical axis faftened 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 compafs-box $P$ is fupported over the level by four fmall pillars; by this means it is more readily obferved than when beneath, and gives the means of laying the telefcope fo clofe to the brais bar F, that it is much more firm than the former inftrument. The bubble of the level is fo long, that its ends appear on both fides of the compafs-box, and is fhewn to be in the middle by feratches on the glafs at $a b$, as ufual.
The fcrews which hold the telefcope to the plate $\mathbf{F}$ are covered by caps of brafs, which defend them from accidentai alteration, but admit their adjuftment when neceffary. To make the tclefcope exactly perpendicular to the vertical axis, the only adjuftment the infrument requires befides this is the eye-piece. It has, in heu of cro's-wires, a fimall micrometer or divided fcale, of mother-of-pearl, fixed perpendicularly a arofs the field of view, the divided edge interfecting the line of collimation : the central divifion of the

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fcale hias a fmall hole through it for diftinction. It is this by which the levels of objects are obferved, and it therefore crofles the axis of the telefcope. It can be adjuited exattly to this by a forew $d$ at top, and another $e$ beneath the tube. The manner of adjufting this inftrument is as follows: the legs being fet on firm ground, the vertical axis is adjufted, in the fame manner as every other level is preparatory to making obfervations, viz. by fetting the telefcope over any oppofite two of the four ferews in the parallicl 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 fhews the level is not perpendicular to the axis, and one-half the error mult be corrected by the fcrews under the ends of F , and the other half by the fcrews of the parallel plates, the telefcope being turned over the other pair of fcrews; and they are adjufted in the fame mnanner. Now the axis is vertical, as is fhewn by the bubble flanding ftill while the telefcope is turned all round. The plate F, being once adjufted in this manner, will not foon be deranged, and when it is will immediately difcover itfelf, and be as eafily rettored. The line of fight, or line of collimation of the telefcope, is made parallel to the level, by an actual trial in the field, which indeed is the molt accurate method, and is reforted to for very delicate purpofes. in the inftrument before defcribed, to verify the adjuftments after making them, the method of trial is applicable to a level of any kind, and is defcribed under Leveling. .The micrometer fcale in the eye-piece is very ufeful in levelling; it gives the means of roughly eftimating equal diftances from the inftrument in any direction. A man who attends the obferver holds up a ftaff of tix feet, or any other length, perpendicular, and the oblerver, looking at it through the telefcope, notices how many divifions of the micrometer fcale the ftaff appears to fubsend; then, if the man recedes from the inltument until the fane flaff reaches the fame number of divifions, he will be at the fame diltance from the inftrument. This property is extremely convenient in many inftances which occur in the ufe of a level.
Level, American, is an inttrument which is formed of two pieces of thin wood of equal length, joined together at top, and connected below by a crofs bar ; from the angle at top a lead plummet is fuspended by a fmall cord, which, when the inilrument itands level on both legs, trikes upon a mark in the centre of the comecting bar, as reprefented by iz, fig. 4. in Plate VI. Surveging. The manner of ufing it is fimply this: At the place from which the level is to be taken, drive a wooden peg in the ground, clofe in to the top, upon which one of the legs of the frame may rett; then bringinis 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 fine!! fpirit-level, will the courfe of the drain be eafily afcertained. But as it is neceffary the drain fhould have as much declivity as to allow the water to run freely, it will be requifite, in taking the level, to regulate the directhon of the line accordingly. Half an inch fall in the length of the frame will be fufficient, and fometimes even lefs. For this purpofe, it will be expedient to have, befides 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 firlt wooden peg at the point from whence you mean to conduct the drain, and
having refted the one leg of the frame upon it, turn round the other till it be level with the firlt peg; there put in the iron pin, fo that this leg of the frame may reft 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, curn 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 clofe by the fide of it, till the top of the wooden one be half an inch lower than that of the iren 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. is line thus fet off is narked from $c$ to $d$ in the figure. When made on a fmaller feale, it is ufcful in afcertaining the proper defcent along the bottom of a drain, while the workmen are laying it; but when made for this purpofe, the crofs bar mult be fixed to the bottom of the legs, as marked with dotted lmes in the plate.

There is a watering level which is much ufed in fome places, which is formed of different pieces of wood, \&c.; the ufual length given it being five feet and a half, and the height from four feet to four feet and a h.lf, according to the height of the perfon who is to make ufe of it.

The oljed ffaff, fig . 5, Plate V I. Surveying, fhould be madee exactly of the iame height with the level. The crofe piece, fig. 6, fhould be fufficiently large to be feen diltinctly at a diftance, and muft be painted white for the purpofe.
This level, in the experience of Mr. Marinall, has been found " preferable to any other level now in ufe, as being equally accurate in afcertaining the relative heights of diftant objects, as in minutely tracing itep by ftep the required line of communication, fo as to give cvery part of it an equal and uniform defcent." In its ufe in fetting out a level, to 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 moft proper; ; it is directed to meafure out one hundred fect on level grourd, placing the level at one end, the object-ftaff at the other, and then adjulting their tops to a dead level, by a dead level line exaetly 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 $\mathrm{fi}_{f}$ ure, then meafuring one foot downward onthe ftaff, and there holding a rule or other ftraight edge level acrofs the flaff; bringing the top of the level, by railing its binder foot, to range accurately with the upper fide of the rule, and while they remain at relt in this pofition, a mark mult be made where the plummet-line refts againt the face of the level. After this meafure out a hundred yards, and proceed in the fame manner, in order to prove or rectify the firt mark, on which a permanent line muft 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 flaff fliould be fet upon the higheft part to which it is defirable to raife ?e water, and the level at the fource, and after having correctly adjufted the top of the latter to that of the former mark, where the plummet relts on the face of the level, where it refts between $a$ and $b$, it is neceffary to confider the cafe, as, where the extent of land is frall, and that of the water unlimited, litile fall may be fufficient ; but in the contrary circumftances, it would be improper to let it wafte by the way more than is neceffary; of courfe where the plummet relts much within the water-line, the ftaff muft be moved and fet lower down on the flope till the requifite fall is gained. But where the plummet is found to rell on the $\begin{gathered}\text { righto }\end{gathered}$
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 eatily rubbed out on the face of the level,) correfponding to the line of the plummet, as the dotted line $c$, and thus fix the fall in this cafe, always making due allowance, in tracing and ftaking out the line with the level thus fet, for the crookednefs of the courfe; as from this lengthening the line, the declination of the channel is proportiunally leffened.
It is fuppofed further, that "many ingenious additions" might be made to this level; but that "they would be injurious to its prefent fimplicity." Any country carpenter maty be eafily inftru\{ted to conftruct it in its prefent form, and " any common labourer be eafily taught to ufe it, either in forming roads or water-courfes." It is, however, beft adapted to the latter ufe.

Dr. Defaguliers contrived an infrument, by which the difference of level of two places, which could not be taken in lefs than four or five days with the beft telefcope levels, may be taker in as few hours. The infirument is as follows:

To the ball C (Plate VI. Survejing, fis. 7.) is joined a securved tube $\mathrm{B}-\mathrm{A}$, of a very fine bore, with a fmall bubble at the top A, whofe upper part is open. From the conftruction of this intrument, 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 inllrument is fet upright. If the air at C be fo rexpanded 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 intrument is, as foon as the air at C returns to the fame temperament as to heat and cold. For preferving the fame degree of heat, when the different obfervations are made, the machine is fixed in a tin-veffel, EF, filled with water up to $g h$, above the ball, and a very fenfible thermometer has alfo its ball under water, that one may obferve the liquor at D , in each experiment, when the liquor in the thermometer ftands at the fame height as before The water is poured out when the inftrument is carried, which may be done conveniently by means of the wooden frame (fig. S.), which is fet upright by three ferews, $\mathrm{S}, \mathrm{S}, \mathrm{S}$, and a line and plummet P P (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 $N$. $\mathrm{M}, m$, are brackets for keeping the upright board, K N , at right angles with the horizontal one at N. The machine feen in front is reprefented fir. 11 , fuppofing the fore-part .of the tin veffel tranfparent; and here the brafs 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 $g h$.

After Dr. Defaguliers had contrived this machine, he contidered, that as the tube is of a very fmall bore, if the liquor thould rife into the ball at A (fig. 7.) in carrying the initrument from one place to another, fome of it would adhere to the fides of the ball A , and upon its defcent in making the experiment, fo much might be left behind, that the liquor would not be high enough at D to thew the difference of the level; therefore, to prevent that inconveniency, he contrived a blank fcrew, to fhut 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, fo that the liquor fhall not run up and down the tube, whatever degree of heat and cold may act upon the inftrument, in going
from one plase to another. Now becaufe 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 fame degree of cold it had in the morning ; therefore, in making the firlt experiment, warm water muft be mixed with the cold, and when the water has ftood fome time before it comes to be as. cold as it is likely to be at the warmelt part of that day, obferve and fet down the degree of the thermometer at which the fixit dtands. and likewife the degree of the water in the barometer at D ; then forew on the cap at A, pour out the water, and carry the inftrument to the place whofe level you would know; then pour in your water, and when the thermometer is come to the fame degree as before, open the forew at top, and obferve the liquor in the barometer:

The doctor's fcale 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 anfwering to a foot in height.
The doctor made no allowance for the decreafe of denfity in the air, becaufe he did not propofe this machine for meafuring mountains (though with a proper allowance for the decreafing denfity 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 anfwers to two or three feet in a diftance of twenty miles, will render this a very ufeful inttrument. Defaguliers's Exp. Phil, vol. ii.' p. 372, \&c.

Level is a term uled to denote a length or pound of a canal, and alfo the adit or fough to a mine or engine-pit.

Level-pegs, are fmall flakes ufed in levelling out an in. tended canal; and they are ufually placed at the level of the top bank, as at d, Plate I. Canals, fr. 7 and 8.

LEVELLING, the art or act of finding a line paralle! to the horizon, at one or more ftations, in order to deter. mine the height of one place with refpect to another ; for the laying grounds even, regulating defcents, draining moraffes, conducting waters, for the irrigation of land, \&c.

The firit procefs, preparatory to taking any levels, is to prove the correctnefs of the inftrument you employ for that purpofe. Some inflruments are contrived to prove themfelves, as defcribed 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: firft fet it level, and obferve fome dittant object ; then turn the level, end for end, and obferve the fame object through the other fight. If it is the fame bothways, all is right; if not, the level mult be altered one-half of the error thus difcovered, which is doubled by this method of trial. For inflance, if the line of fight pointed down the firlt time, it will point as much upwards when ufed at the osther end. A level with :i telefcope cannot be ufed at either end, and there fore this method is inadmiffible, and the following may be adopted.
Choofe a fpot of ground where it is tolerably level for about twenty chains; fet up the inftrument at the point B, fig. I. Plate VII. Surveging, and, levelling the telefcope by the paralliel plates, that the bubble will ftand while it is turned all round, direct the telefcope to a target held up by an affiftant, upon a take driven in the ground at D , at 20 chains diftant. Your affiftant mult, according to your fignals, elevate or deprefs the vane of the target, till it appears in the interfection of the crofs wires; now meafure and write down the height $\mathrm{B} b$ of the centre of the telefcope above a ftake driven into the ground at B, fuppofe it four feet; and alfo write down the height $\mathrm{D} d$ at which the vane of the tar-

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get flands, whicit fuppofe fix fect "the difference between them, two feet, fhews that $B$ is two feet higher than $D$; but the line $b l$, being a tangent to the carth's furface at the point $B$, will be the apparent level; and the true level will be found, by deducting the allowance for 30 chains, fhewn by the table of the earth's curvature to be . 041 of a foot. Making, therefore, the true difference of level bet ween B and D to be I 959 feet, to prove this, level it the other way, removing the inltrument to D , and the target to the fake at B. Obferve in the fame manner as before, and if it gives the fame difference of level as before, after deducting the allowance, the initrument is correct; if, on the other hand, the refults by the two miethods do not prove the fame, take half the difference between the two, and elevate or deprefs the target that quantity, according as the lait obfervation was greater or lefs than the firlt, and adjult the initrument, either 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 inftrument is now corrected, but the trial thould bc repeated to make it certain.

The following method of adjufting a fpirit-level is rather preferable, as it does not require the inftrument to be removed; but it is only applicable to thofe inftruments where the telefcope lies in wyes, and can be removed. Set up the level, as at A in fre 2, fo that you can fee both ways for about soo yards; fix up a thaff in each direction at B and C, 100 yards diftant, fo that the two thaves and the telefcope are in a line. Now give your affiltant two circular pieces of card, about twice the diameter of the telefcope where it lies in the wyes, with altole through the centre cE each, large enough to receive the tube of the ere-piece of the telefcope; now level the telefcope, and your affirtiant applies one of the cards againft one of the flaves, $B$ for inftance, and moves it up and down, till its centre appears to the obferver to interfect the wires. The affiltant now faftens it to the ftaff at $a$, by two pins, baut fo that the centre hole can be feen clear through by the fide of the flaff. The telefcope is now turned half round, and directed to the other ftaf C , which is fitted with a card at $b$, the fame as the former. This being done without ailturbing the inflrument, take the telefcope out of its wyes, and Gut diown the clips again; caray the telefcope to one of the ftaves $D_{\text {, and applying its eye-piece to the hole }}$ in the centre of the card at $a$, direct the telefcope to the wyes of the level, and, looking through them, if the card 3 . on the diftant flaff $C$ appears to fit in the wyes, the level is proved correct ; if it does not, mark the flace where the card $a_{i}$ is fixed to the ftaff: $B$, unpin it, and flide it up or down, till the dittant card appears to fit in the wyes. Mark this polition of the card, rize at $d$, and pin it on in its firlt polition; repeat this operation at the ftaff C , and the card 4, will be removed to E. 'The figure explains the principle of this procefs: in the firlt operation the teiffonpe fet out the inclined line A $a$, inflead: of a horizontal line; the next operation was obferving the inclined line A ts; the third operation at the ftaff B formed a continuation of the inclined line $b . \mathrm{A}$ to $d$; and the fourth operation continued $a \mathrm{~A}$ as far as $e$ in this dtate it is evident, if the fpaces $a, d ; b ; c_{3}$ each of which are double the error of the inftrument, are divided into two equal parts at the points $f$, $g$, that the line $f \mathrm{~A} g$, will be truly horizontal, and the inftrument may be adjufted by the fcrews under the level, fo as to poiat to $f$ or $g$ when the bukble 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 aarth; and a line equally diftant from the centre of it in
all its points, is called the fine of true kevel : whence, becaufe the earth is round, that line naut be a curve, and make a part of the earth's circumference, or an arc concentrical with it, as the line BC FF G, Plate VII. Surveying, fig. 3, all the points whereof are equally diftant 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 femidiameter 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, becaufe we know-by trigonometry, how much each fecant exceeds the radius; and becaufe by meafuring, we have difcovered the precife length of that radius. Or, fince the apparent level between the places B and C is $B D$, and the true level is the arc BC ; it is plain that the former rifes above the latter by the line C D. But by a well known property of the circle $\overline{2 \mathrm{AC}+\mathrm{CD}} \times \mathrm{CD}=$ $\mathrm{BD} \mathrm{D}^{2}$, and the diameter of the earth being fo great with refpect to the line C D at all diltances to which the operation of levelling commonly extends, that 2 AC may be fafely taken for $2 \mathrm{AC}+\mathrm{CD}$ without any fenfible error, we fhall have $=A C \times C D=B D^{2}$, and $C D=\frac{B D^{2}}{2 A C^{\prime} \text {, i.e. the differ. }}$ ence between the true and apparent level is equal to the fquare of the diftance between the places divided by the diameter of the earth, or the rife of the apparent above the true level is proportional to the \{quare of the diftance. It was for want of the knowledge of this, that the ancients 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 neceffary.

By the table fince made, it appears, that at the dittance of 100 yards the apparent level is raifed above the true one about one-third of a line ; fo that the ancients, in this refpect, were mose fcrupulous than needful. By means of this reduction, we are now afle tor level diftances of one or two miles at a fingie operation, which the ancients could not.do in lefs than tiree hundred.

The following table, for fhewing the height of the appa: rent level above the true, was calculated by Mr. Fergufon, 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 iut. Dr. Loag's Altronomy, as not to differ quite two inches from it at the end of the whole degree, which contains 60 geographical miles, equal to $69 \frac{1}{+}$ Englifh miles. The ufe of this table is as follows: If the quantity of an arc of a great circle on the earth's furface is given in minutes. or feconds of a degree, its meafure may bc found in feet and inches. Thus, fuppofe the are contains ter feconds, which is the fixth part of a geographical mile, its mearure is-1015. feet 8 inchas. So an arc of one minute of a degree, which is one geographical mile, contains 6094 feet, or 203.1 yards In foot; which is 271 yards i: foot longer than an Englifh 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:. fuppofe the eye of an obferver upon a hhip at fea.to, be 23 feet two inches above the furface of the water, he will then fee $30,4 \%$ o feet all around him, or to the diftance of 5 geographical miles.

Suppofe:

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Suppofe the top of a mountain in the fea to be feen at the ditance of 60 geographical miles, or one degree, by an obferver, whofe eje is clofe at the furface of the fea; the height of that mountain is 319 r feet 1 jinch, nearly, above the furface of the fea. An Englifh mile is 52 So feet, a geographical nuile 6094.

Suppofe a fpring to be on one fide of a hill, and an houfe on an oppofite hill, with a valley between them; and that the furing feen from the houfe appears, by a levelling inftrument, to be on a level with the foundation of the houle, and is a mile from it ; the apparent levelof the fpring is $10 \frac{6}{10}$ inches above the true level of the houfe: and this difference would be fufficient for the water to be brought in pipes from the fpring to the houfe; the pipes being laid all the way in the ground.
If the diffance of the object be greater than 60 minutes, or geographical miles, its height above the true level may be found thus. Suppofe an eye at the furface of the fea fees
the top of a mountain, which he knows to be 90 geographiscal miles, or a degree and a half dittant from him: take half that number of miles, and multiply the height of the apparent level above the true, anfivering to that half diftance, by 4 ; and the product will give the perpendicular height of 'that mountain. Thus, the half of 90 is 45 , againft which (in the table) ftands 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 fea.

According to thefe meafures, the earth's circumference is ${ }^{131} 3^{1,630,400}$ feet, or 24,930 Englifh miles.

At the diftance of $I$ fecond of a degree (or $\frac{1}{6}$ th of a geographical mile) the height of the apparent level above the true is . 0029547 parts of an inch; at two feconds diftance it is four times as much; at three feconds, nine times; at four feconds, 16 times as much; and fo ort, always increafing in proportion to the fquare of the diftance.

A Table, flewing the Height of the apparent Level above the true, at any Difance within a Degree of a great Circle on the Earth's Surface; calculated to the $\mathbf{1} 000$ dth Part of an Inch.


Table continued．

| Seconds． |  | Feet．Inches． | Inches． | Minutes． | Fect． |  | Fect． | Inches． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 』 35 |  | 355410.0 | 3.619 | ¢ 35 | 213290 |  | 1085 | 10.227 |
| $\cdots \quad 36$ | 9 | 365648 | － 3.829 | \％ 36 | $\overbrace{0}^{9} 21938+$ |  | 1148 | $9.44^{8}$ |
| － 37 | 8 | 375711.6 | ¢ 4.045 | － 37 | 适 225478 | \＆ | 1213 | $5 \cdot 943$ |
| 世゙心 38 | E゙ | $3859 \quad 6.4$ | 글 4.267 | © 38 | － 231572 | $\stackrel{\square}{\square}$ | 1279 | 11．712 |
| 辰 39 | E | 3961 | 3.497 | D 39 | E 237666 | 是 | 1348 | 2.755 |
| $\underset{\sim}{\square} 40$ |  | 40628.0 | 4.728 | \＆ 40 | $\stackrel{\text { F }}{\sim}$ 243760 | 0 | 1418 | 3.072 |
| \％ 41 | E | 4164 | ๕ 4.967 | $\square 41$ | ） 249854 | 5 | 1490 | 0.663 |
| 4． 42 | 岂 | $4265 \quad 9.6$ | $\stackrel{5.212}{ }$ | － 42 | 癹 255948 | E | 1563 | 7.527 |
| 㔽 43 | E | 4367 4．4 | \％ 5.463 | \＃ 43 | \＃ 262042 | $\stackrel{ \pm}{ \pm}$ | 1638 | 11.655 |
| 辰 44 | $\stackrel{y}{3}$ | $4468 \quad 11.2$ | － 5.720 | 官 44 | \＃ 268136 | ${ }^{\circ}$ | 1716 | 1.077 |
| ¢ 45 |  | 45706.0 | $\cdots 5.983$ | ¢ 45 | \％ 274230 | \％ | 1794 | 11.763 |
| \＃ 46 | $\stackrel{1}{2}$ | 46720.8 | \％ 6.253 | $=46$ |  | \％ | 1875 | 7.723 |
| E 47 | $\pm$ | $4773 \quad 7.6$ | $\pm 6.527$ | $\text { E } 47$ | \％ 286148 | － | 1958 | 0.956 |
| 或 48 | － | $4875 \quad 2.4$ | $\text { 荮 } 6.808$ | $\text { 足 } 48$ | ． 292512 | $\stackrel{\square}{\square}$ | 20.42 | 3.464 |
| ¢ 49 | － | ＋976 9.2 | 遻 7．0）4 | ¢ 49 | － 298606 | － | 2128 | 3.245 |
| \％ 50 |  | 5078 4．0 | 家 7.387 | － 50 | \％ 304700 | 号 | 2216 | 0.300 |
| $\bigcirc 5$ | 旡 | 5179 | ¢ 7.685 | 51 | E0 310794 | ci | 2305 | 6.629 |
| ¢ 52 | － | 52815 | － 7.989 | \％ 52 | ． 316885 | \％ | 2396 | 10.232 |
| \％ 53 | ． | 53830.4 | ¢ 8.300 | － 53 | 碞 322982 | 4 | 2489 | 11．108 |
| － 54 |  | 5484 | $\stackrel{8}{ \pm}$ ¢ 8.616 | － 54 | 边 329076 | $\stackrel{+}{\circ}$ | 2584 | 9.259 |
| － 55 | 皆 | 5586 | \％ 8.938 | 55 |  | ． | 2681 | 4683 |
| ¢ 56 | E | 56878 | $=9.266$ | 辰 56 | E 341264 | － | 2779 | $9.3{ }^{81}$ |
| 䂞 57 | ＝ | $\begin{array}{ll}5789 & 3.6\end{array}$ | $\cong$ | \％ 57 | － 347358 | － | 2879 | 11.353 |
| ¢ 58 | － | $\begin{array}{rr}5890 & 10.4 \\ 5092 & 5.2\end{array}$ | 9.940 10.285 | $\cong 58$ | ． | $\underset{\sim}{2}$ | 2981 | 10.598 |
| \％ 59 | 3 | 59925.2 | 10.285 | \＃ 59 | $\geqslant 359546$ |  | 3085 | 7.119 |
| 出 60 |  | 6094 00 | 10.637 | 出 60 | 36，640 |  | 3191 | 0.912 |

Fergufon＇s Tables and Tracts，p．243，\＆c．See De－ pression of the Horizon．

The operation of levelling is as follows：Suppofe 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 difance，between the two points，as in D，and flaffs in A and B；and let there be perfons inftructed with fignals for raifing and lowering，on the faid ftaffs，little marks of pafte－ board，or other matter．The level being placed horizontally by the bubble，\＆cc．look towards the ftaff A F，and caufe the mark fo raifed to be lowered，till the middle，upper edge，or other moit confpicuous part，appear in the vifual ray．Then meafuring exactly the perpendicular beight of the point E，above the point A，which fuppofe 6 feet 4 inches，fet that down in your book：then turn the level horizontally about，that the eye－glafs of the telefcope may be ttill next the eye when you look the other way（if you have only plain fights，the inftrument need not be turned）； and caufe the perfon at the ftaff B to raife，or lower his mark，till fome confpicuous part of it fall in the vifual ray， as．at C ；then meafure the perpendicular height of C above B，which fuppofe 16 feet 8 inches；fet this alfo down in the book above the other number of the firf oblervation； fubtract the one from the other，the remainder will be 1o 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 inftrument is fixed，be in the middle between the two points A and B ，there will be no neceffity for reducing the apparent level to the true

Vos．XX．
level；the vifiual ray，in that cafe，being raifed equaily above the true level．
If it be farther required to know whether there be a fufficient defcent for conveying water from the fpring $\AA$ to the point B，Plate VII．Survering，fg．5－－Here，in re－ gard the diftance from $A$ to $B$ is conficerable，it is re－ quired that feveral operations be made．Having then chofen a proper place for the firft flation，as at I，fet up a ftaf in the point A ，near the － pring，with a proper mark to flide up and down the itaff，as $L$ ；and meafure the diftance from A to I，which fuppofe 2000 yards．Then the level being adjufted in the point $I$ ，let the mark $L$ be raifed and lowered till fuch time as you fpy fome confpicuous part of it through the telefcope，or fights of the level，and meafure the height A L，which fuppofe 13 feet 5 inches．But in regard the diftance A I is 2000 yards，you milt have recourfe to your table for a reduction，fubtracting ro 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 horizon－ tally about，fo as the eje－glafs of the telefcope may be towards the ftaff at $A$ ；and fixing up another ftaff at $H$ ， caufe the mark $G$ to be moved up and down，till you fpy fome confpicuous part through the telefcope，or fights． Meafure the height H G，which fuppofe 6 yards， 4 feet， 2 inches．Meafure likewife the diftance of the points $I, H$ ， which fuppofe 1300 yards；for which diftsnce，according to the table， 4 inches 3 lines mult be fubtracted 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－ 41
nence，

## LEVELLING.

wenec, as E, whence the faff H may be viewed; as alfo another ftaff at $D$, near the place whither the water is to be conveyed. The level being again adjufted in the point $\mathscr{E}$, look back to the itaff H ; and managing the mark as before, the vifual ray will give the point F. Meafure the height HF , which fuppofe in feet 6 inches. Meafure, likewife, the diftance HE, which fuppofe 1000 yards; for which ditance the table gives 2 inches, 5 lines of abatement; which being taken from the height if F , there will remain In feet, 3 inches, 7 lines, which enter in your book. Lattly, turwing the level to look at the next ftaff D , the vifual ray will give the point D. Meafure the height of D from the ground, which fuppofe 8 fect 3 inches. Meafure alfo the diftance from the itation E to $B$, which fuppofe 900 yards ; for which diftance the table gives 2 inches, I line of abatement ; which being taken from the height BD , there will remain 8 feet in lines, which enter as before.

For the manner of entering down obfervations in your book, obferve, that when a proper place or \#ation for the level, between the two points, has been pitched upon, you mult write down the two heights obferved at that ftation in two different columns, viz. under the firft column, thofe obferved in looking through the telefcope when the eye was from the fpring, or towards the point, which we may call back-fights; and under the fecond column thiofe obferved when the eye was next the fpring, which we call forefights, in the manner following:


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 D ; as in this example;

$$
\begin{aligned}
& \text { feet. inch. line. } \\
& 29: 10: 08 \\
& 23: 10: 04 \\
& \hline 6: 00: 04-\text { The difference of height, or leveI, } \\
& \text { between the points } \mathrm{A} \text { and } \mathrm{B} .
\end{aligned}
$$

If the diffance of the two points be required, add all the diftances meafured together; and dividing the difference of height by the yards of the diftances; for each 200 yards you will have a defcent of about 2 inches 9 lines. This problem may be otherwife folved in the following manner: let the line $f \mathbb{g}$, Plute VII. Surveying, fo. 6. repretent the line of fight of the telefcope drawn from $f$, the interfection of the crofs-lairs, through $g$ the centre of the object-glafs; and the points $b, b$, be the marks on the glafs tube, or \{pirit-level, $a b c$. While thefe parts of the inftrument are immutably fixed, with refpect to each other, it is manifeft, 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 fane polition, with refpect to the horizon, or to a plumb-line. Nor is it at all neceflary, in the bufinefs of levelling, that the line of fight and plumb-line flould be exactly at right angles; but only that the angles they make fhall be always the fame. Let $p$ and $q$, fge $q$, be two given points in-two
remote places, and let it be required to find which is the lower, and how much. Let $p a$ and $q b$ reprefent two ftraight Itaffs, or poles, fixed upright by means of a plumbline. Having placed the telefeope by the fide of the pole $p a$, and directed the line of fight to the pole $q b$, alter its clevation by the fciew adapted to this purpofe, till the airbubble refts exactly at the marks upon the tube. Then let an alfittant nark the point $b$, which appears to be covered by the crofs-hairs; and alfo the point $a$ exactly upon a level with the crofs-hairs; which is eafily done by a common iquare applied to the fide of the pole $p a$. Then remove the telefcope to the pole $b q$, and here lct the fame things be repeated; that is, let $d$ be the place upon a level with the crofs-hairs, and $e$ the point upon the other pole $\beta, a$, that appears to be covered by them while the air-bubble relts at the fame mark as before. Bifect the interval $a c$ in $g$, and the interval $b d$ in $s$, and the points $g, b$, will be upor a level: that is, if we fuppofe $g p$ pqb to reprefent a long canal full of ftagnating water, the points $\delta, h$, will both be in its furface; and, confequently, taking the leffer depth $p g$ from the greater $q h$, their difference $q r$ fhews how much the point $q$ 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 ftations mult be chofen; and by repeating the fame practice between. every two fucceffive flations, we fhall find the level of the extremes.

When the points $g, h$, are once found upon two polesinot 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 diftances, the marks. $b, e$, will be-lefs. fubject to fall above or below the poles.

This reciprocal way of lewelling feems to be the moflexact of any, efpecially if it be performed by: two inftruments made to agree together before-hand; which may be done by placing them together, and by altering the crofs-hairs in cither of them, till the fame mark upon a remote objcet is covered by both the croffes, while both the bubbles reft at their marks upon the tubes. Then may two obfervers find the marks upon the oppolite poles at the fame time ; and confequently, the refractions of the rays in the air, whaterer be their quantities, will be equal as near as pofible : and then the refult of the practice will be as accurate as if there had been no, refractions at all. Fur let the curve bia, fis. 8 , reprefent the courfe of the vifual ray from $b$ to $a$; and let the lines $a k, b l$, touch it at $a$ and $b$. Then, becaufe the points $a, b$, are very nearly upon a level, the denfity and conftitution: of the air and vapours at the fame inftant wifl. be nearly the fame in each place; and by confequence the curve $a=2$ and its tangents at $a$ and $k$, will be equally in , clined to the chord $a b$. For the fame reafons the curve emd will be fimilar and equal to the curve aib, being fituated fo very near to it- Thercfore, the angle edtr, under the chord $e d$ and tangent $d n$, will be equal to the angle $a b l$, or $b a k$; and, confequently, fince the angles $q d n_{0}$ $p^{a k}$, are made equal in the two obfervations, by taking away the equal angles edin, $b a k$, caufed by the equal refractions, the remaining angles $q d e, p a b$, will be equal to each other, as if there were no refractions at all.

If the reciprocal obfervations be made about the middle of the fame day, when the air is the purctt, there will fcarcely be any occation for two inltruments: but if they be made near the morning or evening, even on the fame day, an equality of refractions cannot be depended upon, unlefs they

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are made at the fame intant. 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 dittant appeared to be raifed fo fenfibly, that in lefs thaa half an hour their apparent height was augmented more than three minutes. As to the caufe of thefe ap. pearances, they add, that the coolnefs of the night condenfes the vapours, which defcend to a lower place, leaving the air in the ligher itations more pure than in the day time. And on the contrary, when the heat of the fun has made a part of the vapours to mount to more elevated fations, there mult he lefs difference of the mediums, and confequently a lefs refraction.

Setting afide the curvity of a ray, which Mr. Picard tells us is fcarcely fenfible about noon, when the diftance of the object does not exceed 1000 toifes, the line of fight through the telefcope may be fet 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 $g i$ be perpendicular to $g c$, and gut $c b$ in $i$, and having computed the line $k i$ (as follows), and made a mark at it, place the level at $g$, and alter the place of the crofs-liairs in the focus, till they appear to cover the point $i$, when the air-bubble is at its marks, and the bufinefs is done. Now the line $b i$ is equal to the fquare of $g b$ applied to $2 g t$, and, confequently, may be found by meafuring the dittance $g h$, and dividing its fquare by the diameter of the earth, which may be fuppofed equal to $2 g \varepsilon$, though it is not exactly fo, the earth being not exactly fpherical. For bifecting $g b$ in $k$, draw $c k$ cutting $g i$ in $l$; and fince the triangles $k_{g} l_{,} k, c_{g}$ are fimilar, we have $k l: k_{g}:: k g: k$, and by doubling them all, we have $k i: g b:: g b: 2 k c$. Mr. Picard computes that when the diltance $g_{b}$ is 300 toifes, or 1800 Paris feet, the line $b i$ is one inch: and hence any other $b i$ may be found for any other known diftance; it being as the fquare of the diftance $g b$.

Hence, when the inftrument is thus rectified, the point $b$ upon the level with $g$, may be found by one ubfervation ; that is, by marking the point $i$ covered by the crofs-hairs, and by computing $i b$ by the rule above. As the intervals between the Itations mult be but fmall in this method, becaufe of refractions, as was faid above, the readielt way is to make them all equal ; which may be known exact enough for this purpofe, by obferving whether the pole be removed to fuch a diftance, that its image (or the image of any given part of it) in the focus of the telefcope fhall be always of the fame length, being meafured by the diltance between two parallel hairs in the focus: and then the fame allowance mult always be made for the depth of the point $b$ below $i$.

Lattly, by means of thefe parallel hairs, it is eafy to find when the telefcope is placed in the middle between two fiations; and then the points upon a level at each pole are prefently found, by directing the telefcope firft to one pole and then to the other, and by marking the points covered by the crofs-hairs. And thefe points will be upon a level, notwithftanding any refractions of the vifual rays, becaufe the refraction of each ray will be equal. Smith's Optics, book iii. chap. It.

Dr. Halley fuggefts a new method of levelling, which has been put in practice by fome of the French academy : this is performed wholly by means of the barometer, in which the mercury is found to be fufpended to fo much the lefs beight 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 obfervations 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 afcent, when the mercury was at 30 inches. Dr. Halley allows of one-tenth of an inch for every 30 yards; which, confidering how accurately the barometers are now made, an inch, in fome of them, being divided into an hundred, or more parts, all very fealible, he thinks this method fufficiently exact to take the levels for the conveyance of water, and lefs trable 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 . Fengufon has calculated the following table, for fhewing how much the mercury would fink in a barometer at given heights above the earth's plane furface; and confequently, how the perpendicular height of any hill may be found thereby.

| At the | Were. finks. | At the | Merc. fiaks. |  | $\begin{aligned} & \text { Merc. } \\ & \text { finks. } \end{aligned}$ |  | Merc. finks. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\overline{\text { Fect. }}$ |  | Fect. |  | Feet |  | Fect. |  |
| 100 | - II | 3900 | 402 | 7700 | $73^{8}$ | 11,00 | 1030 |
| 200 | - 22 | 400 | 413 | 7800 | 746 | 11600 | 1037 |
| 300 | - 33 | 4100 | $+2 I$ | 7900 | 758 | 11700 | 1044 |
| 400 | - $4+$ | 420 | 430 | 8000 | 7.63 | 11800 | 1052 |
| 5 | - 54 | +300 | $+39$ | 8100 | 771 | 11900 | 1059 |
| 600 | - 63 | 4400 | 449 | 8200 | 779 | 12000 | 1066 |
| 7 | - 76 | 4500 | $+5^{8}$ | 8300 | 787 | 12100 | 1073 |
| 0 | - 87 | 4600 | +67 | 8400 | 795 | 12200 | 1080 |
| 900 | - $9^{8}$ | $+700$ | $+77$ | 8500 | 803 | 12300 | 1087 |
| 1000 | 1 C 9 | 4800 | + 86 | 8600 | 8 II | 12400 | 1094 |
| 110 | I 19 | 4900 | + 95 | 8700 | 819 | 12500 | 1101 |
| 1200 | 130 | 5000 | 504 | 8800 | S 27 | 12600 | 1108 |
| 1300 | 140 | 5100 | 513 | 8900 | 835 | 12700 | 1115 |
| 1400 | I 51 | 520 | 522 | 9000 | 843 | 12800 | 1122 |
| 1500 | 1 161 | 5300 | 531 | 9100 | 851 | 12900 | II 39 |
| 1600 | 172 | . 5400 | 540 | 9200 | $85^{5}$ | 13000 | II 40 |
| 1700 | $1 \begin{array}{ll}182 \\ 1 & 8\end{array}$ | 5500 | 549 | 9300 | 866 | 13100 | 1143 |
| 1800 | 193 | 560 | $55^{8}$ | 9400 | 874 | 13200 | 1150 |
| 1900 | $2{ }^{2} \mathrm{O} 3$ | 5700 | 567 | 9500 | 8 S2 | 13300 | II 56 |
| 3000 | 214 | -800 | 576 | 9600 | S 89 | 13400 | $\begin{array}{llll}11 & 6\end{array}$ |
| 2 | $2 \begin{array}{ll}2 & 2 \\ 2 & 4\end{array}$ | 5900 | 585 | 9700 | S 97 | 13500 | 1170 |
| 2300 | $23+$ | 600 | 594 | 9800 | 905 | 13600 | 1177 |
| 2300 | 244 | 6100 | 602 | 9900 | 912 | 13700 | $\begin{array}{lll}11 & 8 \\ 4\end{array}$ |
| 2400 | 254 | 6200 | 611 | 10000 | 920 | 13800 | 1190 |
| 2500 | 264 | 6300 | 620 | 1010 | 927 | 13900 | 1197 |
| 2600 | 275 | 6400 | 628 | 10200 | 934 | I 4000 | 1204 |
| 2700 | 285 | 6500 | 637 | 10300 | 942 | $1+100$ | 1211 |
| 2800 | 295 | 6600 | 645 | 10,400 | 950 | $1{ }^{1} 200$ | 1217 |
| 2900 | 305 | 6700 | 654 | 10500 | 957 | 14300 | 1224 |
| 3000 | 315 | 6800 | 663 | 10600 | 964 | 14400 | 1330 |
| 3100 | 325 | 6900 | 671 | 10700 | 972 | ${ }^{1}+500$ | 1237 |
| 3200 | 334 | 700 | 680 | 10800 | 979 | 14600 | $12+4$ |
| 3300 | 344 | 7100 | 688 | 10900 | 987 | 14700 | 1250 |
| 3400 | 354 | 7200 | 697 | 11000 | 904 | 14800 | $12 \quad 57$ |
| 3500 | 363 | 7300 | 705 | 11100 | 1001 | 14900 | 1263 |
| 3000 | 373 | 7400 | 713 | 11200 | 1008 | 15000 | 1270 |
| 3700 | 382 | 7500 | 722 | 11300 | $10 \quad 16$ | 15100 | 1276 |
| 3800 | 3921 | 600 | 730 | 11400 | 1023 | 15200 | 12831 |

## LEVELLING.



By this table, and a common barometer tube, the perpendicular height of any hill may be found in the following manner.

The lower end of the tube being immerfed in quickfilver in the common way, and the tube fixed to a board, let a fcale, eighteen inches in length, be divided into inches, and each inch into a hundred equal parts, by diagonal lines, the divilions to be numbered downward from the top. This fcale mult be made to flide in a groove on the board, and have a crofs index to flide upon it to any divifion.

Then, at the bottom or foot of the bill, place the fcale fo as the beginning of the divifions at its top may be jult 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 fhew how much the mercury has funk in the tube, at the top of the hill, from the point where it food when at the bottom; and the number of feet expreffed in the table, againt the Jike finking of the mercury, will be the perpendicular height of the hill.

Thus, fuppofing the mercury had funk eight inches and three bundredth parts of an inch, the height of the hill muit be 8500 feet, or a mile, and foméwhat more than a quarter. Proportionable allowance is eaflly 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 fhews, that the height of that hill is 3700 feet, or almoft three quarters of a mile.
N. B. 660 feet make an eighth part of a mile, 1320 feet a cuarter of a mile, 2640 feet half a mile, 3963 feet three quarters of a mile, and 5280 feet make a whole mile. See Barometer and Atmosphere.

Fo: the common occafion of levelling to be performed, without much apparatus of inftriments, 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 phummet 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 inftruments ufed in levelling; ferving to carry the marks to be obferved, and at the fame time to meafure the heights of thofe marks from the ground. They ufually confitt each of two long fquare wooden rulers, made to flide over one another, and divided into feet, inches, \&c.

The levelling ftaff is reprefented in Plate VII. Surveying, Fir. 10. It is compofed of two pieces which flide on each other, as $a a$ and $b b$ : they are each of about five feet in length, fo as to form, when fully extended, a rod of ten feet. They have a graduated line of feet into hundredth parts. The index, $c$, flides firmly on them; and is moved up or down (by fignal) by the attendant who carries the ftaff, till the oblerver finds it coincide with the interfecting wires of his telefcope. Its height on the flaff, of courfe, marks the difference of the level; and it has two horizontal and parallel black ftripes, which, at confiderable diftances, are of ufe to direct the eye more readily to the fidacial edge at $x$.

With regard to the manner of directing its application in the bufinefs of draining, it has been obferved, that after it has been properly adjutted, and the ftaft about ten feet in length, with the moveable vane or fight, has been affixed to it, the inftrument fhould be fet up in a fituation between the object from wherce the level is to be taken, "nd that to which it is to be directed, provided the diftance from the inftrument to each of them is not too. great. The fituation of it fhould alfo be no higher than the length of the faff will anfwer, and fo as it may be feen from it both ways; then the man with the itaff fhould be directed to hold it at the main fpring, or place from whence you mean to carry the drain; and after directing the telefcope to the faff, and adjuiting it to a level, make a fign to him to move the fight up or down, till it be exactly oppofite the crofs-hair in the telefcope. This done, without fhifting the inftrument from its firft pofition, asd cautioning the man to fix the fight to the ftaff at the point directed, he may proceed forty or fifty yards farther; and after having again adjufted the level, make a fign to him to move to higher or lower ground; till the fight on the ftaff coincide exactly with the crofs-hair or wire on the telefcope. He may then leave a peg at the place where he held the ftaff, and proceed in like manner to other ftations, till the whole line is finifhed; leaving pegs, or making pits, at the places where the ftaff is held during the operation.

But if the length of the line to be levelled requires the inftrument to be fhifted from its firlt pofition, the level muft again be taken from the latt ftation where the Itaff was held, and the fight on it fixed in the proper place, as before directed; proceeding in the fame manner at every forty or fifty yards in length, till the whole is accomplifhed. After the line is thus levelled, and afcertained by marks left at every ftation where the ftaff was fixed, it may again be examined, and other pegs put in between the firt, the better to direct the workmen in cutting the drain; giving the live

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$Q_{u c h}$ turvings, and even fmall deviations from the courfe of the level, as may fhorten or Itraighten it, and humcur the fituation of the ground. And for the fake of accuracy, where the iwork requires it, efpecially if the water is to be conveyed to any conliderable diftance, or wanted to fupply a houfe, or for the purpofe of irrigation, the levels may be proved by reverfing the former line of direction. The fpirit level is alfo neceffary for afcertaining how fuch fall can be obtained from the drain to the nearelt outlet where, the wa.ter can be difcharged; the fhorter that diftance the better, provided fall enough can be gotten. It is often neceflary to level'a mach longer dittance 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, hollors, or other depreffions and inequalities that are met with in lands, whether they are in the ftate of fward, or in that of tillage. It fhould always be performed in fuch a manner, as the parts thus filled up may at firlt be fomewhat higher than the common furface round them, in order to allow for the fettling, which neceffarily takes place; and fhould be done with fuch materials as can be moft convenientiy procured, and which are proper for the purpofe, 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 plongh alfo fometimes require to be levelled down, the proper methods of doing which, under different circumftances, will be taken notice of under that head. Care is, however, conftantly to be taken in the execution of this fort of bufinefs. See Ridge.

Levelling Poles, long wooden rulers, divided inco feet and inches, made to flide over each other, ferving to carry the marks to be obferved in levelling, as well as to meafure the heights from the forface of the ground. They are likewife termed ftaves occafionally. See Levelling Staves, -upra.

LEVEN, in Natural Hifory, a term ufed by Boccone for the milky juice contained in the globules placed at the tops of the italks of red coral. Thefe round buttons are the only part of the coral which are foft while under water, and from thefe the milky juice is eafily expreffed by a gentle fqueezing between the fingers. The globules are each made up of five or fix little cells, not communicating with one another, and each containing its own feparate quantity of this white and thick Huid. When the coral is newly taken up out of the fea, this juice is of a fharp, acrimonious, and altringent tafte; but when it has been fome time expofed. to the air, it lofes the acrimony, and the aftringency of the tafte only remains. This change in the talte 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. Tranf. N- 100.

LEUENFIORDE, in Geography, a town of Weftphalia, in the principality of Calenberg, on the Wefer; 25 miles W.N.W. of Gottingen.

LEVENHOOKIA, in Botany, named in memory of the celebrated microfcopic philofopher Anthony Van Leeuwenhoek, whofe works, as Mr. Brown obferves, abound with excellent obfervations on the Itructure of vegetables. Brown. Prcdr. Nov. Holl. v. I. 572-Clafs and order, Gynandria Diandria. Nat. Ord. Stylidea, Brown.
Eff. Ch, Calyx fuperior, two-lipped, in five deep fegments. Corolla tubular; limb irregular, in five deep fegments; the fifth (or lip) unlike the reft, 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 swo, capillary. Capfule of one cell.

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L. pufilla, the only known fpecies, found on the fouthern coalt of New Holland by Mr. Brown. A little fmooth herb, with nearly the afpect and flature of Radiola. Leaves alternate, ftalked; thofe about the tops of the branches crowded, internixed with cluttered forvers. The moveable joint of the lip is analogous to the irritability in the column of Stylidium, and anfwers the fame 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 caufe, is turned upwards with violence, fo as to cover the upright and immoveable column with its concave part. Brown.
Levens, Leva, or Levencz, a town of Hungary, near the river Gran, where the Turks were defeated, after a defperate engagement, in the year 1664, with the lofs 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 Lafend.

LEVER, Sir Asutov, in Biography, was the fon of fir D'Arcy Lever of Alkington, near Manchefter. He finifhed his education at Corpus Chrifti college, Oxford; and on leaving the univerfity he went to refide with his mother, and afterwards fettled at his family-feat, which he rendered famous by the beft aviary in the kingdom. He next extended his views to all branches of natural hiftory, and became at length poffeffed of one of the fineft mufxums in the world, fparing no expence in procuring fpecimens from the moft diflant regions. This mufrum was difpofed of by lottery in 1785, but to the great lofs of the proprietor. It was, for fome years after this, exhibited to the public at a fmail charge, but is now difperfed, the articles having been fold feparately by auction. Sir Afloton died in 1783. Europ. Mag.

Lever, or Leaver, in Mechanics, an infexible. ftraight bar, fupported, in a fingle point, on a fulcrum, or prop, and ufed for the raifing of weights.

The word is formed of the French levier, which fignifies the fame; formed of the verb lever, or Latin lczare, io raifc.

The lever is the firft of thofe called mechanical powers, or fimple machines, as being, of all fuch, the moit fimple; and is chiefly applied for raifing weights to fmall heights.

In a lever there are three things confidered: the weight to be raifed, or fuftained, as O, Plate XXX. ATecbanics, fig. 4. ; the power byi which it is to be raifed, or fultained, as $B$; and the fulcrum or prop, $D$, on which the lever is fultained, or rather on which it moses 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 firf kind, or vectis beterodromps; to which may be reduced fcufars, 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 mafts of fhips, cutting knives fixed at one end, and doors whofe hinges are as the fixed point. And fometimes the power acts between the weight and the fulcrum, which is the lever of the tbird kind. Such is a ladder ifted by the middle to rear it up againt a wall : thefe two are called vedes homodromi.

In this laft, the power mult exceed the weight in proportion as its diftance from the centre of motion is lefs than the diftance of the centre from the weight. And as the firft two kinds of leyer ferve for producing a flow motion by afwift one, fo the laft ferves for producing a fwift motion of

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the weight by a flow motion of the power. It is by this kind of levers that the mufcular motions of animals are perforned, the mufeces 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 mufcle is many times greater than the weight which it is able to fultain. Though this may appear at firft a difadvantage to animals, becaufe it makes their ftrength lefs: it is, however, the effect of excellerit contrivance; for if the power was, in this cafe, applied at a greater diftance than the weight, the ligure of animals would be not only awkward and ugly, but altogether unfit for motion; as Borelli has fhewn in his treatife "De Motu Animalium." The power of the lever is founded on the following theorem; viz. "That the fyace, or arc, defcribed by each point of a lever, and confequently the velocity of each point of a lever, is as its diltance from the fulcrum, or prop."

From hence it follows, that the action of a power, and the refiftance of the weight, increafe in proportion to their diftance from the fulcrum.

And hence alfo it follows, that a power will be able to fultain a weight, if the diftance of the point in the lever, to which it is applied, be to the diftance of the weight, as the weight to the intenfity of the power; which, if it be ever fo little increafed, mult raife the weight. Sce this doctrine demonftrated under the word Meciavic Powers; and farther illuftrated under the word Balance; between which and the lever there is a great analogy; a lever of the firtt kind being a fort of theelyard to raife weights.

The power and action of the lever will be fully illuftrated by the following propofitions:

1. If the power applied to a lever of any kind futtain a areight, the power is to the weight in a reciprocal ratio of their diftances from the fulcrum.
2. The weight of a lever of the firft or fecond kind, A B, fig. 4, the diftance of the centre of gravity from the fulcrum C V, and the diftances of the weight, and the power A C and C B, being all given, to find the power that will fuftain it. Suppofe 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 fhall have the weight which the lever is ahle to futtain; and this fubtracted from the given weight, the remainder will be the weight to be futtained by the power. Let CB then be to C A, as the remaining weight to a fourth weight, and we fhall have the power to be applied in B , in order to fultain the given weight with the given lever.
3. The gravity of a lever of the firft or fecond kind, A B, the diftance of the centre of gravity from the fulcrum CV , the diftances of the power, and the weight BC and CA , being all given, to find the weight to be fullained. Find the part of the weight fuftained by the lever alone, as in the former problem: in the fame manner find the other part of the weight, which the power applied in B is able to fultain; add the two numbers together, and the fum is the weight required.
4. The gravity, and centre of gravity F , of a lever of the fecond kind C B, fig. 5 , with the weight G, its diftance from the fulcrum $\mathbf{C A}$, and from the power CB, being given, to find the power capable of fuftaining the weight. Suppofe the kever void of gravity, but in lieu thereof a weight equal thereto hung in $F$, the power required to ful. tain the lever alone; then find the power requiifte to fuftain the given weight $G$; add the powers together, and the fum will be the power required.
5. If a power applied to a lever of any kind lift a weigkt, the fpace of the firlt is to that of the laft, as is this laft to a

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power able to funain the fame weight; whence it follors; 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 firt kind, and the law of the equilibrium is the fame; $i_{0} c_{0}$ of 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 $\mathrm{A} M$, perpendicular to the arm A, the power and weight will fultain each other, if $P$ be to W , as CA to CB , or $\mathrm{P} \times \mathrm{CB}=\mathrm{W} \times \mathrm{CA}$. If feveral powers act upon the arm CA , find their centre of gravity, A, on the arm C A, and fuppofe all the powers to be united there; and if the power P be to their fum as $\mathrm{C} A$ to C B, it will futtain them. The fum of the powers being given, it is manifelt that the farther their centre of gravity $A$ is removed from the centre of motion C , the greater refiftance they will oppofe againtt the power $P$, and it will require the greater force in the power to overcome them. Hence Galileo juftly concludes, that the bones of animals are the tironger for their being hollow, their weight being given; or if the arm CBF reprefents their length, the circle CHD a fection perpendicular to the length P , any power applied along their length, tending to break them; then the ilrength or force of all their longitudinal fibres, by which the adhefion of the parts is preferved, may be conceived to be united in A , the centre of the circle C H D, which is the common centre of gravity of thofe 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 diflance CA is greater when the fection is an annulus than when it is a circle without any cavity: confequently the power with which the parts adhere, and which refifts againlt $P$, that endeavours to feparate them, is greater in the fame proportion. For the fame reafon, the italks of corn, the feathers of fowls, and hollow fpears, are lefs 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 inflance, fays Mr. Maclaurin, (View of Sir. 1. Newton's Phil. Difc. book ii. chap. 3. (13.) art only imitates the wifdom of nature. See Mechanical Pozers.

Lever, or Veclis, in Midiwifery, an inftrument ufed 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 ufually called the lever of Roonhuyfen, the name of a furgeon of Amiterdam, who has the credir of having invented, or firlt made ufe of it. Roonhuyfen is faid to have been inftructed by Dr. Hugh Chamberlen in the method of ufing the forceps, (fee that article,) for which he paid him a confiderable fum of money: but finding, in many cafes, great difficulty in introducing the fecond blade of the forceps, he confined himfelf to the ufe of a fingle blade; and procuring an inftrument to be made upon that principle, he called it his lever. Ruyfch was alfo faid to participate with him in the ufe of this new contrivance. It was for a long time applied with great caution, and only fhewn to fuch of their pupils as paid them a fpecific fum for the purpofe. At length De Vifcher and Van de Poll, two phyficians of Amitterdam, purchaied the fecret of a defcendant of Roonhuyfen, and publifhed a defcription of the inltrument, and of the manner of ufing it, in the Dutch language. This account was, many years after, tranflated into - French by M. Preville, and affixed to his tranllation of Smellie's Treatife of Midwifery, to which he added an engraving of the inftrument.

The lever is a flat piece of iron, twelve inches in length,

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one inch in breadth, and a quarter of an inch in thicknefs. It is itraight in the middle for four inches, and moderately curved at cach end. (See, Plate Surrery.) In ufing it, one or two tingers of the right hand (the woman lying on her left fide, as in a natural labour) muft 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 mult be raifed with the right hand, and its middle preffed Jown with the left hand. This will prevent the foft parts of the woman covering the os pubis from being injured. When by this means the head of the child has been made to defcend into the vagina, the left hand muft be removed from the middle of the inftrument, and applied over the anus and the perinzum, to guard thofe parts, (which will be found to be much diftended,) and to prevent their being lacerated; for which purpofe, alfo, the whole of the operation (which will ufually be completed within between ten and twenty minutes) muft be performed flowly and cautioufly, imitating as much as poffible a natural labour.

For further information on this fubject, fee Dr. Bland's Account of the Invention and Ufe of the Lever, publifhed in the fecond rolume of Medical Communications, $1 / 90$.

Leverano, in Geography, a town of Naples, in the province of Otranto; 7 miles N. of Nardo.

LEVERET, amonglt Sport/men, a young hare, in the firf year of its age.

LEVERETT, in Gcography, a townihip of America, in Hampflaire county, Maffachufetts, near Connecticut river; 94 miles $W$. from Botton; incorporated in 1774 , and containing 711 inhabitants. A copper-mine has been lately difcovered in this townhhip.

LEVERIDGE, Riciard, in Biography, was a finger of Purcell's fongs, in the time of Charles MI. and in that of William and Mary. During the reign of queen Anne, he performed in 1 jo6 the part of lir Trulty, in Addifon's Rofamond; and in the firft attempts at opera on the Italian model, he fung his part in Englifl, in Canilla and Thomyris; while Nicolini, Valentini, and the Margarita, verformed their parts in Italian.
He had a deep and powerful bafe woice; was a ufeful performer on the Englifh ftage on many occafions, particularly at Covent Garden, where he attached himfelf to Rich, and his pantomime.entertainments, to the end of his life. He was nor, however, without genius for poetry and compofition, as far as a ballad went. We remember his finging one written and fet by himfelf," Gholts of every Occupation,", and feveral of Purcell's bafe fongs occafionally, which, fifty years ago, feemed antediluvian ; but as he gencrally was the reprefentative of Pbuto. Neptune, or fome ancient divinity, it correfponded perfectly with his figure and character. As he was not only a celebrated: finger of convivial fongs, but the writer of many that werein great favour with lingers and hearers of a certain clafs, who more pioully performed the rites of Comus and Bacchus than thofe of Minerva and Apollo, he had always a crowded houfe at his benefit; nor did he leave this fublunary world, or the fage, till 1758 , at 88 jears of age.

LEVET, in Geagraphy, a town of France, in the de-
partment of the Cher, and chief place of a canton, in the diltrict of Bourges; 6 miles S. of Bourges. The place contains 645 , and the canton $52 \sigma_{3}$ inhabitants, on a territory of $232 \frac{1}{2}$ kiliometres, in 16 conmmunes.

LEVI, Bex-Geranoma, in Biograply, a learned rabbi, who flourifhed in the fourteenth century, was born in Pro. vence about the year 1290. His ctebrity is founded chiefly on his philofophical and theological writings. He was a difciple of Arillote, and philofophizes in the fpirit of his mafter, when diffuling fubjects of facred literature. He died in 1370, when he was So years of age. He was, author of "Commentaries" on all the books of the Old Teltament, of which fome are inferted in the great bibles of: Venice and Bafil; and others were feparately printed at Pefaro, Venice, and Paris. He was author of a philofophical work, entitled "Millemot Hafchem," or "The Battles of the Lord," divided into treatifes on the immortality of the foul, the knowledge of future cyents, prophecy, the interpretation of creams, the omnifcience of God, \&ec.; and of various other treatifes, which wereformerly preferved in MS. in the Vatican library, and in that belonging to the congregation of the fathers of the oratory at Paris.

Levi, Ifle dus Fort, in Geography, an ifland in the riverSt. Lawrence, Upper Canada, in front of the townhip of: Edwardfburg. On this ifland are the ruins of a French fortification.

LEVIEION, a town of Perifa, in the province of Irak ; $3^{6}$ miles W.S.W. of Ifpahan.

LEVIER, a town of France, in the department of the Doubs, and chief place of a canton, in the dittrict of Pontarlier; 10 miles W. of Pontarlier. The place contains 106 9 ; and the canton 7727 inhabitants, on a territory of 310 kiliometres, in $1 ;$ communes.

LEVIGATION, the reduction of hard and ponderous bodies, as coral, tutty, precious ftones, \&c. into a fine fubtil powder, by grinding them with water upon porphyry, or the like, as painters do their colours.

Levigation is much ufed in pharmacy and chemiftry; but unlefs the grinding inftruments be extremely hard, they will wear away, fo as fometimes to double the weight of the medicine thus managed.

LEVIKATE, in the Jewijb Culfoms, a term ufed by authors who have written on the law and cufloms of the Jews, to denote particularly that law of Mofes, which obliges one brother to marry the widow of another, who died without children, to raile 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 exprefs the law whereof we have been fpeaking.

This law, which is an exception to that which condemns. marriages between brothers and fifters, and between bro--thers-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 firlt-born Er, and Onan his. fecond fon, fucceflively 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 Lezuifunus, in honour of the Rev. Dr. Lewis, who fent him feveral plants as: well as fhells from Madras. The Cape flarub to which this appellation was given, having been referred by Limmeus at one time to Brwnia, at another to Protea, is now Leucadendron Levifanus, Brown Tr. of Linn. Suc. v. 10. 55. (See Leucablidilos.) Schreber in his Gen. Pl. 149, eftablifhed another Lovijanus out of

Brenia;

Brunic；but this is now Staivia of Willdenow，Sp．Pl． V．8． 1144 ，a name which we prefume will remain．

LEVIT＇A，in Geography，an ifland in the Grecian Archi－ pelago，about cight miles in circumference．N．lat． $37^{\circ}$ ． E．long． $26^{\circ} \mathbf{1 4}^{\prime}$ ．

LEVYTE，an inferior kind of minifter in the Jewifh ta－ bernacle and temple，who had the care and management of the facred utenifis．

The word comes from the Greek heurnt，the root of which is the name Levi；which was given to that patriarch by his mother Leah，from the Hebrew Mi＇，lavah，to be tied，or united；Leah hoping，by the birth of this fon，to be more clofely linked to her hufband Jacob；and，therefore， in a large fenfe，the Levites were the pofterity of this pa－ triarch，and conitituted one of the twelve tribes of Ifrael． In a more reftrained and peculiar fenfe，they were a lower order of ecclefiaftical perfons，inferior to the priefts，and their affiftants in the facred fervice．The fons of Levi were appointed to this office，in confequence of the extraordinary zeal they difcovered againft idolatry，in the cafe of the golden calf．Exod．xxxii．26． 28.

When God miraculoufly deftroyed all the firft born of the Egyptians（Exod．xii．29．），he fpared the firt born of the $I$ Iraelites；and in order to preferve the remembrance of the miracle，and of that great deliverance from their bondage in Egypt，which that miracle occafioned，he was pleafed to appoint that for the future all the firft－born males＂fhould be fet apart unto himfelf．＂（Exod．xiii．12．16．Numb． viii．17．）But afterwards，on the occafion above men－ tioned，the whole tribe of Levi had the honour affigned them，inftead of the firt－born of IIrael．＂And that it might appear there was a juft fubfitution of the Levites for the firit－born，number for number，he ordered an eftimate to be made of both；and when，on cafting up the poll，the firlt－ born were found to exceed the Levites by 273 ，the furplus was redeemed at the price of five fhekels a head，which was paid to the priefts for the ufe of the fanctuary．（Numb．iii． 14 ，ad fin．）We may here obferve，as a circumitance worthy of notice，that the pofterity of Mofes were no more ithan common Levites，while the defcendants of his brother Aaron were advanced，by the appointment of his law，to the dignity of the priefthood．（ ${ }^{1}$ Chron．exiii．13，14．） This is a plain evidence that Mofes 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 na－ taral to fuppofe that he would have made fome better pro－ vifion than he did for his fons，and for the grandeur of his houfe，and not have advanced his brother＇s above his own．

The Levites were originally divided into three claffes，or families，frons the three fons of Levi，Kohath，Gerfon， and Merari；but afterwards by David into twenty－four courfes．I Chron．xsiii．6．ch．xxviii．11－13．

The Levites，in the Jewih church，were an order in－ ferior to the priefts；and anfwered，iu fome meafure，to deacons，in the Chriftian church．On their firft inftitution， a great part of the fervice that was affigned them was pe－ culiar to the ftate of the Ifaelites at that time；and it was fervile and laborious．But when they were fettled in the land of Canaan；and the tabernacle was no longer carried about as before，the fervice of the Levites was，of courfe， changed，and became much more eafy．On which account， ir the time of David，they were thought fit to enter on their office at the age of 20 years；whereas，by the original ap－ pointment of Mofes，they were not admitted till they were ${ }_{2 j}$ or 30 jears of age，and were difcharged at 50．（Numb．
iv．3．13．43 ch．viii．24，25．）It is an opinion among the Jews，that the Levites paffed through four different degrees． From one month old to their twentieth year they were in w ftructed in the law of God；from twenty to twenty－five，；in？ the functions of their miniftry ；from that period to thirty， they ferved a kind of apprenticefhip，beginning to exercife themfelves in fome of the lower branches of the facred fer－－ vice；and laftly，when they attained their thirtieth year， they were fully inftituted in their office．A fimilar grada－ tion，probably borrowed from that of the Jewifh Levites， has been obferved among the veftal virgins；and fome have fuppofed that this gradation is referred to by the apofle， when he tells Timothy，that they who perform the office of a deacon well purchafe to themfelves a good degree；ха⿱口⿰口口ov $\beta \times 9_{\mu x \%}$ I Tim．iii． 13.

We have already obferved，that the Levites were oric ginally ditributed into three families；and in David＇s＇time， they were diftinguifhed into three claffes，to each of which a different fervice was affigned；and probably each was di－ vided into twenty－four courfes．The firft clafs was ap－ pointed to affif the priefts in the exercife of their minittry ； the fecond clafs formed the temple choir ；the third clafs had the charge of the feveral gates of the courts of the fanctuary affigned them by lot．（I Chron．xxvi．1．15．19．＇ 2 Chion．） xxxy．15．viii．14．）The Levites exercifed the office of magiftrates，which office belonged to them，not as Levites， but as perfons who generally addited themfelves more to the Itudy of the law，and had more leifure to attend on the． duties of the magifracy，than others who were employed in fecular bufinefs．The magiftrates of different ranks，both the＂fhophetim＂and＂hoterin？，＂were very generally， though not always，chofen out of the tribe of Levi．Thus， the prophetic curfe，denounced by Jacob againt Levi， （Gen．xlix．7．）was remarkably accomplifhed，（though in effect converted into a bleffing，）not only in refpect 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 through－ out the whole country；and probably，as the rabbies tell us，fome of theni were generally directors of their feminaries of learning．Of the confecration of the Levites，and of the ceremonies attending it，we have an account in Numb．viii． 10， 11.

As to the refidence and fubfiftence of the Levites，we may obferve 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 diftributed 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 fubfiftence 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 thefe dues，the firft fruits，which were brought to the temple，and the money paid for the redemption of the firt－ born，contributed to their fubfiftence．But，when they were out of waiting，their maintenance partly arofe 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；xyiii．25．）a teath of which they paid to the priefts．See Tirue．

According to the numeration made by Solomon，from the age of twenty there were thirty－eight thoufand Levites capable of ferving：twenty－four thouland of thefc he ap－ pointed for the daily miniftry under the priefts；fix thoufand to be inferior judges in the cities，and to decide matters re－
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lating to religion, and of no great confequence to the flate; four thoufand to be door-keepers, and to take care of the riches of the temple; and the relt to do the oflice of chaators, or fingers.

LEVITICAL Degrees, in Laev. Sec Marmage:
LEVITICI, in Church Hifory, a fect of heretics, who fpring from the Gnoftics and Nicolaitans.

LEVI'I'ICUS, a canonical book of the Old Teftament, fo cailed from its containing the laws and regulations relating to the priefts, Levites, and facrifice: Sec Caxion and Pentateuch.

LEVIT'Y, the priwation or want of weight in any body, when compared with another that is heavier.

In whica fenfe, levity ftunds oppofed to gravity.
The fchools maintain, that there is fuch a thing as pofitive and abfolute levity, and impute ro this the rife or emergency of bodies lighter in fpecie than the bodies wherein they rife.

But we find by experience, that all bodies tend towards the earth, fome flower, and fome fatter, in all fluids, or mediums, whether water, air, \&c. Thus, cork is only faid to be lighter than gold, becaufe, under equal dimenfions, the gold will fink in, and the cork fwim upon water.

Archimedes has demonftrated, that a folid body will float any where in a fluid of the fame fpecific gravity; and that a lighter body will keep above a heavier. The reafon is, that of bodies falling towards the earth, thofe which have a like number of equal parts, have equal gravity $;$ fince the gravity of the whole is the fum of the gravity of all its parts. Now two bodies have an equal number of equal parts, if under the fame dimenfions there be no intervals deftitute of matter; 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 fmall, there can be no reafon for the defeent of thefe, which will not equally hold for the defcent of that.

Hence it may be concluded, that thofe bodies which do not equally gravitate under the fame dimenfions, 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 goid mutt have a greater number of equal parts of matter, under the fame bulk, than the cork; or the cork muft have a greater number of vacuities than the gold; and that there is alfo in the water a greater number of vacuities than in gold: See Fluids, and Specific Grivity.

Hence we lave a clear idea both of denfity or gravity, and of levity; and know, that the latter cannot, in a dtrict fenfe, be accounted any thing pofitive, but only a mere negation or abfence of body; which desermines that body to be lighter than another which contains more matter.

Dr. Hook, it is true, feems to maintain fomething like a pofitive levity; which, if we miltake not, is what he means by the term levitation; riz. a property of bodies directly contrary to that of gravitation towards the fun.

This, he thinks, he has difcosered in the tlreams of fe. veral comets; which, though they had a defcent from the nucleus of the comet towards the fun, yet they quickly returned, and went uppofite to the fun, and that to a prodigious extent. In effect, where the power of gravitation ccales, it fhould feem fome fuch contrary force docs begin ; whereof we have inftances in the phenomena of attraction. I'his is what fir lfaac Newton calls the wis repellens, and appears to be one of the laws of nature; without which it would be hard to account for rarefactions and fome ather appearances.

Vol. XX.

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LEVIZANO, in Genyraply, a town of Italy, in the department of the Panaro; lix miles S.s. E. of Mudena.

LEUK, a fmall town of Switzerland, built upon aa cminence about a mile from the Whine, and the principal place of one of the dixains of the Vallais; containing two churches and a large palace of the bifhops of Sion. At the diftance of fix miles $N$. are celcbrated baths, faid to b beneficial in rheumatifms, difeafes of the fkin, Scc. and to refemble thofe of Bath. Here are feveral fprings of different warmth and of different qualities, According to accurate experiments, the mercury in Fabrenbeit's thermometer, when planged into the principal fource, food at 115 , and at $\$ 20$ in the fpring which flows near the bridge over the Dola. Leuk is diftant 20 miles E. from Sos .

LEVFOPOL, a town of Rutlia, in the province of Tanris ; 80 miles S. of I'erekop. N. lat. $45^{\circ} \mathrm{G}^{\prime}$. L. loné. $3 t^{\prime \prime} 24^{\prime}$.

LEUNCI, AVIUS, Jonn, in Fiografby, an eminent man of letters in the feventeenth century, fon of a gentlman of Wreltphalia, was brought up to the profeffion of the law, with which fcience he was intimately acquainted, as well as with literature in general. He was a great traveller. and refided a confiderable time in 'l'urkey. Ife died at Vienna in 1693 , about the 6oth year of his age. From his knowledge of the Turkinh language he was erabled to collect fome raluable materials for the hiftory of that nation, which he publifhed under the title of "Hiltoriz Mullimanicæ T'urcarum," and his "Annales Tuzcici cum Supplemento et Pandectis Hilt. Turcicæ." His intimate knowledge of the Greek language was difplayed in feveral Latin tranflations of Greek authors, viz. Xenophon, Zozimus, the annals of Conltantine Manaffes, and of Michael Glycas; the Greek abridgment of the fixty books of Roman law; various works of St. Gregory of Nazianzen, \&c. Bayle.

LEVONOVK, is Geography, a town of Ruffia, in the government of Irkutfl, on the Lena; 52 miles S S.W. of Kirenf:
L.EUPOLD, JAmes, in Biograpby, a very celebrated nechanician, and noted for his conftruction of mathematical inftruments, and other machines for the elucidation of facts in philofophy, was commiffary of mines to the king of Poland, and a member of the Royal Society of Berlin, and other fcientific bodies. He died at Leeipfic in 1727 , after having acquired celebrity by the publication of a work, which is ftill highly efteemed, entitled "Theatrum Machinarum," in three vols. folio.

LEVRET, Anprriw, an eminent French furgeon and accoucheur, was admitted a member of the Royal Acadeny of Surgery at Patis"in February, 7742 . He obtained a high and extenfive reputation in his department of the art, by the improvements which he made in fome of the initruments recellary to be employed in certain dificult cafes, (efpecially the forceps,) and by the prodigious number of pupils whom he inftructed. He was employed and honoured with official appointments by all the female branches of the royal family. He publithed feveral works, which underwent various editions and tranflations. "Ubfervations fur les caufes et les accidens de plufieurs' accouchemens laborieux," Paris, 1747. To the fourth edition, in 1 r70, were added, "Obfervations, on the lever of Rocnhuyfen." "Onfervations fur la cure radicale de plufieurs polypes de la matrice, de la gorge, "et du nez, operée par de nouveaux moyens," ibid. $17+9$, Sce. "Suite des obfervations fur les caufes et les accidens de plufietrs accouchemens laboricux," jbid. 17jx. "Explication de plufieurs figures fur le mécha. nimme, de la groffeffe et de l'accouchement," ibid. 1752. "L'Art des accouchemens démontré par des principes de

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phyfique et de mechanique," ibid. 1753 , \&c. "Efai fur l'abus des regles generales, et contre les préjugés qui s'oppofent aux progres de l'art des accouchemens," ibid. $1 \% 66$. Eloy Dict. Hit.

LEV ROUX, in Geography, a town of France, in the department of the Indre, and chief place of a canton, in the diltrict of Chateauroux; 10 miles N. of Chatearroux. The place contains 2800 , and the canton 8904 inhabitants, on a territory of $352 \frac{1}{2}$ kiliometres, in 15 communes. N. lat. $46^{\circ}$ 59. E. lang. $1^{\circ} \mathbf{1 r}^{\prime}$.

LEUSDEN, Jons, in Biography, an eminent philologit, was born at Utrecht in $6^{2} 4^{\circ}$ He laid the foundation of a learned education in his native city, and then went to Amiterdam to improve himfelf in the Hebrew language, and in the knowledge of the Jewif ritual from converiation with the learned rabbis. He obtained, in the year 16.49 , the profeflorlhip of Hebrew and Jewilh 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 Synopfis. His own writings are numerous and very valuable, of which the principal are "Clavis Hebraica et Philologica Vet. Telt." $4^{\text {to. "Clavis }}$ Greca Novi Teft. cum Amnot." "Compendium Græcum Novi Teft." "Philological Notes upon Jonas, Joel, and Hofea," two vols. 8vo. Moreri.

LEUTENBERG, in Geography, a town of Germany, in the county of Schwartaburg-Rudolitadt, on the Sorbitz; near which are mines'of filver and copper ; eight miles S.E.. of Saalfeld. N. lat. $50^{\circ} 28^{\prime}$. E. long. in $35^{\prime}$.

LEUTHEN, a town of Silefia, in the principality of Breflau ; ro miles W. of Breflau.

LEUTKIRCH, a town of Bavaria, near the Efchach, on a heath to which it gives name. This town was free and 'imperial till the year ISO2, 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 Francifcans. The magiftrates are mofly Lutheran; 28 miles S. of U/m. N. lat. $47^{\circ} 53^{\prime \prime}$. E. long. $10^{\circ}$.

LEUTMischl, or Litonysl, a town of Bohemia, in the circle of Chrudim; 22 miles E. of Chrudim. N. lat. $49^{\circ} 47^{\prime}$. E. long. $165^{\prime}$.

LEUTO, Ital. in Mufic. See Lute, and Tineorbo.
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, lignifies to gather or collect ; as, to levy money, to levy troops, \&c.

Levy fometimes alfo denotes to crect, or fet up; as, to levy a raill. Levy a'fo fignifies to raife or cait up ; as, to levy a ditch. To levy a hire of lands, is to pais a fine.

LEVYING ATon:'y wuithout Confent of Parliament. No fubject of Ergland can be conltrained to pay any aids or taxes, even for the defence of the reaim or the fupport of government, but fuch as are impofed by his own confent, or that of his reprefentatises in pariament. See flats. 25 Edw . I. c. 5.8 \& 64 Edw. I. Itat. 4 . c. I. It Edw. III. Itat. 2. cap. it the petition of right, 3 Cir. I. c. r. ftat. I W. \& M. ttat. 2.' c. 2.

Leving IVar againft 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 diftrict of Tournay, feated on a brook near the Dender ; sight miles E, of T'ournay. The place contains 3528 , and

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the canton 14,448 inhabitants, on a territory of $122 \frac{1}{2}$ kilio. metres, in 15 communes.

LEWALDE, a town of Pruffia, in the province of Oberland ; 12 miles N.N.IV. of Soldau.

LEWA RDEN, a city of Hoiland, and capital of Friefland, fituated in a quarter called "Ooltergoo." 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, battions, and other works: the flreets are regular and fpacious, and feparated by eanals which interfect each other, facilitate communication with the fea and with the internal parts of the province, and contribute to an extenfive trade with Holland, Bremen, Hamburgh, and other places. The town houfe, crected in 1715 , is a handfome building. The magiftracy confilts of three burgo-mafters and nime echevins; 28 miles W. of Groningen. N. lat. $53^{\circ} 12^{\prime}$. E. long. $5^{\prime \prime} 43^{\prime}$.
I.EWCKOCE, a town of Poland, in Podulia; 44 miles N.N.E. of Kaminiec.

LEWDNESS is punifhable by our law by fine, imprifonment, and fuch corporal infamons punifhment, as the court may think meet, according to the heinoufnefs of the crime. (I Hawk. 7.) And Mich. ${ }_{5}$ Car. II. a perfon was indicted for open lewdnefs, in fhewing his naked body in a balcony, and other middemeanors, and was fined two thoufand marks, imprifoned for a week, and bound to his grood behaviour for three years. (I Sid. 168.) In times palt, when any man granted a leafe of his houfe, it was ufual to infert an exprefs covenant, that the tenant fhould not entertain any lewd women, \&ic. See Adultery, Bastaidd, Bawdy-house, Incest, \&c.

LEweHAGEN, in Geograpby, a town of Pruffia, in the circle of Natangen ; eight miles E.S.E. of Konigßerg.
LEEVEN, 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 eaftern extremity of one of thofe bold and fertile eminences zalled the South downs, and fo juftly ceeebrated 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 Weft-Saxon, and afterwards to the Saxon and Davifh monarchs of all England; and, though each of thofe revolutions by which it changed its royal lord, removed the court till farther from this town, its natural advantages fecured it a refpectability not inferior to that of the firlt boroughs in the kingdom. During the Danifh ravastes from the clofe of the eighth century to the beginning of the eleventh, Lewes was rendered, both by art and wature, the molt eligible place of refuge for the inhabitants of the adjacent country, and a firm barrier, againat the invaders. In the reign of Athelltan, 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 Chichelter but one; a proof of the early refpectability of the former. On the death of Edward the Confefor, this town, with the other appanages of the crown, devolved to Harold, and on his cefeat was given by the Conqueror to his for-in-law William, lord of Warren, who made it his chicf refidence, and built here a grand manfion and fortifications ; the gate and two towers of his cafte tull remain. In the time of Edward the Confefior here were 127 burgeffeg. Lewes con. inued in the poffeffion of the lords Warren for nearly three centuries, when the male line being extinct, it defcended to Richard Fitz-Allen, earl of Aruncel, fon of Alice, filter of the late earl of War-

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ren. 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 126., between Henry III. and the confederate barons under Simon de Montfort. A particular account of this is printed in Lees Hillory, \&c. of Lewes, Svo. $179 \%$.
Lewes is a well built town, and one of the largeft and mort populous in the county. It had formerly twelve parilh churches, which are now reduced to fix, including St. Thumas at Cliffe, fo called from its ftanding under the high chalky cliffs at the out-fikits of the town. The other cluurches are All-Saints, St. John's under the Callle, St. Michael's, St. Peter's and St. Mary's Wettout, now called St. Anne's, and St. John's, Southover. The diffenters, who have been refpectable and numerous in this town, have alfo their places of worthip.
Lewes is a borough by prefcription, but not incorporated; the civil government is velted in tivo conftables, who are annually chofen by the burgefles. Two members have been returned to parliament ever fince the 26 th year of Edw. I. The right of election is in the inhabitants paying fcot and lot, in number abont 310 . In the year $150+$ an act of parliament was obtained for holding the fhire or county-court alternately at Lewes and Chichelter. 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 $15+2$ the duke of Norfolk's officers were treated with "t two couple of rabbits," price $6 d$. ; a potlle of fack, $6 d$. ; a quart of fack and a quart of red-wine, $6 \mathrm{~d} . \ln 1544$, the " year's wages" of John Payne, one of the burgeffes in pariliament for this borough, was 63 fhillings. The two burgefles were paid 6l. ros. in the year 1555. The following year was dittinguifhed by the burning of four men, in this town, for "herefy." Here are a free grammar-fchool, a charity--Cliool, and feveral private charities. On the banks of the river Oufe, which is navigable for barges, are feveral iron-works, where eannon of fmall fizes, and feveral other articles, are calt.
Leves is 40 miles diitant from Chichefter, and 49 from London. Four fairs are held annually; and a weekly market on Saturdays. The population, in the year 1801, was ftated in the parliamentary return to be 3309 , occupying $\$ 12$ houfes. The fummer aflizes are alternately held here and at Horham.
A priory of Clunize monks, the firt and chief houfe of that order in England, was founded at Lewes, in ro78, by William lord Warren and Gundreda his wife. Here was alfo a priory of Grey Friars; and two hofpitals dedicated to St. James and St. Nicholas.
Lewes. See Loulstown.
LEIVESTEIN, a town of Pruffia ; 16 miles N.W. o Ratitenburg.
LEIVIN, a town of Silefia, in the principality of Glatz; 15 miles W. of Clazz. N. lat. $50^{\circ} 14^{\prime}$. E. long. $16^{\circ} 4^{\prime}$.
LEWING, in Melallurgy, the fifting of the ores of metals in water. This is done in fine fieves 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 ufe in the various wanhings. The coarfer matter, left in the fieve, is powdered agrain with the larger maffes, and all thus fifted together for the blowing-houre.
L.EWIS I.o in Biography, emperor and king of France, furruamed L: Dibonnaire, the fon of Charlemagne, by a fecond wife, was born in 778 , and while a child he was crowned king of A quitaine, to which ttate he was fent to refide. Inere he was carefully educated in the dead lan.
guages, and in the other branches of learning that were cultivated at that period. During his admimftration in Aquitaine, on account of the fuavity of his manners, he obtained the furname already mentioned; and at lis father's death in 814 , he fucceeded to the imperial throne, without oppofition. At this period he had three fons, Lothaire, P'epin, and Lewis, anong whom he divided his dominions: the firtt he railed to the dignity of emperor by afociating him with himfelf; the fecond he created king of Aquitaine; and to the other he gave the title and power of king of llavaria. A.worfe fyitem could not have been adopted, which becwis found to his coit, as each of his fons, feeling them:i-lves indeperdent of the father, violated every tie of filial and fraternal duty. Bernard, king of Italy, natural fon of Pepin, the eldert fon of Charlemagne, took up arms with the hope of depofing Lewis, but his army, in the critical momest, deferted him, and he was obliged to throw himfolf at the emperor's feet, to implore that clemency, which his mildeeds were ill calcu. lated to infpire. The einperor referved him to the affembly of the fates of Aix-la-Chapelle; by whom his conduet was inveftigated, and himfelf 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 caufe of Bernard's death, which happened almolt immediately after the crucl deed had been performed. The recollection of the fufferings of his nephew fo afficted the mind of Lewis, that he performed a public penance on account of it, a circumftance that rendered him contemptible in the eyes of his fubjects. The herce nations of the rorth, fcarcely to be controlled by the genius of Charlemagne, difdained the weak arm of his fucceffor, and it was with the ut. mof difficulty that their rude affaults were repelled, and themfelves confined within their proper circle. The molt difaftrous events of this pariod were the death of the emprefs, and the fubfequent marriage of Lewis with Judith, daughter of Guelf of Bavaria, whofe fpleidid accomplifhments 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 jealouly of his three fons againit each other caufed a change in his favour, and he was again reftored to power. The three brothers, in $8_{32}$, joined in a new league againft their father; they were fupported by the pope, Gregory IV., and the emperor, deferted by his troops, furrendered himfelf a prifoner to his undutiful children. He was now folemnly depofed, the imperial dignity was conferred upon Lothaire, and Judith was fent into a nunnery. The misfortunes and diftreffes of the great ever affect the minds of the multitude, and the compaffion of his people foon began to operate in favour of the fallen fovereign. Pepin and Lewis took up arms againlt their elder brother, who was obliged to throw himfelf at the feet of his father, and alk his pardon. Lewis was again reconciled to the church, and replaced on the throne by the bifhops. He now recalled his emprefs Judith, whofe mind, unbroken by adverfity, engaged in new plots againtt the government, with the hope of advancing her fon Charles, to the prejudice of the other branches of the family. She had the addrefs to caufe him to be declared king of Neultria, and afterwards, on the death of Pepin, king of Aquitaine, in oppofiticn to the claims of the fons of Pepin. This circumftance 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 malter of the beft 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 occafioned by a total eclipfe of the fun: he withdrew from the feat of gover!

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ment, to an inland in the Rhine, where he refufed almoft all fuftenance, excepting the elements adminittered 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 Lait moments were embitered with the molt lively refentment araint the king of Bavaria: he was reminded by the binhop of Mente that it was his duty to forgive; he replicd, "I pardon him, but tell him from me, that he mult feek pardon of God, for having broug'1: my grey hairs with forrow to the grave." The placid virtucs and the urbanity of tersper, which diftinguiferd the charneter of this emperor, very ill compenfated for the miferies which were engendered by his feeble adminitration ; and a prince, to whofe name has been added the epithet of gente, lived without the regard, and expired without the regret of his fubjects.
Lewis II, emperor and king of lealy, the eldent fon of tle 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 hin employment; he haftily went into Italy, and defeated them in feveral engagements. He afterwards called a council, to be held at Teffino, for the reformation of ecclefiaftical abufes. In $8 ; 5$, by the death of Lothaire, he fucceeded to the title of emperor, in addition to his kingdom of Italy. The repeated incerfions of the Saracens called forth his military talents and ardour, and the factions of his own nobility were a fource of much unealinefs and great diforders. He lived, in general, on good terms with the holy fee, and in $S_{1}-1$, was crowned king of Lorraine by pope Adrian II. He died in 8-5, greatly refpected by his fubjects, to whom he adminitered juitice with impartiality.

Lewis III. emperor, called alfo Lewis IV. was fon of the emperor is rnuif, whom he fucceeded when he was only feven years old, in the year 889 . During the courfe of his reign, Germany was defolated by the Hungarians, and torn afunder by civil difcord. He died in 912, and his death is regarded as an era in the Germanic hiltory, as he was the lail 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 128 \& . By the death of his father, when he was only 12 ycars of age, his education devolved chiefly on his mother, and he dillinguifhed himfelf beyond all the princes of his age. In I3 14, he was chofen emperor at Frankfort by a part of the electors, while another part of them adhered to Frederic, fon of Albert, emperor and duke of Aultria. L.wis was crowned at Aix-la-Chapelle by the archbifhop 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 efpoufed the canfe of Lewis, while the Guelphs fupported that of Frederic, and the flames of war \{pread over Lombardy, till at length he gave his rival a fignal defeat and took him prifoner. From this period thofe contelts commenced between Lewis and the holy fee, which difquieted all the latter part of his reign. The pope, John XXII., iffued a bull, affurning the right of deciding between the competitors of the e:mp:re, and commanding Lewis to defilt from exercifing the inp rial functions, till he fhould obtain his exprefs perreifion. The emperor protetted againlt the bull, and was excommunicated. To conciliate the minds of the German princes, he made a peace with the Auftrian family, and fet at liberty duke Frederic, whom he had hitherto kept in prilen. In 3327 , be marched into Italy, and was crowned
king of that country; and in the following year he pro. cecded to Rome, and was crowned at St . Peter's by the bifhops attached to his party. The pope renewing his bulls of excommunication and depofition againit him, he retaliated by publicly pronouncing his holinets a heretic, and a deferter of his flock; and he even pronounced upon him fentence of dcath. By a change of circumfances he was obliged to quit Rounc in hafte, and from this moment his caufe declined in Italy, and he found it neceffary to return into Gcrmany. He now fought a reconciliation with the pope, and was treated with contempt. The death of John, in $1 \hat{3} 36$, was of no advantage to the emperor, as the fucceeding pope, Benedict XII., perfevered in the hoftility manifetted by his predeceflor. About the year 1336, the princes of the empire, as well ecclefiaftical as fecular, aiffembling at Spirc, 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 conItitution was paffed into a law, for ever eftablifhing the independence of the empire. Thefe decrees did not put an end to the difputes between Lewis and the holy fee: the breach was widened by the fecret inttigations of Philip of Valois; neverthelefs, the emperor retained the allegiance of the greatelt 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 furpaffed all his contemporaries, both in perfonal and mental qualities, and accomplifhments. His manners were gay and highly polifhed for the times in which he flourifhed; and although he was capable of concerting his meafures without affiltance, he willingly fought the aid of good counfel. He appears to have been famed for piety; for, notwithftanding the papal anathema, he received the appellation of "Molt Chriltian," and the monks of Germany, as fervile, as fuperftitions, preferved his knives, napkins, \&c. with religious veneration. Modern Univer. Hift.
Lewis I. king of France, has already been noticed under the firtt 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 Stammercr, fon of Charles the Bald, who was born in 843 , created king of Aquitaine in 867 , and fucceeded his father in the throne of France in 877 . This prince expofed his kingdom to the fatal confequences of a weak and divided adminiftration. To obtain the fupport of the principal people, he profufely lavifhed the honours and eftates of the crown upon thofe who made the earlieft application, fo that having exbaufted his bounties, thofe who were the laft to prefent their claims were difappointed in their hopes and expectations. Neglected themfelves, they murmured, and denied the right which he had alfumed of difpofing of thefe poffeffions, without the confent of the general affiemblies. His party prevailed by the force of numbers; and at his coronation he took a folemn oath to maintain the privileges of the grandees, and to refpect the donations which he had conferred on them. The vaffals of Lewis foon became his equals, and contended for the fuperiority. A rebellion caufed him to take the field in his own defence, but on his arrival at Autun. he was attacked with a dangerous difeafe, fufpeted to have been occafioned by poifon, which carried him off, after a reign of about eighteen menths. 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. Previcufly to his death, and fenfible of his approacting end, he defired that his fword and crown might be delivered to his fon,

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Lemes III. king of France, who was at that time about Seventeen years of age. The great lords were defirous, int oppofition to the wifhes of the late fovereign, to eftablif? his other fon Carloman on the throne 'To prevent, however, the evils of a civil war, they agreed that the crown thould be worn by both. The divifion of territory was made in 880, when Lewis had for his flaare France Proper, and Neulria; and to Carloman were affigned Burgundy and Aquitaine. The two brothers lived and reigued together in the molf perfect harmony, and they difplayed fome of the qualities of their anceftor Pepin. They, in fome meafure, put a flop to the ravages of the northern brigands, fifty thoufand of whom had entered by the river Somme, and had taken feveral ftrong places, among which was Amiens. Lewis defeated them in an engrgement near Courtray, but having neglected to follow up his victory, they rallied, and made incurfions into Picardy; here he again encountered, and gave them a molt fignal defeat, leaving on the field of battle 9000 of the enemy, with their leader Guaramond. This victory had difplayed much wifdom and valour ; and the demife of Lewis of Germany proclaimed the moderation of the young king of France, who rejected with firmnefs the crown offered him by the inhabitants of Lorraine, and yielded to the fuperior pretentions of the emperor, Charles the Fat. The French were, however, permitted to contemplate the rifing virtues of their prince only a fhort time. While he was indulging the hope of crecting frefh trophies over the Normans, a mortal difeafe compelled him to renounce the enterprife. He returned to St. Denys, where he expired in the twentyfecond year of his age. His premature death was marked with the fufpicion of poifon, a fufpicion countenanced by the turbulent temper of the nobles, jealous of his active and glorious reign.

Lewis IV. king of France, furnamed D'Ontre-mer, beyond the fex, 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 depofition of his father, was taken by his mother to the court of Athelltan, in Enigland. Here he remained tith the year 936, when he was invited to return and afcend the throne of his anceftors. He landed at Boulogne, proceeded to Laon, and was crowned in that city by Artaud, archbifhop of Rheims. His return was chiefly owing to the influence of the powerful Hugh the Great, duke of France. The firl meafures of Lewis promifed to maintain the internal tranquiliity of his kingdom. To difcharge his obligation to Hugh, and to fecure the fidelity of that nobleman, he appointed him minifter, and committed the reins of government into his hands. The fervant foon raifed himfelf above the - mafter ; and the attempts which Lewis made to free himfelf from this ftate of dependeuce, gave rife to a civil war, which for feveral years threw the kingdom into confufion, 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 , betweert Lewis and his rebellious fubjects. On the death of the duke of Normandy, Lewis attempted to add that duchy to the kingdom: for this purpafe he united with Hugh the Great, in an open invafion 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 himfelf a grant of the city and territory of Laon. Lewis feized upon the firf opportunity to avow his refentment againft his powerful vaffal, and the provinces of France were alternately aflicted by the arms of Lewis,
of Otho, and of Hugh.' During five years the flames of civil war raged without intermifion, and the precarious. peace which was concluded in a perfonal interview, may be confidered as a fufpenfion of hoftilities rather chan a reftoration of tranquillity. The latent embers of difeord were ftill kept alive: they broke ont with renewed violence, and were finally extinguifhed by the two lifters, conforts of the king and Hugh. A permanent peace was efablithed, 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 hie was purfuing a wolf, roufed by chance, with inconfiderate ardour, his horfe ftumbled and threw him: the injury proved fatal, and in a few days he clofed his life at Rheims, after a flormy reign, having been eighteen years on the thronc.
Levis V. was affociated with his father Lothaire in thegovernment, whom he fucceeded in the year 986, being in the nineteenth year of his age. He maniffefted a violent and turbulent character : he quarrelled with the queen-dowager ; expelled the bifhop of Laon from the kingdom; and upona difpute with the archbifhop of Rheims, forcibly entered that city with a confiderable flaughter. At the time that he was preparing to march againft the Saracens, he was taken off by poifon, adminittered, it was imagined, by his own wife Conftance. With him ended the race of kings of the houfe of Charlemagne, which had fiwayed the fceptre nearly 240 years.

Lewis VI., furnamed Le Gros, fon of Philip I., was born in 108t. 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 thofe vices incident to his age and rank. By the vigour of his conduct he held in awe the difcontented nobles, repreffed the rebellious, demolifhed their cafles, and compeiled them to reftore the eftates which they had ufurped from the clergy. His mother-in-law, Bertrade, jealous of the reputation of the young prince, and confidering him as the only obllacle to the clevation of her own fons, attempted, by every means in her power, to deftroy him. He happily efcaped her machinations, and Philip, difcovering her real character, forced her to make fuch fubmifions as difarmed the refentment of his fon. In nio8, 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 contelts between. the kings of France and England. Lewis, in the firit inflance, winhing to avaid the effufion of blood, fent 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, fhould do homage to the fovereign of France for the duchy of Nornaandy, which Henry himfelf had refufed to do. War was again renewed, and in an attion at Brenneville, an Englifh warrior feized his horfe's bridle, crying, "the king is taken ;" to which Lewis replied, "at chefs, the king is never taken," and inftantly laid his antagonift dead with his fword. Lewis endeavoured to deprive Henry of the dukedom of Normandy, but was unfuccefsful. In I1Ig, at a council at Rheims, in which the emperor Henry V. was excommunicated by pope Calixtus II. Lewis lodged his complaints againtt the king of England, but was unable to draw down the cenfures 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 ftanfard of their king, and he flortly found himfelf at the head of $200,000 \mathrm{men}$. It was at this

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crifis that the famous oriflamme, or banner of the abbey of St. Denis, was difplayed as the king's flandard. Lewis next had a difpute with fome of his prelates, which brought upon him a fentence of excommunication from the bifhops of Paris and Sens, but it was taken off by the pope. He now attempted to put an end to the fchifm in the popedom between Innocent 11. and Anaclet, the former of whom he fupported as lawful pontiff. The grofs 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 caufed his fon Lewis to be folemnly crowned, and when he found himfelf almolt in the laft flage of exiftence, he drew the lignet from his finger, and fixed it upon that of his fon, charging him at the fame time to remember, that the fovereign authority, of which this was the fymbol, was a public truit, for which a frict account would be required in a future world. He died in 1137, greatiy lamented by his people, whom he had never burthened with taxes, and whom, in many refpects, he had freed from the oppreffions of the great. Lewis VI. was unqueltionably one of the moft 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 arofe from the order of citizens. He conferred new privileges on the tawns within his domains, by what were entitled charters of cominunity, and formed them into corporations or bodies politic, with the right of adminitering jutice, levying taxes, and embodying a militia within their own diltricts.

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 Guieune and count of Poitou, united to the crown of France an extenfive country from the Loire to the Pyrences. He began his reign by repreffing fome outrages of his nobles, and a revolt of the commons. The electiou of ain archbihlop of Bourges, without his confent, involved him in a quarrel with the clergy, and with pope Innocent II. who fupported them. In the courfe of this difpute, Lewis made an inroad into Champagne, facked the town of Vitri, and fet fire to a church, in which more than 1300 people miferably perifhed. Struck with remorfe for this favage act, he refolved to expiate the foul crime by an expedition to the Holy Land. In 1 if ${ }^{6}$, 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 Conltantinople: from this city the French army marched through Afia Minor, to Antioch, and at length undertook the fiege of Damaicus. The enterprize entirely failed, and Lewis returned difpirited and difgraced. To public calamity fucceeded the pang of domeftic mifery, and it could not be concealed from the eye of a hufband that the fidelity of his queen, who had accompanied him in this expedition, had been facrificed to her own uncle, Raymond. Ow 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 Hemry II. The facility with which he parted from thefe wealthy provinces has for ever annexed to him, by way of reproach, the furname of Yountr. Lewis married for a fecund wife Conftantia, daughter of Alphonfo, king of Caftile, and foon after difplayed his picty in a pilgrimage to the fhrine of St. James, at Compoftella. This ipueen dying without any male iffue, he married Adelaide,
daughter of his old enemy, Thibauld, count of Champagne, by whom he had a fon, named Philip. While a mere child, the royal youth, cngaged in the pleafures of the chace, was loft in the thickneffes of a gloomy fereft, and the heir of France was condemned to pafs a tedious night, oppreffed by folitude and depair. His feeble mind was incapable of fuitaining the horror of his fituation, and when found in the morning, a dangerous fit of illnefs was the effect of the fright. The fupcrititious monarch vifited 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 fhrine 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 recovercd, and in 1180, he experienced a paralytic feizure. Senfible of the great danger which hung over him, he determined to halten the coronation of his fon, and having languifhed 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 refloring the dowry of Eleanor have been arraigned, his humanity has been feldom, and his piety has never been impeached. A tender hulband and an affectionate father, the errors of the monarch, were lolt in the virtues of the man."

Lewis VIII., grandfon of the preceding, was born in ${ }^{118} 8$, and difplayed, at a very carly age a martial difpofition under his father at the war in Flanders, and againft king John of England in Poitou. In 1216, he was invited by the barous of England to afcend the throne, of which their own fovereign had proved himfelf unworthy. He landed in Kent, and marched to London, where he was at firft received with refpect and gratitude : in a very fhort time the tide of public favour completely turned, and he was glad to obtain permiffion to return unmolefted. He fuccceded to the crown of France in 1223, and farcely had afcended the throne of his anceftor, when he was urged by Henry 1II. of England, to make reflitution of the provinces taken by his father from king John; he refufed, and war was dectared. Lewis was every where victorious, and the power of the Englifh in France was greatly curtailed, fo that nothing was left in their poffeffion but the town of Bourdcaux, and the country beyond the Garonne. To preferve thefe, Henry conferred on his brother Richard the title of count of Poitou, and furnifhed him with ample means to fupport his new dignity. The inhabitants of Poitou crowded to his ftandard, and the fpirit of oppofition being revived, the career of Lewis was checked, and he was glad to make a truce for three years. The court of Rome flrongly folicited the king of France to refume the crofs, and to march againtt the Albigenfes. From Lyons he directed his march along the banks of the Rhone, and invelted Avignon with 50,000 men. 'Tlke inhabitants, animated by defpair, defended themfelves with the moit obttinate valour ; and the king, after the lofs of the bravelt of his troops, was forced to grant that capitulation at laft, which he had refufed at firtt. On his return home, he was feized with an illnefs 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 fucceeded to the crown in 1226: being only in the twelfh year of his age he was placed under the guardianfhip of his mother, Blanche of Cattile, who was nominated regent of the kingdom. Her firt efforts with regard to the young king was to infpire him with a love of religion, and an attachment to the prin-
ciples of pure morality. When he attained the alye fit for taking upon himfolf the rule of the kingdom, fuch was the refpect which he bore for his mother, that her authority remained unimpaired, and for feveral years they may be faid to have reinned jointly. Though the piety of this prince obtained for him the title of faint, yet he knew the limits bet ween fecular and ecclefiaftical jurifdictions, and was jealous of ufurpations in the latter. We refufed to join in the crufade recommended by pope Gregory IX., though encouraged to the undertaking by the molt flattering propofals. Lewis fhewed himfelf a good warrior by his exertions in fupprefling a revolt fupported by Henry 1II. of England : he gained two victories in perfon, and conttrained his rival to fubmit to humiliating conditions of peace. Two regula. tions proclaim the prudence and policy of this prince. The firit, under pretence of preventing ftrangers from inheriting lands in France to the prejudice of the natives, prechuded the nobles from marrying their daughters to foreigners, and reftrained them from increafing their influence by connections and alliances with the neighbeuring powers. The fecond compelled the valfals of the crowns of France and Eng. land to make a public avowal, as to which fovereign they would do homage; and, tinally, abolifhed the dangerous cuftom of adhering to either, as their caprice or intereft fuggefted. Yet, even in this edict, the humanity of Lewis was confpicuous, and his juftice indemnified thofe who achered to him for the land they forfeited, by feceding from the king of England. A dangerous indifpofition, which menaced the life of Lewis, was productive of a fatal vow to march in perfon againlt the infidels, whofe fucceffive vietories had overwhelmed the Chriltians of the Eaft : no remonitrances from his counfellors, his nobles, and even his prelates, could divert him from the refolution of fulfilling his vow. The blind zeal, however, which induced him to defcend from his throne to feek the adventures of a fpiritual knight-errant, did not prevent him from concerting his meafures with the utmolt prudence and forefight, as well with refpect to the enterprize itfelf, as the government of the realm during the king's abfence. Having entruited the kingciom to his mother, Blanche, he prepared for his departure. "To furnihh," fays the hiltorian, "f an armament equal to the arduous enterprize, France was exhaufted of troops and treafures; the fea was whitened with eighteen hundred fails; and nine thoufand five hundred horfe, and one hundred and thirty thoufand foot, have been computed as the number of the martial pilgrims. The fleef, with favourable winds, reached the coaft of Cyprus; the troops were difembarked on the friendly fhore, and during the feverity of winter, their flrength was recruited and their health reftored by the plenty of that inand." Here it was determined to make war firlt upon the fultan of Egypt, for the purpofe of facilitating the recovery of Paletine. In 1249 , 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 inAtantly yitided to the aggreffor, 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 naturahy atteneant upon idtenefs and the want of fubordination. From this period he was no longer fuccefsful : every new attempt at conqueft ended in difalter, till at length himfelf, his brothers who had accompanied him in the expedition, and his whole army, were under the neceffity of furrendering themfelves prifoners. The enemy fcarcely knew any bounds to their revenge: they maffacred 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 fubmited with firmnefs and dignity. The king was at length libcrated, having firtt agreed to pay a ligh ranfom, and to agree to a truce of ten years between the Chriltians and Mahometans in Egypt and Syria. 'This treaty was punctually execued, and if high was the honour of Lewis, that upon difcovering a contiderable miltake made by the Saracens in the value of the money to their own lofs, he caufed it to be rectified. He left the country with his queen and brothers, and carricd with him about 6000 men, the fole remains of the valt army which he had collected in the ourfet of the bulinefs. He embarked for Paleftine; and though it might have been expected, that, after his late misfortunes, he would readily have relinquifhed the vain hope of eaftern laurels, and returned to the government of his own kingdom. yet he feemed unwilling to revifit his dominions without glory, trulting for tranquillity at home, in the vigilance and fidelity of his mother Blanche. His ambition now was to fecure Jerufalem from the hollilities of the Saracens; with this view be repaired the fortifications of the places till poffeffed by the Chriltians, made pilgrimages of devotion, attempted converlions, and funk the character of a mighty monarch into that of a fupertitious crufáder. News was brought him of the death of his mother, who had undergone much difquiet from various circumflances during the abfence of her fon, and whofe grey hairs were brought with overwhelming forrow to the grave. The king was now obliged to return, and in his paffage the vefiel which carried him and his family ftruck upon a rock, and was in the moft imminent danger; neverthelefs, the fortitude of the monarch was fo great, that he refufed to avail himfelf of another fhip, determining to fhare the fate of all who were expofed to fimilar rifks with-thofe 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 impreffed with melancholy; the former ftill bore the fign of the crofs, the latter evidently difplayed the marks of defeat. The magnificence of the monarch was, however, beheld with admiration in his reception of Henry III. of Eugland, who embraced the opportunity of an expedition into Gafcony, to vifit Paris. The fplendour 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 himfelf with all diligence to the government of his kingdom, by his ftrict and impartial adminitration of juftice. In the fimplicity of ancient manners, he was accuftomed to Seat himfelf under a fpreading oak at his caftic of Vincernes, and there, in perfon, to decide the caufes that were brought before him. He protected the lower orders from the oppreffions of the great, and would not fuffer his own brothers to pafs over the limits of law and equity. He was extremely fevere in every thing that regarded religion; and the edicts which he iffued againt blafphemous and impious perfons, as thofe were called who doubted the truths of an eftablifhed faith, might have been worthy of a bigotted inquifitor. So great was his character among fureign nations for equity, that he was often applied to for a fettlement of difputes between kings and their nobles. The barons of England and Henry III, in their difputes, agreed to make Lewis the arbiter ! his decifion was favourable to the reral authority, but with a large refervation of the rights and privileges of the fubject, fo that, in fact, it determined nothing. He enlarged his own kingdom by the acquifition of various places on the borders of the Low Countries, and he acquiefced 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

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Leeris: the latent fame of collufiafin which had been damped by his defeat in Egypt was not extinguifhed; ard an opportunity was only wanting to revive the dormant embers. 'The wifdom of his regulations had reftored the tranquillity of hit dominions: his coffers were recruited, his finances augmented, and his lopes of fuccefs were expanded, and very fanguine. His filent preparations had heen incesfantly 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 molt gallant firits of the court of France. He entrulted the reins of government, during his abfence, to the vigilanee and fuperintendance of Matthew, abbot of St. Denys, who derived his noble lineage from the counts of Vendome ; and to Simon de Clermont, count of Nefle, 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 itecered immediately for the coall of Africa. An obfeure king of Tunis had pro. feffed an inclination to abjure the tenets of Mahomet for thofe of Chrilt ; and the vain report of an immenfe treafure reconciled the more interefted pilgrims to the wild and vilionary enterprifc. But caprice or policy had already united the fickle or crafty barbarian to the precepts of the Koran; and in Itead of a zealous profolyte, Lewis encountered an active and formidable enemy. The walls of Carthage were, indeed, Itormed by the impetuous valour of the French; but their flrength was exhaufted 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 pellilential blaft, and he breathed his latt on the inhofpitable floore, in the $44^{\text {th }}$ 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 confpicuous than his fortitude and valour in wat. The father of his people, his heart fympahized with their miferics, and his hand was ever ftretched out to relieve their dilltrefs. His excellent underftanding was clouded by the fumes of enthuliafin; and the flaughter of his fubjects, his own captivity, and at length his death, were the fatal confequences of a blind fuperitition. Pope Boniface VIII. canonized him in 1297; and his defcendant, Lewis XIII., procured the day, dedicated to his honour, to be declared a general featt of the church.
Lewis X., furnamed the Boiferous, from the rude promife of his infant years, fon of Philip, was born in 1291, and fucceeded his father in 1314 . Hr, in a fhort tires after his coromation, caufed his firlt wife to be ftrangled in the prifon of Chateau Gailard, where the was confined, and endeatoured 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 himfelf to concilinte the jealoulies and appeafe the difcontents of his new fubjects. Jeexis, notwithitanding the furname which he had acquired, was of a quiet difpolition, and furrendered the chief authority in the thate to his uncle, Charles of Valois. The firances of the king dom having fallen into diforder, the fuperintendant, Euguerand de Mlarigni, was made a tacrifice to the revengeful paffions of the new minifter. Marigni vindicated his charafter with vehemence; but his eloquence was of no avail, he was configned to an ignominiuns death on the gibbet, and his fortunes were confifcated to the ufe of the fovereign, and were applied to defray the expences of the coronation, which was celebrated at Rheims; and as nuch as they fell flort of public expectation, fo much
did the deficiency contribute to eftablin the innocence of the unfortunate fuperintendant. Far different fupplies were neceffary for the fupport of a war with Flanders, which Lewis was defirous of engaging in, and he accordingly propofed to raife the neceffary fupplies by a general enfran. chifement throughout the kingdom. The inhabitants of the towns were already frce, but thofe 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-propofed by the fovercign, who prefaced his edict with thefe words: "Since, according to natural right, every perfori onglit to be free, \&c." a maxin not very confifent with the compulfory purchafe of liberty. The money being provided, Lewis made a campaign againft de Bethune, count of Flanders, who, feeling himfelf unable to withftand the army brought againft him, determined to bend againtt the florm. By the fpecious language of fubmiffions, he involved the king in a feries of frutlefs negociations, till the feafon of action was paffed, and the lirench army was obliged to rctreat, withont obtaining any advantage. While the king, indignant at the arts of his adverfary, was meditating new projects for revenging himfelf upon his adverfary, his defigns were interrupted by death. A fudden diforder, imputed by fome to poifon, by others to drinking a glafs 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 442 , and at an early age difplayed confiderable talents, united to a turbulent difpofition. At the age of feventeen he headed a party of difcontented nobles, who engaged in a petty war, which was foon fuppreffed, and the prince was glad to fubmit. After this he reinftated himfelf in the royal favour by his fill and valour in relieving Harfleur, inveited by the Englifh. He was foon fent with a body of troops to affif the duke of Auftria againft the Swifs, and obtained fone advantages over them, which were fucceded by a negnciation with the Cantons, in which be concluded the firt treaty between them and the crown of France. In I446, difgutted with the afcendancy of Agnes Sorel, his father's miltrefs, he left the court, and retired into Dauphinè, in which province he excrifed the fovereign authority. He ettablifled the parliament of Grenoble, made laws, and even coined money. At length his conduct created fo much uneafinefs in the brealt of his father, that he was determined to get poffeffion of his perfon; but the pringe, being made acquainted with his intention, efcaped, and took refuge in the court of Philip the Good, cuke of Burgundy. Here he was treated in a manner confiltent with his rank; but Philip would not encourage any of his feditious projects. In the mean time the king brought back the government of Dauphinè to its ancient form, and kept a watchful eye over his fon's motions: fo jealous was he of his intentions, that the dread of being poifoned by his contrivance was the caufe of his death. In the year 1461, Lewis received the news of his acceffion to the crown of France; he did not affect to conceal the joy which the intelligence excited in his breall. The competition of his younger brother, the duke of Berri, vanihhed at his appearance, and his own coronation was celebrated with valt magnificence at Rheims, and honoured with the prefence of Philip, his noble hoft, and that of his fon, the count of Charolois. The firt emotions of the king's gratitude for the protection he had met with, was difplayed in his declaring the count his liev-tenant-general in Normandy, with a very munilicert falary; but thefe marks of elleem and confidence foon vanifhed, and
were fucceeded by an enmity between thefe rival princes, which only expired with life. The new king immediately 'difmifed the miniters of his father with difgrace, and at the fame moment releafed from imprifonment the duke of Alençon, who had been confined for treafonable practices. With regard to foreign potentates, his conduct feemed to be deftitute of every principle of jultice, and dictated merely by what appeared to be the intereft of the moment. In pope Pius II. he met with a politician more refined than himfelf, for in the hope that this pontiff would affif in replacing the houfe of Anjou on the throne of Naples, Lewis cancelled the pragmatic fanction of his father, which eftablifhed the liberties of the Gallican church : afterwards, finding himfelf deceived in his expectations, he permitted its execution in certain points. Being conftituted mediator in a difpute between the kings of Cattile and Arragon, he had an interview with the former, in which he difplayed the fingularity of his difpofition: for while the Spanih monarch with his attendants difplayed the greateft magnificence in their apparel, he appeared in a drefs of coarfe cloth, with an old hat upon his head, upon which was fluck a leaden image of the Virgin: This contraft infpired them with mutual averfion, and the two kings, after a fruitlefs conference, returned with a thorough contempt of the fordidnefs of the one and the incapacity of the other. It was a great object of his policy to reduce the formidable power of the houfe of Burgundy; and, in the execution of his plans, he was furpected of a plot for the feizure of the perfons of the duke and his fon. In return, the count of Charolois joined the duke of Brittany in caballing with his difcontented 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 Monthèri, in which the wietory 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 lexgue by liberal promifes, and trult to events for eluding the execution of them. He accordingly agreed to a difgraceful 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 difputes 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 poffefled. The acceffion 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 hoftilities. In the courfe of thefe, the king's brother, whom he had been obliged to make duke of Guienne, died, not without fufpicion of poifon, and the duke of Burgundy, openly accufing Lewis of fratricide, refumed his arms. An jnvafion 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 ftorm, lavifhed his treafures upon Englifh minitters and geserals, and ailured Edward himfelf by a promifed penfion 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 himfelf from foreign foes, Lewis indulged his fevere difpofition in taking vengeance on domeftic traitors. The conftabie 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
the innocent children of the latter nobleman itand mume w. fcaffold, at his execution, that they might literally the fyrinkled with their father's blood, infpired univerfal horror and general deteftation of the tyrant who could devife fuch a deed. In Ity 6 , Lewis was delivered from his molt danger ous enemy Charles, who fell before Nanci; and he felt no fcruple in making all.poffible advantage of this cvent, to the prejudice of the heirefs, Charles's only daughter, Mary of Burgundy : but his attempts againft her were unfucceffful, and Flanders and Artois declared for the duchefs. Another fcheme which Lewis meditated, was to oblige Mary to marry the young dauphin, but his hoftile procedure had the effect of throwing her into the arms of Maximilian, archduke of Auttria, an event which proved the fertile fource of war for centuries. A war was the inmediate confequence of this alliance, but mutual convenience foon brought about a fufpenfion of arms. Lewis then turned his attention to the neighbouring ftates, and managed feveral negociations with his wonted dexterity. He provided for the fecurity of the family and dominions of his deceafed fifter, the duchefs of Savoy; he fupported the houfe of Medici againft pope Sixtus IV., made an alliance with Ferdinand and Ifabella, and renewed his treaty with Edward IV. One of the laft public events of this reign was the union of Provence to the crown of France, by the bequeft of Charles, count of Maine, the laft prince of the houfe of Anjou. Lewris had now attained to a flate of great external profperity, was regarded throughout Europe for his power and dextrous policy, and feared by thofe who did not efteem him. The decline of his health, and the dread of death, filled him with jealoufies and fufpicions relative to his temporal authority. The nearer he approached his end, the more he clung to life; and he endeavoured, by fuperfitious practices, to quiet the upbraidings of a guilty confcience. He had a ftrong guard round his palace, who kept at a diftance all vifitors, except a very few, whom he permitted into his prefence fingly. He changed his domeftics every day, facrificed many to his fufpicions, and felt more dread than he infpired. "The walls of the cafle," fays the hiftorian, "were covered with iron fpikes, a guard of crofs 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 proceffions to avert his impending doom; all hope was fled, and his favourite, Oliver le Dain, pronounced to him the fentence of certain and approachirg diffolution; the king heard him without betraying any emotions of terror: he fent for his fon Charles, and employed his laft moments in advifing him to cherifh the princes of the blood; to govern by the counfels of his nobles; to maintain the eftablifhed laws of the kingdom; and to diminifh the extraordinary impoits with which he had burdened his fubjects. This laft effort exhaufted the ftrength of the fainting monarch, and he died, after a reign of twenty-three years, in Auguft 1483. Dreaded by his fubjects, whom he had continually oppreffed, and detefted by his neighbours, whom he had affiduoufly deceived, he yet obtained from the obfequious temper of the reprefentative of St. Peter, the title of Chrifo tian King, a title that was ever after held by his fucceffors. He inftituted the order of St. Michael. He was author of feveral ufeful eftablifhments, and the adminithtration of jufice was generally pure where he himfelf was not concerned.
Lewis XII., fon of Charles, duke of Orleans, defcended from Charles V., was born in 1462 : he married Joañ, daughter of Lewis XI., and at the death of that monarch, in 1483 , and the acceffion of Charles V1II. he ftood as prefumptive heir of the crown, with the title of duke of Or.

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leans. On the death of Charles, in 149 S , he fucceeded to the crown without oppofition. Among the very earliefl efforts of his reign were his attempts to diminifl the taxes levied upon the people. He is alfo celebrated at this period for the well known fentiment with which he quieted the apprehenfions of his enemies. "It is," faid he, "not for the king of France to revenge the injuries done to the duke of Orleans." Turning his attention-to the daties of his new ftation, he introduced various reforms into the civil adminiftration and military difcipline, exhibiting at the fame time a fteady mind in every thing which he undertook. He was anxious to obtain a divorce from his wife, the daughter of Lewis XI., becaufe, being deformed, the was not likely to bring him any children, and alfo, becaufe he wifhed to efpoufe Anne of Brittany, widow of the late king, who had refumed her duchy. The pope, Alexander VI., was ready to favour him on this occafion, in order that, in return, he might obtain an eftablifhment for his natural fon, Cæfar 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 lubmitted with decent refignation to a fentence which deprived her of a crown, retiring to a nunnery, in which the took the veil, and clofed 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 fhould be productive of two fons, the younger fhould 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 eldelt daughter Claude to Francis, count D'A ngoulefme, who afterwards afcended the throne. The claims of Lewis upon the Milanefe, and the kingdom of Naples, new began to excite in his breaft the ambition of conqueft ; 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 fhort fpace of three weeks, made themfelves mafters of Milan, Genoa, and all the ftrong places in the country: Lewis entered Milan in triumph, while Sforza retired with his family and treafures to Infpruck. A fudden revolution caufed the expulfion of the French, and the return of the duke, but the troops of Lewis fhortly entered the Milanefe, and got poffeffion 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 fucceiffully executed, and Frederic, king of Naples, expelled from his dominions, put himfelf into the hands of Lewis, as the molt generous of his two enemies. Ferdinand was not content with a part of the conqueft, but took every method to fecure to himfelf the whole fpoils; and by means of his famous captain, Gonfalvo de Cordova, obtained poffeffion, in 1503 , of the whole kingdom of Naples, after defeating the French at Seminara and Cerignole. It was on this occafion that Gonfalvo got pofferfion of the young prince, whom be 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 lait friend to captives, extinguifhed in him the Arragonefe line 'of Neapolitan kings. In the year 1507, a revolt of Genoa called Lewis, in perfon, into Italy with a powerful army ; he entered it as a conqueror, feemingly bent on vengeance, but his natural clemency was difplayed in a moderate chaftifement which he inflicted upon it. In the following year he joined the famous league of Cambray againit the Venetians, formed by the temporary union of powers
mutually jealous of each other, and oppofite in interefts. Lewis became a party in the league through the influence of cardinal d'Amboife. 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 almoft to ruin. Its fafety arofe from that difunion which might be expected in a league formed of fuch difcordant materials. Pope Julius II. who had chiefly contributed to its formation, refolved, after the purpofes of his own ambition were anfwered, 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 againft the French. A new league was now formed, of which Julius was the chief mover: he attacked in perfon 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 fupported by the duke of Nemours, who, in 1512 , gained the battle of Ravenna, but fell in a rafh purfuit 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 purchafed fo dearly. In a fhort time after this, the Swifs overran the Milanefe, and the French were expelled. It was again recovered, and again loft. At this period Henry VIII. of England joired the papal league, invaded Picardy, and routed the French in an action, fince denominated the battle of the Spurs. Henry purfued his career of fuccefs, which was interrupted by the retreat of the Swifs and the defertion of his allies; he determined, therefore, to repafs the feas with the greater part of his army, ill compenfated for the expence with which it had been attended. In 1514 the queen died, and he propofed marriage to Mary, fifter of Henry VIII. : his offers were accepted, and a league offenfive and defenfive was formed between the two kings. Lewis, however, was obliged to purchafe this alliance with a great fum of money, inltead of receiving a portion with his wife. It was agreed that Henry hould receive the payment of a million of crowns, being the arrears due by treaty to his father and himfelf; and that the princefs Mary fhould bring four hundred thoufand crowns as her portion, and enjoy as large a jointure as any queen of France. Lewis alfo agreed that Tournay fhould remain in the hands of the Eniglifh; and that Richard de la Pole, an exile in France, who affected to revive the pretenfions of the houfe of York, fhould be banifhed.

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 midft of feftivities 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 conftitution, already fhaken, was exhaufted by his affection for Mary, with whofe beauty, grace, and numerous accomplifhments 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 diftinguifhed by a fuperior integrity, feldom to be difcerned in princes; and though fometimes the dupe of his goodnefs 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 houfe of Orleans, and the ficeptre of France was transferred to that of Angoulefme.

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"Hillory," fays the biographer, " has taken pleafure in recording, that when, according to the ufual cuftom, the criers announced his death, it was done in thefe words," the good king Lewis, the father of his people, is dead." He was naturally inclined to economy: this was onee made a topic of ridicule in his prefence, to which he replied, "I had rather fee my courtiers laugh at my avarice, than my people weep at my extravagance." In his manners and converfation, Lewis was affable, mild, and cheerful, prone to fallics of innocent pleafantry, and fond of literature. He affembled men of learning at his court, and employed them in public affairs. Greek was firtt taught at the French univerfities in his reign.

Lewis XIII., fon of Henry IV., 'by Mary de Medicis, fuccecded 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 ftates-general were convoked. At the meetings of this aflembly many abules were difcuffed, and fome few were remedied. During the minority of the king, France had been, on account of the mal-adminitration of the queen, a feene of faction and civil commotions: thefe troubles continued, and were greatly aggravated by a religious war. Lewis's character, as it opened, difplayed that propenfity to be governed, which indicates weaknefs of mind, together with much coldnefs 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 eftates which he had purchafed through the bounty of the late king, and refigned his offices. Every day now revealed the afcendency of Concini, who endeavoured to remove from the eyes of the people the unpopular circumitance of foreign birth, by affuming the title of marquis d'Ancre. During the adminiltration of this favourite, the annals of France, as they refpect the internal affairs of the country, prefent a dreary profpect of uninterefting anarchy and barren difcord. The princes of the blood, infatiate of power, and the nobles turbulent and difcontented, repeatedly erected the ftandard of revolt againft the regal authority; as frequently, with contemptible levity, they courted the returning friendflip of the crown, whofe timid counfels were content to foothe, without prefuming to reprefs, their capricious arrogance. Amidlt thefe hoftilities 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 Condè, in order that he might imprefs his fubjects with favourable fentiments of his courage and activity. The approach of winter fufpended the operations of the contending parties, who, while they rejected all terms of accommodation, feemed ftudious, in every enterprize, to avoid the effufion of blood. With the return of fpring the royal forces were again affembled, and were again led on by the prefence of their fovereign; but much was the furprize of his fubjects to learn the intelligence that the king had fubfribed a peace, and fubmitted to the demands of thofe princes whom he had fo lately declared traitors to his throne. In 1617, Concini was murdered in the Louvre, at the inftigation of Luynes, whom he bad introduced to the king, and whe now fuperfeded him in the royal favour. The principal events which occurred in this reign during the adminiftration of Luynes, were quarrels with the queenmother, and a renewed war with the Calvinitts, who were headed by the duke de Rohan. During this war Luynes died, and the Calvinifts obtained an advantageous peace.

In 1624, cardinal Richelieu, who, while bifhop of Luçon, had been gradually rifing to political reputation, acquired the chicf management of affairs, which he held with unco:strouled fway fo long as he lived. This great minifter found a very difficult takk before him, owing to the weaknefs of the king, the felfifh ambition of the nobles, and the prevalence of dafferent factions. War broke out again with the Calvinifts, who complained that the conditions of a former treaty had not been obferved. The fovereign appeared in arms, but the chief honour was due to Richelieu, who, after a long fiege, took Rochelle, by means of a vaft dyke throwa acrofs the harbour to cut off fupplies by fea. This important conquelt was the means of reducing the party to civil obedience, and, to the honour of the victor, they were ttill allowed a good fhare of religious liberty. In addition to the civil contentions, a war with Spain broke out in 1635, which was at firt unfuccefsful on the part of France; but at length the Spaniards were reduced to fue for peace. Inz the mean time the fpirit of Richelieu's domeltic adminiliration was highly arbitrary, and the king difplayed great harfhnefs in his addreffes to the parliament. The laft of his favourites was Cinqmars, who was recommended to the monarch by his miniter, but who was led by his ambition to cabal againlt his friend and patron. His ruin was the confequence, and Lewis gave him up to execution with the moft perfect indifference. (See Cinquars.) On the morn. ing of the execution of this man, intelligence was brought of the furrender of Perpignan, and the total difcomfiture of the enemy, of which facts the minilter apprifed the king in a fingle and very fhort fentence, "Your troops are in Perpignan, and your enemies in their graves." Immediately after thefe events, Mary de Medicis clofed a wretched life, reduced to the utmoft 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 engrofled by the approaching difiolution of him, whofe daring counfels had driven her into banifhment. The glories and life of Richelieu drew near their end; after the reduction of Perpignan, exhautted in body, but ftill vigorous in mind, he had approached the capital by flow and triumphant journies; his laft moments attefted his afcendancy over the fovereign. On bis deathbed he protefted to Lewis, that his counfels had ever heen directed to the honour of the crown and the welfare of the kingdom. (See Ricueliev.) From the death of this minitter, Lewis afpired to hold the reins of government for himfelf: the war was profecuted with diligence, vigour, and fuccefs, and the fpirit of Richelieu feemed ftill to impel the machine which his genius had fet in motion. But victory could not check the progrefs of difeafe, and Lewis was fenfible that the inevitable moment was rapidly approaching when his life and reign muft terminate together. A flow fever had already worm him to a ikeleton, and he prepared to meet with firmnefs and compoiure the laft fcene of human greatnefs. "When," fays the hiltorian, "his phyfician, at his earnelt 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 ftrictly verified by the event, and he ex. pired in the forty-fecond year of his age, and in the thirty-third of his reign. In ellimating his character; he was devout, but his devotion hewed itfelf in minute obfervances and fubmiffion to his confeffors. He was not greatly addicted to pleafure, and the miltreffes on whom he beiloned his farvurs, were rather the objects of his jealouly
than of his love. He had a fhare of judgment and folid fenfe, and did not want decifion. In the adminitration of jultiee, he was inclined to rigour, and thence acquired the epithet of "The Juft;" though it muft be admitted that his adminittration of juftice was frequently impeached by his feverity, and fometimes by his cruclty.

Lewis XIV., fon of the preceding, was born in 1638 , and fucceeded to the crown, under the regency of his mother, Anne of Auftria, on the death of his father in 1643. She foon refigned herfelf to the influence of cardinal Mazarin, who had fucceeded Richelieu in the laft reign. In the early part of this reign, the kingdom was involved in a bloody and extenfive war with the houfe of Auftria. The peace of Munfter, in 1648, relieved France from the greater of her foreign foes; but it was foon fucceeded 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 moft ufeful 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 inftruction moral and literary, marked his character through life. The leffon moft ftrongly impreffed 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, nourifhed 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 fubjeets were nothing in the comparion; 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 ftate had not ceafed when Lewis XIV. had attained the age fixed for his affuming the reins of government, and his majority was folemnly dechared in parliament; but he was ftill in leading-ftrings, influenced wholly by the counfels of his mother, and he feemed to inherit her fond partiality for Mazarin, though he was fhortly 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 loudeft acclamations, and he found himfelf freed from the clamorous importunitics of a difcontented 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 lealt difturbance. The king received him as a father, and the people as a matter; but the cardinal, amidat the fatisfaction of this change, could not reprefs his contempt of the national levity. The minifter applied himfelf with vigour to extinguinh the fparks 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 marfhal Turenne. In 1659, the peace of the Pyrences advantageounly 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 poft of prime minitter became vacant: he had, however, able men about him ; among the $[$ e was Colbert, who had been recommended to him by

Mazarin, as a moft able financier. To his genius was owing the revival of commerce and the marine, and all the fplendid eftablifhments of arts and manufactures which adorned the carly part of this reign. It was he who, though not learned himfelf, was capable of appretiating the true value of literature, and fuggefted to the king, his mafter, that plan of penfioning all the eminent men of letters throughout Europe, which, at a comparatively fmall expence, fecured to him more adulation from perfons of real learning, than any prince of modern times. His leading object was perfonal grandeur. In whatever point any other prince had attained to greatnefs, he was refolved to emulate him. He employed all the refources of a rich and flourifing country to furpafs every competitor, in whatever could conduce to his glory. This fpirit led him to attempt many great and ufeful projects, but for want of limit and moderation, it defeated its own purpofes, and exhaufted 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, ftood at its higheft pitch; at the fame time, it was that which demonftrated its wretchednefs and humiliation, and the impartial hiftorian has held up the king rather as the fquanderer of his country's profperity, than as the author of it. Of the wars of this monarch we cannot pretend to give a detailed account; the moft that this article will allow will be a fketch 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 Spanifh ambaffadors at London, gave occafion to Lewis to affert in fuch high terms the fuperiority of his crown, that the point was never after contelted. 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 afk 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 $166 \%$; the king in perfon took the field, though the meafures of the campaign were probably directed entirely by the great Turenne. The whole of Flanders was reduced in this campaign, and at the clofe of it Franche Comptè was conquered. A triple alliance between England, Holland, and Sweden, checked the progrefs of the French arms; and produced the peace of Aix-la-Chapelle in 1668. In 1672 Lewis, with a vaft army, commanded by the ableft generals, burf upon the provinces of Holland ; and Amfterdam, 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 fpirits of his countrymen; and the principal potentates of Europe, alarmed at the fuccefs and ambition of France, leagued againft her. Holland was now evacuated as fait as it had been over-run. The French arms were again turned upon Franche Comptè; it was conquered a fecondtime, and became infeparably annesed 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 hittoriographers to record his exploits, and every art was employed to exalt him in his own eftimation, 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 eftimation of foreigners, and it has, by the events of the laft twenty years, finally become obfolete among his own
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countrymen. 'The peace of Ninegucn did not terminate the projects of Lewis XIV.; he attacked, and brought to fubmilfion, the piratical fates of Algiers, Tripoly, and T'unis; and next, upon very trifing grounds of offence, made war upon Genoa, and forced the doge to come in perfon and akk pardon of the king. With pope Innocent XI, he quarrelled refpecting the fuppofed ri, hhts of the Roman church, and becaufe he inlifted upon retzining the franchifes of embalfadors from Rome, which other powers had agreed to renounce, as inconfiftent with a fafe and regular police. On this occafion 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 rictory over it by Richelieu, had become a peaceful feparation from the national church, and its fectaries were ufeful citizens chiefly attached to manufactures and commerce. Lewis, animated by a fpirit of intolerance and birotry, undertook to put an end to it. The privileges of the Proteftants were openly violated: miffionaries were fent for their converfion, fupported by dragoons; and feverities were exercifed, which excited the horror and indignation of all the reformed Itates of Europe. In 168 ; the revocation of the ediet of Nantes, firlt granted by Henry IV. and confirmed by Lewis XIII. deprived the Proteltants of all exercife of their religion, and tore from them their children to be educated Catholics. The tyrant at the fame time iffued his decrees againft emigration, asd placed guards on his coaft ; neverthelefs valt numbers efcaped from his machinations, and carried their arts and induftry to foreign and hoftile nations. Lewis, though a pretended votary to religion, and a zealous fon of the church, was not free from that licentioufnefs which is regarded as highly culpable by perfons of real and unaffected piety. Several miltreffes, in fucceffion, enjoyed his favours; with one of whom, madame de Montefpan, a married woman, he lived a long time, in the moit open manner, and indulging her haughty and capricious humour. Her influence declined with her perfenal charms, and the king's advancing years; and the was fuperfeded by the widow Scarron, elevated from that low condition to the title of madame de Maintenon, a perfon who, by the powers of her underftanding, and confummate fkill in the art of pleafing, obtained a complete afcendency over the king's mind. On the death of the queen he privately married her, but fhe was never acknowledged as queen. The league of Auxbourg, formed in 1687, bet ween the emperor and moit 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 afcended the throne of England, contrived to add that kingdom to the confederacy. The forces of France had proved victorious in many quarters; marfhal Luxembourg, and other eminent generals, renewed the fucceffes of the former war, and the king in perfon took Namur. The defeat at La Hogue was, however, a fatal blow to the French marine ; the finances of the country began to be depreffed, a circumitance that led to much domeftic diftrefs, and Lewis XIV. was obliged, in the midtt of victory, to fign the general peace of Ryfwick in 1697. The declining health of Charles II. king of Spain, who was without hcirs, became a fubject of univerfal intereft with refpect to the difpofal of his vaft inheritance ; and Lewis, fearing left it fhould fall into the hands of the houfe of Auftria, joined England and Holland in a fcheme for the partition of the Spanifh 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 forefaw the danger of accepting the legacy, but was decided by a regard for the glory of his houfe, and the wifh of uniting the interefts of two great monarchies, which had generally been at variance. The hopes of the king have been completely difappointed, and every attempt to form an union of iuterelt and affection between two nations radically oppofite in character and circumilances, has teen bafled. Neither the intrigues nor the power of the prefent emperor of France have, at prefent, been able to effect that which was unqueftionably an objeet near the heart of Lewis XIV.
The jealoufy excited in England and Holland by this acceffion to the influence of France, was converted into open hoftilty by the imprudence of Lewis in declaring the fon of James II., king of England, at the deceafe of his father in 1701. This ftep, 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, becaufe 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 fucceffor 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 thofe places taken from him, which, in the former part of his reign, had been acquired at the expence of many thoufand lives. The domettic mifery of Lewis had kept pace with the public calamities ; the court, the fplendour and magnificent entertainments of which had excited the admiration and envy of Europe, had long been impreffed with a deep and fettled gloom. The art of furgery, in Europe, was jet feeble and crude; a fiftula, with which the king was attacked, fpread a general alarm; and though the operation was fuccefffully performed, yet he never recovered his accuftomed \{pirits, but led a more ferious and retired life, and chiefly devoted his hours to the converfation of madame de Maintenon, whofe influence increafed 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 duchefs his wife, and their eldeft fon, all fwept away within a few months, and laid in the fame tomb; the only furviving child at the point of death; thefe private woes, added to thofe of the public, mark the clofe of the reign of Lewis, as an era of calamity; and a wretched people, who conceived that their own happinefs was concerned in the glory of the king, awaited in filence to behold the former greatnefs of their monarch extinguifhed by the dark cloud of mifery which obfcured 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 embaffador for England remonftrated againft this evafion of the treaty of Utrecht, and Lewis was under the neceffity of difcontinuing the works. At the age of feventy-feven, that vanity and ambition which had agitated the years of manhood were nearly extinguifhed. He coolly liftened to the folicitations of the unfortunate James, who afpired to afcend the throne of his late filter, queen Anne, already filled by the elector of Hanover, under the title of George I. To the importunities of the prince he granted a fmall fupply of money, and a veffel fitted out in the name of an individual; but while

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that enterprize hung in fufpence, Lewis was feized with a mortal difeafe which foon brought him to the grave. In his lat hours he difplayed a greatnefs of mind worthy of his exalted fituation. "Why do you weep," faid he to one of his domeftics, "did you think me immortal ?" His fortitude was tempered with humility; he recollected his own weaknefles, and had fufficient magnanimity to confefs them; his advice to the infant that was to fuceced him was to avoid that glory which he had hoped to attain by war, and to confider the happinefs of the people as the principal object of his government. To madame de Maintenon he left no tixed Itipend, 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 3000 . per cinnum during her life; this was regularly paid till her death, which happened in about four years. Lewis XIV, had the misfortuna of outliving his popularity, and an indecent joy was manifefted by the people at his funeral. As a monarch he had none of the commanding qualities which create a natien or an era, and would fcarcely have been diftinguifled from common princes under common circumftances. The mafculine beauty of his perfon was enbellifhed with a noble air; the dignity of his behaviour was tempered with the higheft affability and politenefs; elegant without effeminacy ; addieted to pleafure without neglecting bufinefs; decent in his vices, and beloved though invetted with arbitrary power. Neverthelefs his qualities feemed thofe that rather attract a momentary regard, than command a permanent efteem. Thie talents, the fire of the ftatefman, 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 ftrongeft towns, yet in all his campaigns he never expofed his life to the hazard of à 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 fcience.

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 laft 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, difgulted with an appointment which gave him only a calting vote, appealed to the parliament of Paris, who fet afide the will of the late king, and declared the duke fule regent. His firlt acts were extremely popular, and gave the molt favourable ideas of his government and character. He reftbred to the parliament the right which had been taken from them, of remonftrating againt the ediets of the crown; and compelled thofe, who had enriched themfelves during the calamities of the former reign, to reftore their wealth. The young king was placed under the tutelage of Fleury, bifhop of Erejus, afterwards cardinal, who, by his infinuating and very gentle manners, acquired his affection and efteem. 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 minifter to the duke of Bourbon, who negociated a marriage between the king and Maria Leczinfki, daughter of Stanillaus, king of Poland, which took place in 1725. Shortly after this, Fleury became prime miniter; which polt, notwithflanding his great age, he held till his death in $17+3$. The fpirit of his government was econumical and pactic; 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 fome ladies of the court, and receired, it is faid, the favours of three fifters at the fame period: and from this time he indulged his propenfities for the female fex without moderation and delicacy. On the death of the eniperor Charles VI. in 1740, a new continental war was excitcd. France joined with Pruffia and Poland, in raifing to the empire the elector of Bavaria, in oppofition to the interelts of the houte of Aufria, whofe caufe was maintained by England, Holland, and Sardinia. In 1744 Lewis took the ficld in perfon, and was at the reduction of feveral ftrong places; but at Metz he was attacked with a dangerous illnefs, which occafioned a general contternation through France. His recovery was celcbrated with all thofe tranlports of joy which could proceed from the awakened fenfibility of a nation, then renarkable for an enthufiaftic attachment to its fovereigns. The furname of "Well-bcloved" was given to the king on this occafion ; 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 I What have I done to deferve it?" Soon after his recovery, he beheld at a diftance the bloody battle of Fontenoy, gained by marfhal Saxe. The French were generally fuccessful in Auftria and the Dutch Netherlands, but were defeated in Italy; and their marine was totally ruined by the Englifh. The treaty of Aix-la-Chapelle, in 1748, reftored peace to Europe: and, as far as the exhaufted finances of France would allow, ufeful plans of domeftic improvement were executed; and the moft fplendid eftablifhment of the reign, the royal military fchool, was inftituted in the year 175 I . About this time, fome warmly contefted difputes between the magiftracy and clergy occafioned the interference of the king, who, inftead of making a firm decifion between the contending parties, upon principles of juftice and true policy, acted the part of a defpot, by alternately banihing both. It was in confequence of the ferment produced by thefe quarrels, that a fanatic, named Damien, was induced, in 1757 , to attempt the life of the king at Verfailles, in the midit of his guand. He received a flight ftab between his ribs. Damien was evidently infane : he was inftantly feized by the foldiery, and put to the rack, in which he endured the molt exquifite tortures that the wit of the moft favage hearts could invent. In the midat of thefe he perfifited in an obftinate 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 reftore peace to his dominions. Thefe expreffions had no weight with his mercilefs tormentors, who configned him to the moft terrible death which they could devife. This circumftance had probably fome effect on the king himfelf; for he foon after banihed the archbifhop 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 figned, 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 in: variably regarded as the enemy of the other. At shat time, the acceffion of Spain to her caufe only added new laurels and acquifitions to Great Britain. Lewis's attachment to a feltinh and imperious miltrefs, madame de Pompadour, who

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was allowed to appoint and difmifs minifters and commanders at het 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 fucceffion. The conclufion of the feven years' war, in 1763 , gave the nation repofe, but not without a confiderable diminution of territory; and in the following year, the fociety of Jefuits, as celebrated for their great learning as famous for their unbounded intrigues, was abolifhed in France. The death of madame de Yompadour 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 diffolute arts, provoked his languifhing delires; and his latter years, as might have been anticipated by the conduct of the former part of his life, was difgraced by the grofeft fonfuality. At the fame time, the government became more fevere and arbitrary. Though the arms of Lewis had extinguifhed the flame of freedom in Corfica, in France it was revived by the breath of the parliaments, and cherifhed with a fond regard that threatened the moit important confequences. An edict iffued by the king, which transferred fome nerr and extraordinary powers to the grand council, was ftrenuoufly oppofed by the parliament of Paris. Sixty-four members of that affembly voted for utterly abolifhing that council; and the queltion was loft by a majority of two, though all the princes of the blood attended to fupport the court ; and the duke de Choifeul endeavoured to overawe the independent fpirit of the patriotic party, by continuing in the affembly throughout the debate. The minitter, finding his exertions in the fupport of defpotifm of no avail, attempted to conciliate thofe whom he had vainly endeavoured to intimidate. Hitherto the fovereign had refifted 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-eftablinh the parliament, and to recal the members from exile. But conceffion, which a fhort time before would have been afcribed to the benignity of the monarch, was now attributed to his fears; and the parliament had fearcely affembled before they convinced their countrymen, that oppreffion had confirmed, and not extinguifhed their zeal for the public welfare. The province of Brittany had long groaned under the iran rule of the duke d'Aiguillon; who for four years had perfecuted with unremitting vengeance M. de Chalotais, the attor-ney-general to the parliament. That unfortupate gentleman had oppofed, with the indignation of a virtuous magiltrate, the oppreffive meafures of the duke; he was therefore driven into exile, and purfued from dungeon to dungeon, till at length a fentence was procured againft him that would have invotved his life, and which his cruel perfecutor was hattening 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, poffeffed of new proofs, commenced a procefs againtt the duke d'Aiguillon, whofe trial was conducted in the prefence of the king, the princes of the blood, the peers, and the parliament of Paris. Before fo high a court thus fpecially affembled, the written proceedings carried on againit M. de Chalotais were produced, and difclofed fuch a complicated fystem of guilt and cruelty as exceeded every thing that could have been imagined. Amidtt thefe domeftic difquietudes, the dauphin, afterwards Lewis XVI., received the hand of Maria Antoniette, fifter to the emperor of Germany. The crowd that eagerly preffed forward
to be fpectators of the firesworks, difplayed on this occafion, was fo great, and the confufion that prevailed was fo completcly overwhelming, that feveral hundred perfons perifhed, by being literally trampled to death. This lofs, however, which was felt in one way or other by almoft 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 mof earneft folicitude, the decifion of this mof important caufe, Lewis thought proper, by a violent exertion of his power, to put a flop to the whole courfe of juftice, and to all farther inquiries into the conduct of the duke. All the parliaments of the kingdom made a common caufe : the ordinary courfe of juftice was furpended; and, in conclufion, the king, in 1771, overthrew the whole fytem of judicial adminiftration, and eftablifhed a new one. This was not effected but with force. The language of the parliament of Paris was worthy the indignant feelings of free men: "Your edict, fire," fay" they, "is deffructive of all law: your parliament is fworn to maintain the law; and the law perihing, they fhould perih with it : thefe, fire, are the laft words of your parliament." Lewis, unaccuftomed to fuch language, prepared to fupport his authority by the moft violent meafures. In the dead of the night, the members were roufed from their flumbers by parties of the guards fent into each houfe, who prefented to every individual a lettre de cachet, which enjoined them to declare whether they would refume the adminiftration of juftice. In the moment of confufion, feveral of them were furprifed into acquiefcence; yet they foon retracted, and, in the end, the whole body of parliament was banifhed the capital. Here then was the foundation of that revolution, which mult be touched upon in the next reign, and which has introduced fuch fcenes into the political world which the wildeft imagination could not have conceived. The exhaulted ftate of the finances fuggefted new and burdenfome impolts on the great body of the people, which augmented the public difcontents. In the midt of thefe, Lewis found no folace even in the company of his mittrefs madame de Barrè: her beauty proved infufficient to excite defire; and he became difcontented with himfelf, and with all about him. A fucceffion of miftreffes became neceffary to roufe the languid appetites of the king. One of thefe, who was infected with the fmall-pox, communicated the difeafe to the king, who in a fhort time died of it, unpitied and unlamented, May 1774, in the fixtieth year of his reign. He had loft his only fon in $1 ; 65$, and his crown devolved upor his grandfon.
Such was the fate of Lewis XV., who at lengtts fell a victim to thofe fenfual appetites, in the gratification of which he had facrificed his own fame, and the welfare of his fubjects. The enviable appellation of ruell-bcloved, which he was confcious, as we have feen, he had not merited, bat 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 excefs, profufion, and rapacity: his example had loofened the bands of morality; his prodigality had exhaufted the credit and refources of his country; and his wanton pride had trampled upon every form that had been held facred in the conttitution. His affections feemed to have been confined within the narrow limits of his perfonal pleafures and fecurity. It was by the perpetual fuggeftions of the countefs de Barre, that his fafety was at itake, which ftimulated him to decifive meafures in fupprefing the parliaments of France. Though concealed from the public eye, the embers of freedom were ftill carefully cherifhed, and, as will be feen in due time, burf forth with accumulated force, and overwhelared

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wheimed the throne of defpotifm. During this reign the arts and fciences made a rapid progrefs in France, which was aided by the munificence of the court, as long as other demands did not anticipate the funds for this purpofe. The voyages of the French mathematicians to the equatorial and polar regions, iu order to meafure a degree of the meridian, were equally honourable to the government and the perfons employed. The king was decply read in hiftory and geography. As a gentleman he was polite, affable, and naturally mild and humane ; but fondnefs for fenfual indulgence degraded him as a king and a man.

Lemis XVI. grandfon of the preceding, and fon of the dauphin, Lewis, and of Maria Jofepha of Saxony, was born in Augult, $175+$. His father carefully fuperintended the education of his three fons, and placed them under the direction of preceptors, who were particularly attentive to their morals, and who inftilled into their minds found prineiples. With refpect to the fubject of the prefent article their cares perfectly fucceeded t he, whofe title at that time was the duke of Berry, was naturaily modelt, timid, and docile, and repaid, by his virtues, the attention beftowed upon him. In his earlieft years, though he did not manifelt any brilliancy of parts, he fhewed a difpofition capable of attaining ufeful knowledge, and manifefted a memory retentive of the minutelt facts. He had a found judgment, great patience and application. He afcended the throne in $\mathbf{1 7 7 4}$, being then in the 20th year of his age, and, to fecure himfelf againtt the dire effects of that difeafe, which had proved fatal to his predeceffor, fubmitted to inoculation, with fereral 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 himfelf diligently to extinguifh the differences which had taken place betwixt his predeceffor and the people. He removed thofe from their employments, who had given caufe of complaint by their oppreftions; and he conciliated the affections of his fubjects, by difmiffing the now parliaments and recalling the old ones. Though the prudence of Lewis had fuggetted thefe compliances, he was anxious to preferve the royal authority pure and entire: he avowed in one of his earlieft fpeeches, in the great chamber of parliament, that the fteps he had taken were defigned to enfure the tranquillity and happinefs of his fubjects; and he hoped, from the zeal and attachment of the prefent affembly, for an example of fubmiffion to the reft of his fubjects; he farther faid, he was defirous of burying in oblivion all paft grievances, and that he fhould ever behold with extreme difapprobation, whatever might tend to create divifions and dilturb 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 fpeedy crifis in the political fyftem. The defpotifm of the lalt two reigns had exafperated men's minds, and rendered them alive to the evils of arbitrary power, while the weaknefs and debauchery of Lewis XV. had accuftomed the nation to regard the crown with contempt. " The profligacy of the nobles, the rapacity of the courtiers, the difputes and vices of the clergy, had fapped 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 eflablihmments, and endeavoured to fubvert .public opinion." The finances were in a flate of derangement, and though the king himfelf was extremely moderate in his expences, his economical plans were thwarted by the queen and the princes of the blood.

The final conquett of the Corficans, who, provoked by the oppreffions of their governors, had once more attempted to regain their former liberty, was the firft event of import. ance which took place after the refloration of public tranquillity; but the kingdom was a prey to diforder from other caufes. A fcarcity of corn happening to take place juft at the time that fome 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 abfolutely neceflary to quell them. The humanity of Lewis was fhewn in an edict, which he caufed to be regiftered in parliament, fentencing the deferters from the army, in future, to work as flaves on the public roads, inftead of punifhing them, as formerly, with death; and with equal attention to the general welfare of his fubjects, he feized the moment of peace to fulfil thofe promifes of economy, which on his acceffion he had given to the people. Particular attention was paid to the Itate 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, notwithftanding 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 ftation in the country, to crofs the Atlantic, and ferve in the republican armies. The confequence of thefe meafures was a declaration of war on the part of England. After a variety of fortune, France and her allies fucceeded in detaching America from the Britifh crown; yet the expence of fuch widely extended operations left the French finances in a ttate of aggravated diforder, while the event could not fail to operate in behalf of antimonarchical principles. In the mean time fucceffive miniftries had adopted various and contradictory fyftems with regard to external and internal policy; and feveral projects of reform had been propofed and difcuffed, with no other advantage than that of accultoming the nation to debate with freedom all public topics, and open its eyes to exifting abufes. Without pretending to enumerate the events of the prefent 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 defcription of an era more important to France and the world than can be found in hiftory; we fhall only refer to fome of the more prominent events, which led to the fatal, unjuft, and cruel termination of the reign and life of Lewis XVI.

Of the miniftries employad by Lewis, feveral were diftinguifhed for enlarged and philofophical views, though, as it afterwards proved, they were very little accommodated to circumftances and the ancient conftitution of the country. Among the more remarkable occurrences of the period of which we are fpeaking, was the appointment of M. Neckar to the adminitration of the fianarices of the country. Hitherto France had carefully excluded aliens from the country and eftablifhed faith from the controul of her revenue; nor was it lefs hoftile to the feelings of the court, that a perion without rank fhould be elevated to fo high an office in the ftate: neverthelefs M. Neckar was a Swils by birth; a Proteftant in religion; and a banker by profeffion. In the year 1780 , the king fixed on the anniverfary of his birth to render the day memorable in the annals of his country by a new inflance of humanity, and abolifhed for ever the favage cultom of "putting the queflion," as it was denomi. nated, that is, of extorting confeflion from perfons accufed, by the inttrumentality of the rack and other engines of tor-ture;-a cuftom which had been fo long eftablifhed by the practice of ages, that it feemed to be an infeparable pakt of the conflitution of the courts of juitice in France. At
the fame time, he rendered himfelf worthy of public efteem, by diminihing his own expenditure, and by facrificing the magnificence of his court to the eafe of his fubj: Ets. Unfortunately, however, the popular difcuntents were excited in the following year, by the difmiffion of the then popular miniter M. Neckar. He had conceived the arduous project of fupporting the war by loans without taxes; and the rigid economy which he had introduced into all the departments of the houlhold, and the various refources that prefented themfelves to his fertile genius, had fupported him amidft the difficulties that attended his fyitem. The aufterity of his manners, increafed 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 reprefenting 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 repusation. The effect of his difniffal was a vaft abatement of public confidence in the permanency of the flate; three different perfons fucceeded one another in rapid fucceffion, as finance minifters; thefe, however, whatever might be their intentions, ferved only to increafe the jealoufy of the people, and the failure of the celebrated "Caiffe d'Efcompte" completed the univerfal confternation. The ftoppage of this national bank was imputed to a fcarcity of fpecie, but the real caufe was probably owing to an inmenfe loan advanced fecretly to the government. Some fuccefsful expedients revived the credit of the bank, and its fock role to above double the original fubfrription; by thefe means public credit was reftored throughout the kingdom. In 1783 M. de Calonne, who had already fucceffively filled with acknowledged reputation the office of intendant of Mentz, and afterwards of the provinces of Flanders and Artois, was nominated to the poft of comptroller-general. This gentleman, whofe 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 fome attendance at the bar, he obtained, as we have feen, various important trufts, till he became prime minitter. When he fucceeded 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 ipecious operations he reftored an apparent profperity to the affairs of the ftate, and maintained the public credit by a punctuality, till then almoft unknown, in the payments from the royal treafury. He laboured with unwearied affiduity to reftore the equipoife between the annual income and expenditure, and to provide a fupply for the emergencies of the ftate, without vaftly increafing the burdens of the people, which, even before his adminiftration, they were fcarcely able to fuftain. For this purpofe, he advifed the king, to revive the ancient ufage of convening national affemblies of the Notables, to whom he propofed the bold project of fuppreffing the pecuniary privileges and exemptions of the nobility, clergy, and magiftracy. This meafure was too daring even for him to carry; it excited indeed fo much ill-will and determined hatred from thefe powerful bodies, that M. de Calonne found it neceffary to retire to England, where he wrote two defences in juftification of himielf and his meafures. 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 ftate of its finances.

The ftates-general of the kingdom, as a body formidable to monarchical authority, had never been convoked fince the year 1614 , aud it was therefore determined firft to have re-

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courfe to an inferior kind of affembly, denominated the Notables, becaufe thefe were to be felected by the king from the different orders of the flate, 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 29 th of December 1786 ; and they were addreffed to feven princes of the blood, nine dukes and peers of France, eight field marhails, twenty-two nobles, eight counfellors of thate, four mafters of requefts, eleven archbifhops, thirty-feven perfons high in the profeffion of the law, twelve deputies of the pays d'êtats, and twenty-five magiftrates of the different towns in the kingdom. The firt meeting of this affembly, in the month of February 1787, difclofed an enormous deficit which had hitherto been concealed. Great taxes were propofed to make good the deficiency, which the parliament of Paris refufed to regitter, and thus refufing, that body was immediately banifhed the capital. The duke of Orleans, a man who difguifed the wortt principles, and the moft criminal ambition under the mafk of patriotifm, and who probably, from this moment, was perpetually engaged in intrigues to ruin the king and fubvert the conflitution, having entered a proteft in favour of the parliament, partook of its punifhment. Various meafures, fome harfh, fome conciliatory, fucceeded, all difplaying the embarraffment of the government, and the progrefs of the public difcontents. M. de Calonne was now difmiffed; 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 ftates-general, a circumftance that was looked on with anxious dread by the partifans of the court, and which was anticipated with pleafure and delight by thofe who were hoping for fome radical change in the affairs of the ftate. On the difmiffion of the notables, they were addreffed in a moderate and very conciliatory fpeech from the throne. During the delay, the popular caufe had ftill been gaining ground in the public mind, by meetings held in the capital and provinces, at which the utmoft freedom, and no fmall 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 ftrength.

The time appointed for the convention of the ftates-general was now approaching, and the means of affembling them formed a matter of difficult deliberation in the cabinet. The laft meeting, in 16I4, had been convened by application to the bailiwicks. This mode was liable to ftrong objections ; the bailiwicks had been increafed in number and jurifdiction, feveral provinces having, fince that period, been united to France; and the numbers and quality of the members were no lefs an object of ferious attention: it was not, therefore, till the clofe of the ycar, that the propofal of M. Neckar was adopted, which fixed the number of deputies at 1000 and upwards, and decreed that the reprefentatives of the third eftate or commons fhould equal in number thofe of the nobility and clergy united. It remained now, as a matter of valt importance, for the popular party to carry the meafure of the votes being taken, not by orders in three diftinct houfes, but by numbers in one houfe. As this would infallibly throw the whole power into the hands of the third eflate, it was long and vigoroully oppofed by the royalift and aritocratical parties. At length the commons, thinking themfelves fufficiently fupported by the voice of the people, declared themfelves "The National Affembly," and affumed the whole legiflative authority. (For an account of the great operating and immediate

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caufes of the French revolution, we fhall refer to the articic Revolution, and in the prefent article confine ourfelves to thofe events which were clofely 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 fteady to his purpofe, fluctuat 1 between oppofite councils. His chief defire was, evidently, to preferve tranquillity, and prevent the effufion of blood, and he was prepared on his own part to fubmit to any facrifices for this purpofe that might be required of him. The flates had been fummoned to meet at Verfailles on the $2 \eta$ th of April, and moft 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 feffions till the $4^{\text {th }}$ of May. During this period, the members affembled, having little to do, foent their time in forming an intimacy with each other. Some of them united themfelves into a club, into which none were admitted but thofe who were deemed zcalous advocates for the popular caufe. This fociety, originally formed at Verfailles, was, hereafter, found fufficiently powerful to give laws to France, under the appellation of the Jacobiri club, and to excite an almoft univerfal terror and alarn through Europe. The flates-general commenced their bufinefs by roing in folemn proceflion, preceded by the clergy, and followed by the king himfelf, according to ancient cuitum, to church, to perform an act of devotion. The nobles and fuperior clergy were fplendidly arrayed: the commons appeared in black. The affembly was now opened by a flort fpeecli from the throne, in which the king congratulated himfelf on thus meeting the people affembled; and having alluded to the difficult circumftances in which thoy were placed, he concluded with the followiag prayer, "May an liappy union reign in this affembly, and may this epocha become ever memorable for the glory and profperity of the country. It is the wifh of my heart ; it is the mott earneit 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 fpent in difcuffing mere matters of form; in the meas time the people from without were vexed that no important ftep was taken to remedy the evils under which they laboured. They imputed this delay to the nobles and clergy, who became exceedingly unpopular. The leaders of the commons, called at that period the tiers etat, tonk advantage of the change which was taking place in the minds of their countrymen, and formed the project of feizing the legiflative authority of France : they almoftinftantly declared that the reprefentatives of the nobles and clergy were only the deputies of particular incorporations, whom they would permit to fit and vote among themfelves, but who had no titie in a collective capacity to act as legifators of France. Some of the clergy had joined them; and they then proceeded to announce themfelves, by a folemn decree, the fovereign legilators of their country, under the name of the "National Affembly." M. Bailly, the celebrated aftronomer, was the firft prefident : its earlieft acts were decifively expreflive of its own fovereignty. 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 unlefs they could make a decifive ftand all would be lolt : they accordingly addreffed the king, intreating. him to diffolve the ftates-general ; and on the next day, the 20th, when the prefident and members were about to enter as ufual into their hall, they found it furrounded by a detachment of the guards, who refufed them admiffion, while the heralds at the fame time proclaimed "A royal
feffion." Alarmed and irritated by this unexpetted crent, they inftantly retired to a neighbouring tennis-court, where, in the vehemence of enthufiaim, they took a folemn oath, " never to feparate till the conftitution of their country fhould be completed." The royal feffion was held in the moft fplendid form, but altogether in the fyle of the ancient defpotifm: the fuperior orders were feated while the commons were kept an hour in the open air, while it rained, before they were admitted. The king now affumed a high tone, delivered his fpeech, 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 thofe 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 majefly carried into effect, the count de Mirabeau, flarting 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 mafter, that we are here by the power of the people, and that nothing fhall expel us but the point of the bayonet." The king gave way, and at firft, anxious to fpare 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 meafures was the entire fubverfion of all monarchical power; he therefore gave orders for the affembling of troops round the capital, and ventured upon the ftep of difmiffing Neckar, and commanding him inftantly to quit the kingdom. Paris burf into a flame upon this unexpected event ; commotions took place; the foldiers were commanded to fupprefs the feditious affemblies; but they without hefitation grounded their arms inftead of firing on the people; a valt body of national militia was organized, who fupplied themfelves with arms from the arfenal of the invalids, and on the memorable 14 th of July, 1789, hodilities againf the royal authority openly commenced by the forming of the Baftille. Reliftance to the popular torrent was now in vain; the king recalled Neckar, who returned amidft the acclamations of the whole nation, and refumed the reins of government. Schemes for a new conititution and new meafures of finance were difcuffed with calmnefs and compofure, till a fcarcity of provifions, joining with other caufer of public agitation, infpired the populace with uncontroulable fury. In the beginning of October a dreadful infurrection took place, in which an immenfe 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 fome of the moft zealous friends to royalty, who carried into foreign countries a defire of exciting thofe hoftile interferences cil the part of the neighbouring powers in the affairs of France, which in the end proved deftructive to the king and his family. On the 19th of October the national aff-mbly, which had followed the king to Paris, opened its firlt feffion; and a conflitution was Ipeedily formed on the bafis of a limited monarchy; a decree was paffed, which put an end to all diftinetion of orders and immunities, fo far as privileges were concerned, and the whole of the lands belonging to the church were confifcated for the purpofe of fupplying the exigencies of the ftate, This: meafure was propofed by M . Talleyrand, the bifhop of 'Autun, who afterwards took a ead in the revolution. A provifion was, at the fame time, made for the national clergy, who were in future to be paid by the fate On the day following that, on which this important meafure was adopted, a decree was paffed, fufpending the parliament of the kingdom.

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dom from the exercife of their functions. During the winter the king had been ftrictly watched by numerous guards placed round his palace, fo that he was regarded as in a flate of captivity. To obliterate this impreflion, if poffible, he appeared in the affembly, and in the prefence of the deputies of the nation made a folemn declaration of his refolution to adhere to and defend the new conflitution to the laft moment of his life. On the $14^{\text {th }}$ of July it was determined to commemorate the deftruction of the Baftille, that fortefs of defpotifm : never was a more fplendid fpectacle. The national affembly and the coure joined in the proceffion that was made on the occafion, and when every thing was properly arranged to create effect, the king, after a ferious invocation to God, approached the altar, and amidft the moft folemn and awe-infiring filence, took the following oath: "I the king of the French do fivear to the nation, that I will employ the whole power delegated to me by the conflitutional law of the flate, to maintain the conflitution, and enforce the execution of the law." The national affembly then took oaths of fidelity to the nation : as did La Fayette 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 defrription. " Never," fays the hiltorian, "was there before fuch an orcheftra, or fuch an audience ; their numbers baffled the eye to reckon, and their fhouts in full chorus rent the ikies. It is impoffible 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 difturb the public tranquillity."

Several new efforts were now making by the difaffected among the nobles and clergy to excite diturbances in various parts of the kingdom. Emigration became more frequent, and comprehended the king's aunts, and moft of the princes of the blood, while troops were collected and openly formed into an army on the frontiers. The public fufpicions were naturally kept awake by thefe circumftances, and papular ferments occafionally broke out in the capital and provinces. In April, 1791, the king and his family preparing to go to St . Cloud, to fpend the Eatter holidays, were forcibly ftopped by the populace, who were fufpicious that he meant to quit the capital. La Fayette drew out the national guard, but they, with one confent, refufed to act againtt the citizens: "We know," fay they, "that we are violating the laws, but the fafety of our country is the firl law." The king went to the affembly and complained of the infult : he was anfwered refpectfully by the prefident, and continued his journey. He now endeavaured to convince foreign courts that he was no longer in a ftate of thraldom, declaring his cordial affent to the new order of things.

About this period, M. de Bouille, 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 2 Ift of June, it was announced from the Thuilleries, that the king, the queen, their children, together with the king's eldef brother and his wife, had quitted the palace and the capital. The national affembly took upon themfelves the government, and decreed their fittings to be permanent: they fent at the fame time meffengers in all directions to attempt to lay hold of the fugitives. At Varennes they were ftopped, arrefted, and brought
back to Paris in triumph. The alleged reafon for this do parture was the danger and infult to which the king, and more efpecially the queen, were expofed, from the licentious violence of the Parifian mob ; but there is no doubt that it was connected with the plans of the emperor Lcopold 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 efcape. The national affembly pruceeded wish their labours, which they brought to a conclution on the following September. The conttitution, as fixed on at that time, was prefented to the king, who folcmonly accepted it, and fwore to maintain it inviolate. On the 30th of September, the national affembly, which has been knuwn fince by the name of the "Conftituent Affembly," diffolved itfelf, and gave place to the fucceeding "Legiflative National Affembly," which had been elected according to the rules prefcribed by the new conflitution. It was foon evident that France would have a foreign war to fuftain with the powers coalefced for the reftoration of the ancient monarchy, and for the further purpofe of making conquelts upon the French territories. In proportion to the national danger, the fufpicions of the people increafed, and their loft confidence in the king could never be recalled. New jealoufies were excited by the interpofition of the royal negative, allowed by the new conftitution, againft two decrees of the affembly, one levelled at the emigrants, the other at the non-juring priefts. War was declared by the allembly againft the emperor in April, and armies marched to the frontiers. A decree paffed the affembly for forming a cainp of 20,000 men near Paris, which Levis, conceiving it a pian defigned to overawe the more moderate party, and Itrengthen that of the Jacobins, refufed to fanction, as he did likewife a fevere decree againt the refractory clergy. He alfo difmiffed fome of the popular minitters who had been forced upon him. The difcontents which thefe meafures excited burft out into a furious infurrection on the 20th of June, in which an armed mob made their way into the Thuileries, and treated the royal family and their attendants with the groffeft perfonal infults. The king difplayed on this, as on all other occafions, great fortitude; and in reply to threats againft his life, repeated in the loweft and coarfelt language, he exclaimed, "Alas! would that my life could fecure the happinefs 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 Pruflian army, preceded by a moft menacing manifefto, in which the king's acceffion to the new conflitution was reprefented as a mere involuntary compliance, itimulated the people almoft to madnefs. The republican party determined to take advantage of this circumitance, with a view of depofing the king, and inflituting 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 depolition of the king. This was on the gth of Auguit; and at fix on the following morning the king was feen revierring his troops. He was received at firlt with thouts of Vive $l_{e}$ roi, which were flortly overwhelmed with thofe 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 divifions near the palace, and, had a feady refiftance been made from within, it has been thought they would have joined the royal party. The king was advifed to feek protection in the fall of the national affernbly: he was willing to comply; $4 \mathrm{M}=$

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but the queen oppofed, with vehemence, the humiliating propofal, till actual danger furrounded her perfon and children; fhe then confented, and the king, queen, the princefs Elizabeth, the king's fifter, with the dauphin and princefs royal, weut on foot to the hall of the affenbly. "I am come lither," faid his majelty, as he entered the doors, "to prevent a great crime. Among you, gentlemen, I believe myfelf in fafety." By an article of the conftitution, the affembly could not deliberate in prefence of the king. The royal family were, therefore, placed in a box feparated from the hall, where they remained 14 hours, without refrefhment, obliged to hear difcuffions in which the royal character and office were treated with every mark of infult. At length the fatal decree was paffed that the royal authority fhould be fufpended, 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 iufurgents attacked the palace of the Thuilleries, which was defended by Swifs guards: a bloody engagement enfued, which terminated in the maflacre of the greateft part of the Swifs, and feveral other regiments. As foon as the royal authority was fufpended, the king and his family were fent to the Temple as a ftate prifon. Maffacre fucceeded now upon maffacre, till at length, on the fecond and third days of September, the molt cruel and favage fcenes were exhibited that were ever witneffed in a civilized country. More than a thoufand ftate-prifoners were bafely and infamoufly murdered by the ruffians of the capital, a anong whom was the beautiful princefs of Lamballe, whofe bleeding head was carried on a pike through the ftreets of the city, and under the windows of the room in which the queen was confined, whofe intimate favourite fhe bad been. Thefe acts, to which the royal family could not be ftrangers, they might well regard but as preludes to their own death : there was no party left in the country to efpoufe their caufe; and no individual durft lift up his voice in their defence. The new convention was affembled on the 20th, and their firt decree was the eternal abolition of royalty, which was carried by acelamation : this object being attained the houfe adjoarned, and copies of the decree was fent into every village and commune of France. The moft violent meafures were adopted; nor could the moderate party in the convention reftrain the madnefs of the Jacobins, who were bent on levelling all diftinctions; to bring into contempt every thing in letters and in fcience that was in the leaft raifed above the comprchenfion of the loweft of the people. The intention was foon avowed of bringing the king to trial. It was in vain that thofe, who were anxious to fave his life, appealed to the inviolability of his perfon, declared by the conftitution he had accepted : principles, however facred, were made to yield, and a committee was appointed to give in a report upon his conduct. The refult of this was, that various accufations were brought againt him, and the convention refolved to take upon themfelves the part of accufers and judges. On the inth of December, the fallen monarch was brought to the bar to anfwer to the heads of accufation drawn up againlt him for the crime of tyranny and treafon towards the nation. He defended himfelf with judgment and prefence of mind, and received the advice and affiftance of three eminent advocates, who generoully and nobly undertook his caufe, though with great hazard to themfelves. 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 finifhed, the king rofe, and holding a paper in his hand, pronounced, in a calm and dignified manner, and with an impreflive tone of voice, "Citizens, you bave heard my defence; I now fpeak to you, perhaps
for the laft time, and folemnly declare that my counfel have afferted nothing to you but the truth; my confcience reproaches me with nothing." The difcuffion was finally clofed on the 16 th of January; and after a fitting of 34 hours, the punifhment of death was awarded by a very fmall majority of the convention. M. Defeze then invoked the affembly, in the name of his colleagues, to confider by what a trifing majority the punifhment was pronounced againft the dethroned monarch; "Do not affict 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 juftice and facred humanity, to induce the convention to refer their fentence to the tribunal of the people. "You have either forgoten or deftroyed," faid M. Tronchet, another of the king's advocates, "the lenity which the law allows to criminals, of requiring. at leaft two-thirds of the voices to conftitute a definite judgment." The fentence was ordered to be carried into execution without delay. The king and his family had been kept feparate 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 extrene. On the morning of the 2 if of January, at eight in the morning, he was fummoned to his fate. He afcended the fcaffold with a firm and dignified ftep; and his behaviour there partook of the calm fortitude which had diftinguifhed him through all his fcenes of fuffering. Raifing 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 fome few exclaimed "Vive la Republique ;" but the great mafs of fpectators was too deeply abforbed in thought to join in the fhout 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 fhould be confumed. 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
 ing yeat. The queen was brought to the fcaffold in 1793, and his fifter in 1794. Such were the misfortunes to which this royal houfe was fubject. Lewis XVI. poffeffed from nature a good underftanding, which, however, was blunted by the early indulgences of a court. He had a ftrong fenfe of juftice, and his humanity was much fuperior to what could have been expected from a perfon in his high fation in life. By pofterity he will be regarded as one of the beft and moit virtuous of the French kings. He had acquired a large portion of general knowledge, and on fome literary fubjects he entered rather deeply. He wrote well, and excelled in clearnefs of expreffion and methodical arrangement. In vigour of mind he was unquellionably deficient; but in reviewing the hiltory of the period, we cannot conceive how he could have acted fo as to have fuccefsfully oppofed 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 themfelves from fuch 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.Univerfal Hiftory ; to the Hifory of France, London, 1790 ;

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and to the Hiltory of the French Revolution, by Rabaut St. Etienne.

Lewis, John, a learned Englifh divine, was born at Briftol in 1675 . He was educated in grammar learning at the free-fchool of Winbourn, in Dorfet flire, 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 prefented by archbihop Tenuifon with the rectory of Saltwood in Kent, with the chapelry of Hythe annexed. He was afterwards collated to the vicarage of Minfter, in the ifle of Thanet, and in 1719 archbifhop Wake conftituted hine mafter of Eaftbridge hofpital, 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 induftry and learning; among thefe were "The Life of Wickliffe :" "Wickliffe's Tranflation of the New 'Teftament :" "The Hiltory and Antiquities of the Inc of Thanet :" "The Hiftory of the Abbey and Church of Feverfham :" "The Life of William Caxton:" "The Hifory of the Tranflations of the Holy Bible and New Teftament into Englifh."

Lewis, in Geography, is the molt northern, and the largeft of the Hebrides, or Weftern Illands, of Scotland. It is connected with the ifland of Hartis by a narrow ifthmus, 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 tranfverfe direction. Towards the centre the land is mountainous and boggy; but near the fhore it is rather flat, and is interfected by numerous inlets or bays of the fea. The ifland is almolt deftitute of wood; a few birches, hazles, and a little heath, being the only fpecies of fhrubs feen here: but it is faid that Lewis was formerly covered with plantations; the decay and deftruction of which contributed to form the peat-earth, with which the illand abounds. Springs, lakes, and rivulets, fcattered through the inland, furninh in all parts abundance of frefh water. With refpect to the climate, the fpring is uncommonly cold and backward, the fummer warm, the autumn accompanied by profufe rains, the winter without long or fevere frofts, or very weighty falls of fnow, but with conftant winds, and thefe formy and fharply cold. Among the wild animals, the ifle fill produces deer or roes. Great numbers of wild fowls of many different fpecies frequent the thores, the lakes, and the cliffs of the mountains; among others, is the eider goofe, the down of which is held in high eftimation. Immenfe fhoals of fifh, of an innumerable diverfity of kinds, haunt the coafts.

The ifland is interfected by arms of the fea, called lochs, which run to a confiderable diftance inland, both from the eaftern and weftern fides. One of the chief is loch-Roag, on the welt, which is two leagues in breadth at the entry, and runs up, in a fouth-eaftern direction, about twelve miles into the ifland. This loch contains feveral iflands, fome of which are inhabited; one, called Large Bernera, is eight miles in length.' The whole of this curious lock abounds with fafe places of anchorage, fufficient to hold the whole Britifh navy, or even that of all Europe. About 540 tons of kelp, of a fuperior quality, are annually made from loch Roag. On the eaftern coaft, loch Seaforth runs into the country to a great diftance; loch Keofe and loch Leurbult advance alfo far inland from the eaft; but loch Stornaway is moft important, on account of the town which

Aands near it, and which is the capital of the inland. On the coaft, in this parifh, is a large cave, into which the fea enters at high tide ; this cavern is only acceffible from the fea. When it was firlt noticed, a great number of feals were killed annually in it; and the practice is ftill 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 iarge pillar into two arches. Its whole length is about an Englifh furlong.

The ifland of Lewis is divided into four parifhes; named Barvas, Lochs, Stornaway, and Uig. It has various fmall inets attached to it. In the parifh of Barvas is the inand of Rona, which is a mile in length, and half a mile in breadth; it is fituated in the Northern ocean, and is fup. pofed to be the fartheft to the north-welt of any land in Eu. rope. The parifh of Lochs derives its name from the great number of lakes which are interfperfed over its furface. It is about nineteen miles in length and nine in breadth : along the coaft it has a bold and rocky appearance; in the interior it is barren and inhofpitable. About 50 tons of kelp are manufactured here annually; and the greater number of the inhabitants are employed in the finheries on the coaft. The parifh 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-filheries in the bays, in which about 35 or 40 fmall veffels are annually fitted out. It is a port of the cuftom houfe, and has a poft-office, and a regular weekly packet. The houfes of the town are, in general, well built : here are a convenient cuftom-houfe, a town-houfe, a commodious church, an affembly-room, and two fchool-houfes. On an elevated fituation, near the town, ftands Seaforth lodge, the feat of lord Seaforth, who is the proprietor of the inland. The parifh of Uigis fifteen miles in length, and thirteen in breadth: the interior is hilly, covered with heath, and interfperfed with fmall lakes; the coafts are mottly level and cultivated. The fifheries and the manufacture of kelp are here alfo the chief fources of fubfiftence to the inhabitants. Near the hamlet of Calarnifh, at a fhort diftance from loch Roag, is a Druidical temple, formed by a circle of twelve flones or obelifks, each about feven feet high, and fix feet diltant 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, flanding in a line; another fach to the weft, and one to the eaft; each fone being nearly equal in fize, and arranged at equal diftances. Towards the north are two Atraight ranges of obelifks, forming an avenue to an opening between two of the ftones which form the circle. Each of thefe ranges confifts of fix ftones, regularly placed, one oppofite to another. All the fones are in a rough natural itate, as taken from the fhore. At Melifta are the remains of a nunnery, ftill called in the Gaelic Teagh nan cailichan don, "the houfe of the old black women." At Cailaway is a Danih fort, quite circular, with a double wall of ftone, thirty feet in height. This is broad at the bafe, and narrower at the top, like the fruftum of a cone. In the year 1794, there was living in this parih a lufius nature, of which Mr. Monro, the minifter, gives the following account in his ftatiftical report to fir John Sinclair.-"Very near the manfe there lives a woman, who has four diftinet breats or mamma. She has had feveral ftout, healthy children, and fuckled them, and likewife one of the minifter's children. She has nipples and milk in each of the four breatts; the

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two upper are fituated under the arm-pits, and by being diftended with milk, are very troublefome to her for the firft two or three months after delivery."

The population of Lewis, in the year 1796, was 8311 ; which was an increafe of 1925 from an enumeration which was made in the year 1755. The inhabitants of the whole ifland are fcattered, for the moft part, in fingle families, or clulters of two or three families, around the coalt, or through the interior parts. Some large tracts are without inhabitants; while upon others the population is more clofely affembled. There is fearcely any regular road: the moor, which reaches acrofs the iffand from Stornaway to Uig, is fo extenfive and foft, that it would require the labour of many ages to form a regular road through it. Martin's Defrription of the Weftern Iflands of Scotland, 8vo. 1716. Buchanan's Travels in the Weftern Hebrides, from 1782 to 1790, " 8 vo .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 Grech, a fmall ftream in Vermont, which falls into lake Champlain at Ferrifberg, a little N. of Little Otter creek.

Lewis and Rchoboth, a town in Suffex county, Delaware, containing 1514 inhabitants.

## LEWISBURG. See Louisbourg.

Lewisburg, a county in Orangeburgh diftrict, South Ca-rolina.-Alfo, a polt-town of North Carolina, and capital of Franklin county, which lies on Tar river, and çontains between twenty and thirty houfes, a court-houfe, and gaol; 30 miles N. of Raleigh.-Alfo, a poft-town and chief town of Greenbriar county, Virginia, on the north fide of Greenbriar river, containing about fixty houfes, a courthoufe, and gaol ; 250 miles W. by N. of Richmond. N. lat. $38^{\circ} 8^{\prime}$.-Alfo, a polt-town of Northumberland county, Pennfylvania, cailed alfo "Tarltown," on the W. fide of the Sufquehanna, 7 miles above Northumberland; containing about 60 houfes, and well fituated for a good trade with the N.W: part of the flate ; 30 miles E. by N. from Aaronfburs-

LEWISHAM, a populous village, in the upper halfhundred of Blackheath, lathe of Sutton at Hone, and county of Kent, England, is fituated $5 \frac{1}{2}$ 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 moft probably founded in the Saxon times; this manor having been given to that abbey by Elthruda, niece to king Alired. After the fuppreffion of the alien priories, Henry V. made this a part of the endowment of his newly erected Carthufian priory at Shene. Lewilham is now the property of the earl of Dartmouth, whofe feat on Blackheath is within the bounds of this parifh. The prefent church was erected in the year 1774: its form is that of an oblong fquare, with a femicircular recefs at the ealt end for the altar. It contains two handlome monuments: one to the memory of Anne, wife of John Petrie, efq., was executed in Italy; it includes a fine bas-relief in marble, reprefenting the deceafed on her death-bed, with her hufband and children lamenting round ber. The other commemorates Margaret, relict of the Rev. Robert Petrie, and was fculptured by Banks: it reprefents Mrs. Petrie dying in the arms of Religion, fupported by Faith and Hope. Many old monuments were thrown carelefsly into the vault, when the church was rebuilt. An excellent free grammar fchool 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 fchool, and directs that it fhall be for the education of thirty-one boys of the feveral parifhes the:ein named; one fcholar yearly to be fent to cither of the univerlities. He alfo founded an Englifh fchool here for thirty-one boys, and an alms-houfe for five "poor godly houfeholders." The population of Lewifham, as returned under the act of 1800 , amounted to 4007 ; the number of houres to 722 . In this enumeration was included the chapelry of Sydenham, noted for its medicinal fprings. Brayley's Beauties of England, vol. vii.

LEWISTOWN, a poft-town in Lincoln county, Maine, on the eaft fide of Androfcoggin river, and bounded fouthweft by Bowdoin; containing $9 \not+8$ inhabitants; 36 miles N.E. of Portland.-Alio, a pott-town, called "Lewes," in Suffex county, Delaware, pleafantly fituated on Lewes creek, three miles above its mouth in Delaware bay; containing a Prefbyterian and Methoditt church, and about 80 houfes, in a Areet more than three miles in length, extending along a creek which feparates the town from the pitch of the cape. Its fituation is high. The court-houfe 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 clofed with ice. The circumjacent country is beautifully diverfified with hills, woods, ftreams, and lakes, but much infefted with mofquitoes and fand-fies. This town carries on a fnall trade with Philadelphia in the productions of the country. A manufacture of marine and Glauber falts, and magnefia, has been eitablifhed here; 113 miles S. of Philadelphia. N. lat. $3 \mathrm{~S}^{\circ} 6^{\prime}$. W. long. $75^{\circ} 18^{\prime}$. -Alfo, the chief and poft-town of Miftin county, Pennfylvania, fituated on the north fide of Juniatta river, on the weft fide of, and at the mouth of, Cifhicoquilis creek; about 23 miles N.E. of Huntingdon; regularly laid out, incorporated in 1795, and containing about 120 dwelling. houfes, 523 inhabitants, a court-houfe, and gaol; $15^{\circ}$ miles W.N.W. of Philadelphia. N. lat. $40^{\circ} 33^{\prime}$. W. long. $77^{\circ} 23^{\prime}$.

LEWUNAKBANNEK, a town on the Ohio, in which is a fettlement of Chriftian Iudians, formed by Moravian miffionaries.
LEX, Law. See Law.
Lex Amiffa, or legem amittere, in Lawu, is undertood of an infamous, perjured perfon, who is faid to lofe bis lawv: or, as Bracton has it, non of ulterius dignus lege. See INfamols.

Lex Judicialis, is properly purgatio, per judicium ferri; fometimes called fimply judicium.
Lex Sacramentalis, purgatio per facramensum. See OAth and Purgation.
Lex Talionis. See Talio.
Lex Terre, the law and cuftom of the land; by which name it is diftinguifhed from the civil law. See Common Law.

## Lex, Legem terre amittere. See Amittere.

LEXAWASCEIN, in Geography, a fmall river of Pennfylvania, which rifes by feveral branches in Northampton county, Pennfylvania, on the ealt fide of mount Ararat, which unite about 10 miles from its mouth in Delaware river. It joins the Delaware, after a fouth-eaft and eaft courfe, about 174 miles above Philadelphia.
LEXEN, a town of Moravia, in the circle of Olmutz; 18 miles N.W. of Olmutz.
LEXIARCHI, $\Lambda \in \xi_{s x}$, 0 , at Athens, fix officers, afo fifted by thirty inferior ones, whofe bufinefs it was to lay fines upon fuch as came not to the public affemblies, and alfo to make fcrutiny among fuch as were prefent.
The lexiarchi kept a regitter of the age, manners, and
abilities of all the citizens, who were always enrolled at the age of twenty.

LEXICON, A\& $\xi$ Ixv, the fame with dietionary.
The word is chiefly ufed in fpeaking of Greek dic. tionaries: it is derived from the Greek $\lambda$ ets, word, dition; of $\lambda_{k} \mathrm{~F}_{\mathrm{L}}, I$ 万peak.

LEXINGTON, in Geography, a county of America, in Orangeburg diftrict, South Carolina.-Alfo, a poft-town of Virginia, and capital of Rockbridge county ; fituated on the poit-road from Philadelphia to Kentucky, by way of the Wildernefs, and about a mile fouth of the north braach of James's river; containing a court-houfe, gavl, and about 100 houfes. Its fituation is agrecable and healthy, and the adjacent country highly cultivated. Near it is " Libertyhall Academy," now "Walhington College," built of ftone, and capable of containing forty or fifty ftudents, and harfifomely endowed by the diftinguifhed perfonage whofe name it bears. The town is 159 miles W. by N. of Rich-mond,-Alfo, a poft-town of Kentucky, formerly the metropolis of that flate; fituated on a rich extenfive plain, in Fayette county, on the north fide of Town fork, a fmall fleam, that falls into the fouth branch of Elkhorn river. The town is built on a regular plan, and contains about 350 houfes, five places of public worfhip, a court-houfe, and gaol, and alfo an univerfity, with feveral manufactories and florehoufes. It is an agreeable flourihing 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 ftone, covering a well, artificially ftoned; and in its vicinity are alfo the remains of two ancient fortifications, furnifhed with ditches and baltions, overgrown with large trees.-Alfo, a pofterown in Rowan county, North Carolina, 399 miles from Wahington.-Alfo, a fmall polt-town of Georgia, formerly called the "Great Falls," fituated on the fouth 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, in miles N.W. of Bofton, having a neat congregational church, and a number of compact houfes. This town has been rendered famous by being the fcene of a battle, fought April 19, 1775, which may be confidered as the commencement of the American revolution. On the ground where this battle was fought is a fone monument, 10 feet high, with the following infcription: "Sacred to Liberty, and the Rights of Mankind!! The freedom and independence of America fealed and defended with the blood of her fons, \&c. \&c." Concluding, "The die was caft!!! The blood of thefe martyrs, in the caufe of God and their country, was the cement of the union of thefe ftates, then colonies, and gave the fpring to the fipits, firmnefs, and refolution of their fellowcitizens!" Morfe.

LEY, in Agriculture, a term ufed to fignify land in the ftate of fward or grafs.

Lex, Sir James, in Biography, a learned Englifh judge, whe flourifhed in the feventeenth century, the fon of Henry Ley, efq. of Jeffont, in Wiltthire, was, on acceunt of his great merit, made lord chief juftice, firft in Ireland, and afterwards in England. He was likewife created baron Ley, lord high treafurer, and earl of Marlborough. His reports were printed in the year 1659.

## Ley. See Lixivium.

LEYBA, in Geography, a town of: South America, in 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 publifhed a courfe of mathematics ${ }_{2}$, which, was held in confiderable efli-
mation. He was author of a treatife on Surveying, a work on Dialling, and another work, entitled "The Trader"s Guide." He died about the year 1690 .

LEYDECKER, Melchor, a Durch divine, was born at Middleburg in $16 ; 2$. Having received a good education, he officiated as paftor of a church in his native place; and in 1678 was appointed profeffor of divinity at Utrecht, and foon after took his degree of doctor in divinity. He died, in 172 1. 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 Calvinifts, and made fome ineffectual efforts for the purpofe. He was a voluminous wiriter, and his works are all written. in Latin: of thefe the chief are, "A Treatife on the Republic of the Hebrews," in 2 vols.: "An Analyfis of Scripture, with Rules for Preaching;" "A Hiftory of Janfenifm;" "A Continuation of the Ecclefiatical Hittory of Hornius, with Notes;" and "A Hiftory of the Church of Africa."

Leyden, Lucas Van. See Jacobs, Lucas.
LeYDen, in Geography, a city of Holland, the "Inugdunum Batavorum" of Ptolemy, and the "Caput Germanorum" of Antonine's Itinerary, is the capital of a fmall dilt ric, called "Rhynland," comprehending 49:towns or villages, and, next to Amfterdam, the largett and moft populous city of Holland; the number of inhabitants being eltimated at about 50,000 . It is fituated on the ancient bed of the Rhine, which, by means of various Atreams, 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 Amfterdam, 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 baftions. The cloth manufactured at Leyden has been much celebrated, and $i t$, contains a ftaple-hall erected for the ufe of the manufacturers and merchants. The chief ftreet of the town is conftructed in the form of a crefcent ; and the principal public building is the town-houfe, which has nany fpires, and is a handfome flructure, with a fone front. In the burg cmaiter's chamber is a very capital painting of the Latt Judginient by Lucas of Leyden, for which the emperor Rodolphus is faid to have. offered as many gold ducats as would cover it; tegether with feveral other capital paintings, and a reprefentation of the famous fiege of 1574, wrought in tapeftry. The great church is one of the handiomett in Holiand. The common council of the city, called "Vroedfchap," is compofed of 40 perfons, who are required to be natives of Holland, 28 years of age, and Proteltants. Here are likewife four burgomatters, and eight echiv ns, and a grand bailiff, who adminilters juttice in civil and cruminal cafes, jointly with the echevins. The fair of Leyden is an ancient eftablifment, and fill much. frequented : it occupies by its booths, arranged under trees, and iang the borders of canals, about a fourth part of the town. In proof of the antiquity of this city, fome 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 Jofeph Scaliger contends that it was built five or fix centuries ago by the comtes of Holland. This city was confiderably enlarged towards the fouth in the year 1389 ; but it has fuffered much from fieges and the plague. In the year 1574, the Spaniards land fiege to it ; but it was obflinately defended by the inhabitaits, and even by the women, who lined the ramparts, and performed the duties of foldiers.

During:

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During this refiftance, the mifery of the inhabitants was extreme: 6000 perfons died of famine, and the diftrefs attending it ; fo that for 14,000 who furvived, there remained no more than 107 muids of wheat. The general of the Spaniards, apprized of their fituation, fummoned them to furrender; but they replied, that they could not want fubfiftence, as long as their left arms remained, on which they were determined to feed, whillt with the right they defended the city. The conftancy and courage of Adrian de Werf, burgomatter of the city, deferve to be recorded; when he was folicited by fome of the inhabitants to furrender, he told them, "My friends, fince I mult die, it is of little importance whether I fall by you or by the enemy; cut me to pieces, and divide them amengit you; I fhall die fatisfied, if by my death I can be the leaft ufeful." Juit as they were preparing to furrender, they received notice by fome pigeons, that relief was at hand; and the dykes of the Meufe and the Iffel having been opened, Louis Boilfot, 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 accuftomed every feven years to exhibit a fpectacle of the fiege. William Prince of Orange, juft recovering from a dangerous illnefs, was carried to Leyden, that he might in perfon thank the citizens for their brave defence; he alfo Iiberally rewarded Boiffot 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 univerfity, and appointed Janus Douza the firft curator. This univerfity, fays Mrs. Radcliffe, in her "Journey through Holland, \&c." would fcarcely be known to exift, if it had no more confpicuous objects than its buildings. The Dutch univerfities have no endowed foundations; fo that the profeffors, who have their falaries from the ftates, live in private houfes, and the ftudents in lodgings. The library, to which Jofeph Scaliger was a benefactor, is open only once in a week, and then for no more than two hours. To this, and other meafures of Dutch policy, it is owing that the univerfity has been of late years declining. There are ftudents, however, of many nations and different religious profeffion, no oaths being impofed, except upon the profeffors. Phyfic and botany are cultivated with much fuccefs; and there is a garden to which not only individuals, but the Eaft India company, contribute foreign plants. The falaries of the profeflor3, exclufively of fees from the ftudents, are nearly 2001 . a-year. The government of the univerfity is in the rector, who is chofen out of three perfons, returned by the fenate to the flates; the fenate confifts of the profeffors; and, on extraordinary occafions, the fenate and rector are directed by curators, who are agents for the flates. The tand adjoining to Leyden is very fertile and productive, and is much cultivated by gardeners, who fupply Amfterdam with vegetables; and the rich meadows and paftures in the environs furnifh excellent butter and cheefe. Leyden is diftant 14 miles N. of Rotterdam, and 19 S.W. of Amfterdam. N. lat. $52^{\circ} 9^{\prime}$. E. long. $4^{\circ} 20^{\prime}$.

The plays and players of the theatre of Leyden are not of the moft refined fort; farce has not yet quitted tragedy, nor has Punch quited farce; however, thele exhibitions amufe perfons, whofe tafte has not been formed upon refined models, and perhaps come more home to their bufinefs and bofoms, thau the tragedies of Sophocles, or comedies of Menander, would do, if they were now to be reprefented in the original Athenian manner.

As to mufic, mechanical chimes, every quarter of an buur ; carillons at noon, two or three times a week; and
huge organs, coarfely played, to more coarfe plafmody, contitute all that Apollo and the Nine Mufes have given to this place, in the way of harmony and melody, as far as we could difcover. Burney.

Leyden, a fmall ifland in the Eaft Indian ocean, near the coaft of Java, within view from Batavia.-Alfo, a fmall ifland in the gulf of Manar, near the W. coalt of Ceylon : 12 miles W . of Jaffnapatam.-Alfo, a fmall ifland in a bay of the Pacific ocean, on the N. coaft of New Guinea. S. lat. $3^{\circ} 5^{\prime}$. E. long. $135^{\circ} 39^{\prime}$--Alfo, a town of Pruffia, 27 miles S.S.E. of Konigfberg.-Alfo, a poft-town of America, in Oneida county, New York; 330 miles N.E. from Wafhington.-Alfo, a townhip in Hampfhire county, Maffachufetts, between Colerain and Bernarditon; 29 miles from Northampton, incorporated in 1784, and containing 1095 inhabitants.

Leyden Phial, in Elearicity, is a glafs phial or jar, coated both on the infide and outlide with fome conducting fubftance, for the purpofe of being charged, and employed in a variety of entertaining and ufeful experiments. See Coating and Charge.
It was thus called becaufe Mr. Cunæus, a native of Leyden, was fuppofed to have firt contrived, about the clofe of the year 1745 , to accumulate the electrical power in glafs by this method ; and hence the operation of charging and difcharging coated glafs, 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. Priefley, the hiftorian of electricity, informs us, that the perfon who firft made this great difcovery was Mr. Von Kleift, dean of the cathedral in Camin; who, on the 4 th of November, 1745, fent an account of it to Dr. Leiberkuhn at Berlin : however, thofe, to whom Mr. Kleitt's account was communicated, could not fucceed in performing his experiments. The views which led to this difcovery in Holland are ftated by Dr. Prieflley in the following manner: profeffor Mufchenbroeck and his friends, obferving, that electrified bodies, expofed to the common atmofphere, which is always replete with conducting particles of various kinds, foon loft their eleetricity, and were capable of retaining but a fmall quantity of it, imagined, that if the electrified bodies were terminated on all fides by original electrics, they might be capable of receiving a ftronger power, and retaining it a longer time. Glafs being the moft convenient electric for this purpofe, and water the mof convenient non-electric, they firft made thefe experiments with water in glafs bottles; but no confiderable difcovery was made, till Mr. Cunæus, happening to hold his glafs veffel in one hand, containing water, which bad a communication with the prime conducter 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 fhock in his arms and breaft, which he had not in the leaft expected from the experiment. This experiment was repeated, and the firlt account of it publifhed in. Holland by Mr. Allamand and Mr. Mufchenbroeck; by the able Nollet, and M. Monnier, in France; and by Meffrs. Gralath and Rugger, in Germany. Mr. Gralath contrived to increafe the ftrength of the fhock, by altering the fhape and fize of the phial, and alfo by charging feveral phials at the fame time, fo as to form what is how called the elearical battery. He likewife made the hock to pafs through a number of perfons connected in a circuit from the outide to the infide of the phial. He obferved that a cracked phial would not admit of being charged; and he difcovered what is now called the refiduum of a charge. Dr. Wation,

## IEYDEN PHIAI.

about this time, obferred a circumflanes attending the operation of charging the phial, which, purfued, would have led him to the difcovery which was afterwards made by 1)r. Franklin. He fays, that when the phial is well electrified, and you apply your hand to it, youl fec the fire flan from the outfide of the glafs, wherever you touch it, and it crackles in your hand. He alfo obferved, that when a fingle wire only was faftened round a phial, properly filled with warm water, and charged ; upon the inltant of its ex. plofion, the electrical corrufcations were feen to dart from the wire, and to illuminate the water contained in the phial. Ife likewife found, that the froke, ia the difcharge 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 glafs: in confequence of which he made experiments, that led him to conclude, that the effeet of the Leyden bottle was greatly increafed, if it was not principally owing to, not fo much the quantity of non-electric matter contained in the glafs, as the number of points of non-electric contact within the glafs, and the denfity of the reater of which thefe points confifted; prorided the matter was, in its own nature, a ready conductor of electricityHe farther obferved, that the explofion was greater from hot water inclofed in glaffes, than from cold, and from his coated jars, warmed, than cold. For lif manner of explaining the fhock of the Leyden phial, fee Afrlux.

Mr. Wilfon, in 1746, difcovered a method of giving the fhock to any particular part of the body, without affecting the reft : he alfo increafed the ftrength of the fhock 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 Lejden bottle was always in proportion to the thinnefs of the ghlafs, the furface of the glafs, and that of the non-electrics in contact with the infide and outfide thereof. Mr. Wilfon made a variety of other experiments with the Leyden phial, which our limits will not allow us to recite.

Mr. Canton found, that if a charged phial was placed upon electrics, the wire and the coating would give a fpark or two alternately ; and that, by continuing this operation, the phial would be difcharged; though he did not obferve that thefe alternate fparks proceeded from the two coitrary eleftricities difcovered by Dr. Franklin.

The abbe Nollct made feveral experiments with this phial. He received a flock from a hottle, out of which the air had been exhauted, and into which the end of his conductor had been inferted. He afcribed the force of the glafs in giving a fhock, to that property of it, whereby it retained it more flrongly than conducters do, and was not fo eafily divelted of it as they are. He alfo firt tried the effect of the electric flock on brute animals, and enlarged the circuit of its conveyance. See Crucurt.
M. Monnier is faid to have been the firtt who difcovered that the Leyden phial would retain its eletericity for a confiserable time after it was charged, and to have found it to do fo for thirty-fix hours, in time of frolt; and it is re. markable that the French as well as the Englifh philofo. phers made feveral experiments, which, with a little greater degree of attention, would have led them to the difcovery of the different quality of electricity on different fides of the glafs. But this was referved for the ingenious doctor Franklin, who, in explaining the method of charging the Leyden phial, obferves, that when one tide of the glafs is electififed pofitively, or flus, the other fide is electrilied negatively, or minuls; fo that whatever quantity of fire io thrown upon one fide of the glafs, the fame is theown out

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of the other ; and in a phial not-charged, none can lie thrown into the jufide, when none can be grot out from the outlide; and there is really no more electric fire in the phial after it is charged than befure; all that can be dune by charging being to take from one fide and consey to the other. Dr. Franklin alfo obferved, that glafs was impervious to clectricity, and that therefore, fince the equitibrium could not be reftored to the clarged phial by an internal communication, it muft be done by conductors externally joining the infide and the outfide. Thele capital difcoveries le made by obferving that, when a flial was charged, a cork-ball, fufpended on filk, would be attracted $\mathrm{b}_{j}$ the outhide coating, when it was repelled by a wire com. municating with the infide, and rice verfá. But the truth of this maxim appeared more evident, when he brought the knob of the wire communicating with the outtide coating within a few inches of the wire conmunicating with the infide coariug, and fufpended a cork-bail between them; for, in that cafe, the ball was attracted by thean alternately, till the phial was difcharged.

Dr. Franklin alfo fhewed, that when the phial was charged, one fide loft exactly as much as the other gained, in reftoring the equilibrium. Hanging a fmall linen thrad near the coating of an electrical phial, he obferved that whenever he brought his finger near the wire, the thread was attracted by the coating: for as the fire was taken from the inflde, by touching the wire, the out:de drew in an equal quantity by the thread. He likewife proved, that the coating on one fide of a phial received juit as much eicctricity 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 contlantly to it; becaufe, 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 touk 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 cafe 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 obferve a greater variety of facts, relating both to charging and difcharging it, than other philofophers had attended to. This masim, that whatever the phial takes in at one furface it dofes at the other, led Dr. Franklin to think of charging feveral phials together with the fame trouble, by connecting the outide of one with the infide of another; whereby the fluid that was driven ont of the firlt would be received by the fecond, \&c. By this means he fourd, 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 ilem fire, and lofes its old with forne reluctance, or rather gives fome fmall refiltance to the charging. On this principle he contructed an electrical battery:

When Dr. Fratrklin firft began his experiments upor the Leyden phial, he imagined that the electric fire was all crowded into the fubltance of the non-electric, in contact with the glafs; but he afterwards found that its power of giving a flock lay in the glafs itfelf, and not in the coating, by the following ingenious analyfis of the bottle. In order to find where the ttrength of the charged bottle lay, he placed it upon glafs; then firft took out the cork and the wire, and finding the sirtue was not in them, he touched the outlide ceating with one hand, and put the finger of the

## LE Y

other into the mouth of the bottle; when the fhock was felt quite as ftrong 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 fhock, but he found it gave none. He then judged that the electric fire mult either have been loft in decanting, or muft remain in the bottle; and the latter he found to be true; for, filling the charged bottle with frefh water, he found the flock, and was fatisfied that the power of giving it refided in the glafs itfelf. The fame experiment was made with panes of glafs, haying the coating on lightly, and changing it as the water had been before changed in the bottle, and the refult was precifcly the fame. He proved in other ways that the electric fire refided in the glafs. Franklin's Letters and Obfervations, \&c. Priefley's Hift. 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 reafon of the procefs, are eafily underthood. 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 cenductor, will gradually rife as far as 90 nearly, and then reft; which flews that the phiial has received its full charge; then if the difcharger be held by its glals handle, and one of its knobs be applied to the outide coating of the phial, and the other be brought near the knob of the wire, or near the prime conductur that communicaies with it, a report will be heard, and luminous fparks will be difcovered between the difcharger and the conducting fubftances communicating with the fides of the phial, alld by this operation the phial will be difcharged. If, inttead of ufing the difcharger, a perfon touches the outfide of the phial with one hanu, and brings the orther hand near the wire of the phial, the fame fpark and report will be obferved, and a flock will be felt, that affects the wrifts and elbows; and, when the fhock is ftrong, the breaft likewife; and a fhock may be given to any fingle part of the body, if that part alone be brought into the circuit. If a number of perfons join hands, and the firft of them touches the outfide of the phial, and the latt touches the wire communicating with the inlide, they will all feel the hock at the fame time. If the coated phial be held by the wire, and the outfide coating be prefented to the prime conductor, it wili be charged as readily, only with this difference, that in this cafe the outfide will be pofitive, 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 oppofite fide would be electrified pofitively. But if the phial be infulated, and the fame procefs repeated, the index of the electrometer will foon rife to $90^{\circ}$, yet the phial will remain uncharged; becaufe the outfide, having no communication with the carth, \&c. cannot part with its own elcctricity, and, therefore, the infide can acquire no additional quantity; but when a chain, or any other conductor, connects the outlide of the phial with the table, the phial may be charged as before. Moreover, if a phial be infulated, and one fide of it, inftead of being connected with the earth, be connected with the infulated rubber, whillt the other fide communicates with the prime conductor, the phial will be expeditioully charged; becaure, whilf the rubber exhaufts one fide, the other fide is fupplied by the prime conductor; and in this way the phial is charged with its own electricity; or the natural
electric matter of one of its fides is thus thrown on its. other fide. This la't experiment may be diverlified, by infulating the phial, and placing it, with its wire, at the diftance of about half an inch from the prime conductor, and holding the knob of another wire at the fame diftance from its outfide coating; then turning the winch of the machine, and a fpark will be obferved to proceed from the prime conductor to the wire of the phial, and another fpark will pafs at the fame time from the outfide coating to the knob of the wire prefented towards it ; and thus it is feen, that as a quantity of the clectric matter is entering the infide of the phial, an equal quantity of it is leavin, the outfide. If the wire prefented to the outfide of the phial be pointed, it will appear illumimated with a far; but if the pointed wire be connected with the coating of the phial, it will appear illuminated with a brub of rays. See Charge, Electrical Experiments, \&c. Electricity, Electrometer, \&c.

Mr. Cavallo has defcribed the conftruetion of a phial, which, when charged by an electrical kite, in examining the tate of the clouds, or in any other way, may be put into the pocket, and which will retain its charge for a confiderable time. Béfides the coating on the inlide and outfide, which this phial has like others of the fame kind, a glafs tube open at Goth ends is cemented into its neck, and paffes', within the phial, having a finall wire faltened 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 fmall length of it out of the other end of the tube. If this piece, with the wire; be held by the middle of the glafs 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 difcharging the phial, if it be charged. A phial of this kind has been kept in a charged ftate for fix weeks. Cavallo's Elect. p. 340. See Conductor.

We flall clofe 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 difcharge, or other accident. He removes the outlide coating from the fractured part, and then makes it moderately hot by holding it to the flame of a candle; and whill it remains hot, he applies burning fealing-wax to the part, fo as to cover the fracture entirely; taking care that the thicknefs of this wax coating may be greater than that of the glafs. Laftly, he covers all the fealing-wax, and alfo part of the furface of the glafs beyond it, with a compolition 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 plafter. In this way feveral phials have been fo effectually repaired, that, after being frequently charged, they were at lalt broken by a fpontaneous difcharge, but in a different part of the glafs. Phil. Tranf. vol. 1xviii. part ii. p. 1011 .

LEYGAGER is ufed 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; $20^{\circ}$ miles N.E. of Leitmeritz. N. lat. $50^{\circ}$ $39^{\prime}$. E. long. $14^{\circ} 43^{\prime}$.

LEYRE, a town of Spain, in Navarre; eirght miles N.E. of Sanguefa.

## L. E Y

LEIRIA, a city of Portugal, in the province of Eftremadura, the fee of a bihop, erected in $15+5$; containing a glafs-houfe eitablifhed by Englifhmen, and about 3500 inhabitants. Near 1t, on an eminence, is an ancierst caltle built by the Moors; 57 miles N.N.E. of Lifbon. N. lat. $39^{\circ}$ 39'. E long. 8 34.

LEYSE, a town of Pruffia, in Ermeland; iS miles N.E. of Heiliberg.

LEYSERA, in Bofary, fo denominated by Linnaus, in honour of Frederick William Von Léyfer, author of the Flora Halenfis, publifhed in 1761, in one volume octavo. 'I'his is a fynoplis of the plants found about Hall in Saxony", difpofed according to the Linnzan fyttem, with fcarcely any fynonyms. The number of fpecies is only 1122 , embracing 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 original remarks, as well as new plants." The mof original part feems, in our opinion, a chronological and local diftribution of the plants, inferted by way of appendix: A fecond edition appeared in 1783 .-Linn. Gen. 431. Schreb. 563. Willd. Sp. Pl. v. 3.2132. Mart. Mill. Dict. v. 3. Ait. Hort. Ker. v. 3. 229. Thunb. Prodr. 160. Jufi. 179. Lamarck. Illuftr. \&. 688. Gxertn. t. 173. (Afteropterus; Vaill. Mem. de l'Acad. des Sc: 1720 Gærtn. 460. t. 173.) Clafs and order, Syngenefia Polygamia-fuperflua. Nat. Ord. Compofite Difcoidec, Linn. Corymbiferc, Juft.

Gen. Ch. Common Calyx ovate, imbricated ; fcales obtufe, concave, fcariole. Cor. compound, radiated; ficrets of the difk feveral, perfect, tubular, funnel-fh3ped, five-cleft, mearly erect ; thofe of the radius feveral, ligulate, lanceolate, entire. Stam. (in the perfect florets) Filaments five, capillary, very fhort ; anthers united into a cylindrical tube. $P i f$. (in the fame) Germen fmall; ftyle thread-fhaped; itigma notched. In the female ones the ftyle is fhorter, and the ftigma more divided. Peric. none, except the unchanged calyx. Seed, in both kinds of flurets, folitary oblong; down, in thofe of the difk, long, of five feathery brillies, furrounding a very fhort chaffy crown; in thofe of the radius the feaihery briftles are wanting. Recept. naked in the dilk, the florets of the circumference only being feparated by narrow chaffy fcales.

Obf. In Leyfera paleacea the feathery britles of the radius are wanting. Gartner reftrains the genus of Leyfera to fuch fpecies, keeping Vaillant's mame Afteropterus for thofe which have the two kinds of feed-down as above defcribed; but fuch a diftinction appears to us, as it did to Linnæus, merely to feparate a very natural genus, and it ferves, among many other inftances, difplayed in this part of Gærtner's admirable work, to prove that technical characters muft never be followed, without taking natural ones as a clue.

Eff. Ch. Receptacle chaffy in the circumference. Seeddown chaffy; in the florets of the difk mofly feathery alfo. Calyx fcariofe.

Linnæus has three fpecies of this genus.

1. L. gnaphalodes. Linn. Sp. Pl. 1249. Levf. Hall. ed. 2; frontifpiece, infcribed " unicum pramium, fed immortale." (After æthiopicus, ftoechadis foliis, flore aureo; Herm. Lugd. Bat. 6S. t. 71.)-Leaves linear-awlhaped, downy and glandular. Calyx-fcales lanceolate.-Native of the Cape of Good Hope, as are all the known Ipecies hitherto difcovered. The flem is fhrubby, determinately branched, leafy, downy. Lefaves copious, fpreading every way, fcattered, briftle-fhaped, hardly an inch long, downy, as well as befprinkled with little prominent glandular brittles. Flowers moitly terminal, folitary, on long flender ftalke, with yellow
rays, and a fhining membranous ealyx. The feathery down of the feeds is very confpicuous among the numerous floret3 of the dijk.
2. L. Callicornic. Linn. Mant. 286. (Calicorni gnaphaloides; Burm. Prodr. 24. Hieracii peculiare genus, coridia folio, $x$ thiopicum, feminum pappis denfius radiatis; Pluk. Mant. 103. Phyt.t. 35 c. f. 4.)-Leaves linear-threadhaped, rough. Scales of the calyx acute. Flowers nearly feffile. This differs at firft fight from the former in its feflite flowers, folitary at the fummit of each branch, and the fcales of the calyx are more pointed.
3. L. paleacea. Limn. Syft. Veg.ed. 13. 541. ed. $14 \cdot 771$. (L. ericoides; Berg.Cap. 29 + Reihania paleacea; L'Hetit. Sert. Angl. 24. Thunb. Prodr. 146. Willd. Sp. Pl. v. 3. 2137.)-Leaves linear, channelled, downy. Calyx feffile, turbinate; its inner feales thin and pointed. Feathery down wanting. Marginal fcales of the receptacle furmounting the florets. - The leaves of this are not fo flender as either of the former, being triangular, furrowed above, very cottony, but not glandular. Flocuers feflile at the end of each branch, folitary. Outer fcales of the calyx lefs fcariofe than in the former. On account of the want of the feathery feed-down, M. l'Heritier referred this fpecies to his genns Relbania, which is rather a heterogeneous aliemblage. In this, however, he is followed by Thunberg and Willdenow, who alfo agree in removing the Linnatan Stabelina gnaphaloides to Leyfera, a meafure which feems to us rather unnatural.

Thunberg adds feven more fpecies to this genus, the fpecific characters of which are given in his Prodromus, but nothing more is known concerning them. They are named ciliatu, incana, arauoides, Pilofilla, ovata, piãa, and polifolia.

LEYTA, in Geography, one of the Philippine inlands, about 250 miles in circumference; the foil is fo fertile as to yield two hundred fold ; the mountains abound in deer 2 cows, wild hogs, and fowls; cocoas grow fpontaneoufly; the air is pure and healthy; and more temperate than at Luçon. The inhabitants are mild and peaceable in their difpofition, and hofpitable to ftrangers. Their number is eftimated to be about 9000 , who pay tribute in wax, rice, or cloth. N. lat. $10^{\circ} 5^{\prime}$. E. long. $124^{\circ} 40^{\prime}$.

LEZAISKO, a town of Aultrian Poland, in Galicia; 56 miles W:N.W. of Lemberg.

LEZANDRIEUX, a town of France, in the department of the North Coalts, and chief place of a canton, in the diftrict of Lannion, four miles $\mathbb{E}$. of Treguier. "I'he place contains 1763 , and the canton 12,289 inhabitants, on a territory of $142 \frac{1}{2}$ kiliometret, in fix communes.

LEZERS, an Indian nation, which inhabit o between the mouth of the Ohio and Wabafh rivers. They can furnifh 300 warriors.

LEZIGNAN, a town of France, in the department of the Aude, and chief place of a canton, in the diftrict of Narbonne. The place contains 1505 , and the canton 6827 inhabitants, on a territory of 270 kiliometres, in $1_{7}$ communes.

LEZOUX, a town of France, in the department of the Puy-de-Dome, and chief place of a canton, in the diftrict of Thiers; feven miles W.S.W. of Thiers. The place contains 3307 , and the canton $10, j 81$ inhabitants, on a territory of $197 \frac{1}{2}$ kiliometres, in 12 communes.

LGOV, a town of Rufia, in the governmeat of Kurf. N. lat. $48^{\circ}$. E. long. $35^{\circ} 54^{\prime}$.

LHOTA, a town of Bohemia, in the circle of Konigin. gratz: fix miles S.E. of Trautenau.

LHOTKA, a town of Bohemia, in the circle of Konigingratz ; If miles W. of Konigingratz.

## L I A

LIADOVA, a town of Moldavia, on the Dniefter; 56 miles E.N.E. of Choczim.
I.IAISON, Fr. in Mufic, connection, relation, combieation. See Relative.
LIALSKOI, in Geography, avtown of Ruffia, in the province of Ulting, on the Vim; 48 miles E. of Yarenk.

LIAM, a town of Lower Siam, on the E. fide of the gutf. N. lat. $12^{\prime \prime} 33^{-1}$. E. long. $102^{\circ} 18^{\prime \prime}$.

LIAMONE. a river of Corica, which runs into the fea; 10 miles N . of Ajaccio. It gives name to one of the two departnents into which Corfica is divided; the other being Colo. It is formed by the fouthern part of the illand, in N. Lat. $4^{1} 3^{\circ}{ }^{\prime}$, containing 149 \{quare leagues, and 63.347 i:habitants. It is divided into three circles, viz. Vico, containing 10,079 intabitants; Ajuccio, 26,918; and-Sartone, including 26,3 So inhabitans. In the vallies and acchivities of the hil's, the fcil is fertile, yielding grain, fruits, paftures, and, in fome diftricts, delicious wines.

LIAM-PO. Sce Ning.ro.
I.LAMSA, a town of Ruffia, ia the goverment of Archangel, on the coatt of the White fea; $3^{6}$ 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 diltrict of Clermont; four miles S. of Clcrmont. The place contains 962, atd the canton 10,365 inhabitants, on a territory of 125 kiliometres, in 22 communes.
L.IANGA, a town on the E. coall of Mindanao. N. lat. 8 -21'. E. long, $126^{\prime}$ ro'.

LIANG-CHAN, a town of Corea; 40 miles S.S.E. of Kang-tcheor.

LIANGDAL, a river of Sweden, which rifes in the province of Harjedalen, and runs into the gulf of Bothnia, - near Sundfwal.

IIAAN-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. $34^{\circ} 34^{\prime}$. E. long. $90^{\circ} 44^{\prime}$.

LIATRIS, in Botany, a name of whofe meaning or origin we are not able to difcover any thing fatisfactory. Gartn. t. 167. Schreb. 542. Willd. Sp. Pl, v.-3. 1634. Mart. Mill. Ditt. v. 3. (Suprago; Gxrtn. vo 2. 402. Anonymos, n. 309 ; Walt. Carol. 196. Cirfum ; Dill. Elth. t. 71, 72. See Serratuia ; Juff. 174.) -Clafs and order, Syngenefia Poly-gamia-ezualis. Nat. Ord. Compofita capitata, Linn. Cinarocephala, Juff.

Gen. Ch. Common Calyx oblong, imbricated, of numerous, fomewhat ovate, unarmed, coloured feales. Cor. compound, uniform, tubular; forets are perfect and equal, monopetalous, funnel-flaped; their tube inflexed; limb in five recurved fegments. Stan. Filaments five, capillary, very fhert; anthers usited into a cylindrical tube. Pijf. Germen to each floret, oblong; fylc thread-fhaped, very long, divided as far as the top of the ftamens, ftraight ; ftigmas rather acute. Peric. none, excepe the permanent unaltered calyx. Seeds folitary, angular; down feffile, feathery, fometimes coloured. Recopf. naked, flat.

EG: Ch. Receptac'e naked. Calyx oblung, imbricated, unarmel, colourcd. Down leathery.

This genus appears to have been criginally feparated from Serratula by Gertner, who altered the name by which he at firlt datinguifhed it, Suprozo, to that it now bears. Serratula differs from it in having a fcaly or hairy receptacle, as well as in habit. Dight fpecies are defined by Willdenow, of which the following are the mot characteritic and remarkable.
E. Jocr:ofa. Willd. n. 2. (Serratula fcariofa; Limn.

Sp. Pl. 114\%. Eupatorio adfinis americana buibota, flori. bus fcariofis calycibus contectis; Pluk. Phyt. t. 177. F. 4.) -Lcaves lanceolate, tapcring at each end, rough-edged. Flowers on long bracteated italks. Calyx-fcales obovate, fpreading.-Native of North America; fometimes feen with us in curious gardens, where it is a hardy perennial. Root a bulb-fhaped tuber. Stem three or four feet high, leafy, finely hairy, racemofe at the upper part, each flower fupported by a flalk from two to four inches long, bearing a few leafy lratiens. The figmas are long, purpliih, as well as the florets. Calyx-facales more or lefs obtufe, leafy, widely spreading.
L. elegans. Willd. n. 3. (Staehelina elegans; Walt. Carol. 202. Serratula fpeciofa; Ait. Hort: Kew. v. 3. 13S.) -Leaves linear, dotted. Spike very long and denfe. Calysfcales lanceolate, acute, hairy; the invermoft elongated, coloured, fomewhat toothed. Florets few.-Gathered by Bartram, in Georgia, in 1763 ; by Walter in Carolina. The upper flem-leaves are widely fpreading, or reflexed; lower longer, more diftant and upright ; all finely dotted on both fides. Spike long, denfe, erect, hender, of numerous, nearly feffile, bracteated flowers, whofe long, leafy, fine pink, inner fcales of the caly $x$ are very beautiful.
L. pilofa. Willd. n. 4. (Serratula pilofa; Ait. Hort. Kew. v. 3. 13S.)-Leaves linear, hairy, fomewhat dotted. Clufter long, loofe, hairy. Bracteas and calyx-fcales obtufe, fringed.-Native of North America, from whence it was introduced, in $\mathrm{I}_{7} 8_{3}$, into Kew garden, where we gathered it in flower twe years after. It is perennial and hardy, blooming in the autumn. As there is no defcription nor figure extant, the following may be acceptable. The flem is three feet high, fender, leafy, angular, clothed with longifl fcattered hairs, at leaft in the upper part. Leaves narrow, reflexed, fringed with fimilar hairs, and irregularly dotted on both fides; the upper ones dilated at the bafe, and embracing the ftem. Cluffer terminal, fimple, long, loofe, leafy, nightly hairy. Flower Ralks about an inch long, axillary, bearing at their upper part two or three fhort, obtufe, fringed, dotted braleas, refembling the lower fcales of the calya; whofe inner-fcales are graduailly longer, with a membranous, fringed, white or reddifh edge. Flerets and figmas pink.

We cannot but lament, that while fo many well-known plants are figured over and over again in every publication, fuch curious and beautiful fpecies as the two latt fhould remain neglected and unknown.
L. Spicata. Willd. n. 6. (Serratula fpicata; Limn. Sp. Pl. $11+7$. Cirfum tuberofum, lactucx capitulis picatis; Dill. Elth. 85. t. 72. f. 83.)-Leaves linear, ditantly dotted, fringed at the bafe. Spike leafy; denfe above. Ca-lyx-fcales obtufe, fmooth - Native of various parts of North America, from whence it was brought to the Engling gasdens about eighty years ago, and itill remains at Kew. The nearly feffite foacers, and imooth-edged calyz, ditainguifh it from the lait, to which it is otherwife nearly allied.
L. odoratifima. Willd. n. S. (Anonymos odoratiflimus; Walt. Carol. 19S.)-Leaves elliptic-oblong, fmooth; the upper oncs heart-fhaped, clafping the ftem. Panicle corymbofe, fpreading. Calyx-fcales obovate, glandular.-Gathered by Walter in Carolina; from whence it was brought by the late Mr. Frafer in 1787 . This fpecies is remarkable for its fine feent when dricd, which refembles that of the Woodruff, and Holcus odoratus. The radical leaves are ftalked, three or four inches long, nearly elliptical; thofe of the ftem numerous, much fmaller. Flozvers fmall, purple, very numerous, in a fmoothih, fpreading, bracteated, corymbole panicle. Florets not numerous.

LIBA,

LIB

LIBA, in Geograply, a town of Bohcmia, 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 fophit, or rhetorician, was born of an ancient family at Antioch, about the year 314. He devoted himfelf from his youth to the interefts of literature, and purfued his ftudies at Athers. Havine tinifhed his education he collected difciples, and made himfelf known by various rhetorical compolitions. His reputation was fo high at Conftantinople, that fome other profeffors, jealous of his fame, procured his banifhment on the charge of magic. He then went to Nicomedia, where he obtained a great number of difciples, among whom, in a private n:snner, was Julian, afterwards denominated the Apottate. 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 acceflion of Julian, he was one of the firt whom that emperor invited to be near his perfon. He declined the honours intended him, preferring a life of privacy to the bußle of a court. He was, however, warmly attached to a prince who patronized his fludies, and fupported the fane religious caufe; 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 compofitions. He furvived to an advanced age, but the time of his death is not known. The writings of Libanius were very numerous, confilting chiefly of orations, declamations, differtations, and epiltles; which are characterized by Gibbon as, "for the molt part, the vain and idle compofitions of an orator who cultivated the fcience of words:" yet he admits that he had merit, and that his correfpondence was various and elaborate ; " he praifed the virtues of his own times; he boldly arraigned the abufes of public and private life; and he eloquently pleaded the caufe of Antioch againft the juit refentment of Julian and Theodofius." Some of the works of Libanius, confilting of his orations, declamations, \&c., were publifhed in two volumes, folio, in Greek and Latin, in the years 1606 and 1627 ; but the molt complete collection of his epittles is that publihed at Amiterdam in 1733. A volume, containing feventeen of his harangues, from the library of St. Mark, was printed at Venice in 1755. In reference to the conclufion of this writer's life, Gibbon obferves, "it is the common calamity of old age to lofe whatever might have rendered it defirable; but Libanius experienced the peculiar misfortune of furviving the religion and the fciences, to which he had confecrated his gemius. The friend of Julian was the indignant fpectator of the triumph of Chriltanity ; and his bigotry, which darkened the profpect of the viifble world, did not infpire Libanius with any lively hopes of celeflial glory and happincfs." The judicious and excellent Lardrer has tranllated the whole of Libanius's oration to the emperor 'Theodofius, every part of which, he fays, is of innportance to Chriftians. The occafion of this oration was, that in the reign of Theodofius, feveral heathen temples had been pulled down and deftroyed by the monks, with the confent or connivance, as Libanius thought, of the bifhops, and without the orders of the emperor to that purpofe. Of this Libanius complains and implores the protection of Theodofius, that the temples may be preferved. Dr. Lardner, therefore, gives the oration at length, to thew that the teftimony of this heathen writer weat- directly to
prove the divine origin of Chrifianity. And he conclutes by maintaining, that the greatnefs and fplendour to which the Chritlian church had attained from fmall begiunings, by the force of truth againit worldly terrors and allurements, was a greater wonder and a work of greater power than the magnificence of Rome and the grandeur of her empire. Libanius has given an interelling 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 Juidan in our laft volume. Thic works of Dr. Lardner flould have been cited as containing a fummary of the arguments refpecting the extraordinary interpofitions that prevented this emperer from rebuilding the Jewifi temple. Sec Lardner's teffinoonies of Ancient Heathens, vol. iv. or vol. viii. edit. 1 z88. Gilbor, vol. iv. Moreri.
Limanius, Geonge, who flourifhed in the fixteenth century, was defcended from a refpectable family at Lignitz, in Poland, of which place he was a native. He purfued his fludies for feveral years in the moft celebrated German univerfities; and coming to refice at Cracow, he was appointed one of the profefiors in the principal college of that city. He is faid to have been the firft perfon who introduced there the fludy of the Greek language. He publifhed feveral works : as "Economicorum Aritotelis Libri Gracis et Latinis Annotationibus illuftrati;" "Carmina Sibyllx Erithrex, \&c.;"" Paraclefis, id eft adhoriatio ad Gracarum Litcrarum ftudiofus, habita Cracovix;" "De Mudicx Laudibus Oratio, \&ec." He alfo compiled an "Anthology," or choice Collections from the Works of St. Baliit, St. Gregory Nazianzen, and St. Chryfoftom. Moreri.
 cies of divination performed with frankincenfe; which, if it prefently caught fire, and fent forth a grateful odour, was eitcemed a happy omen, and vice verfà.
LIBANOTIS, in Botany, the ancient appellation of a plant, fuppofed by fome to have been the name of a boy, changed into the plant in queftion; but the moft evident and generally received etymology is from $\lambda_{1} \beta_{a v o s,}$ frankincenfe,
 of Diofcorides appears to be our Rofemary, as has beea ufually fuppofed; which fhrub is by the modern Greeks called Itsigcoispuyy, or Tree Libanos. Libanotis however has at different times, been employed to defignate various umbelliferous plants, of an aromatic quality, and generally of menastain origin, which may have been found under the genera of Albamarta, Cachrys, Buplcurum, Sc.
LibanUS, in Geography. See Lebanon.
Liba'tion, Libatio, a ceremony in the heathen facrifices, wherein the prielt filt fome water, wine, milk, or other liquor, in honour of the deity to whom the facrifice was offeried; after having firft tafted it himfelf.
Alcxander is faid to have facrificed a bull to Neptune; and, for an offering to the fea-gods, to have thrown the golden veffels ufed for the libation into the fea.
Libations were alfo in ufe under the law of Mofes, beirg enjoined by God in Exodus xxix. and Numbers xy.

LIIBAU, 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, fuggelted by the circumfiance that many of thefe trees formerly grew here. This etymology is further confirmed by the conlideration that the Lettonians even now call the town "Ieepaja." Some Germans intermixed with the intarbitants of this town in the
$13^{\text {th }}$ century, and about the clofe of the fifteenth, and commencement of the 1 oth centuries, many of that nation united together, and in 1625 it obtained the privileges of a city. In 1737, the harbour was cleared by Ernelt John, and the future accumulation of mud and fand prevented, fo that it is now a commodious port for veflels of light burden; a confiderable number of which repair hither and are loaded with hemp, linfeed, \&cc. This town was often taken by the Swedes, but ceded to Courland by the peace of $1660 ; 66$ miles W. of Mittan. N. Iat. $55^{\circ} 28^{\circ}$. E. Iong. $21^{\circ} 37^{\prime}$. In this part of the Baltic, as well as in the whole province of Courland belonging to Ruffia, accounts are kept by merchants, as at Riga, in Alberts dollars of eighty ferdings, or of ninety Alberts grofehen; but retail traders moltly reckon two guldens of ninety current grofchen, four of which are equal to three Alberts grofchen. The coins chiefly circulating here are Dutch ducats, and Alberts dollars; and allo pieces coined in the country of the fame flandard and value with thefe two coins. The ferding is an old filver coin; but the grofche is inaginary. The Ruflian coins are alfo current here. (See Riga.) The laft of wheat, rye, barley or peafe, contains 48 leofs; that of oats and malt 60 leofs, which are equal to 106 Eriglifh buthels; fo that a leof of wheat contains about $10 \frac{1}{2}$ Euglifh quarters, and a latt of oats ${ }^{1} 3^{\frac{1}{7}}$ Englifh quarters: one hundred lafts of falt are equal to 11,110 Englifh bufkels. Libau exchanges with London at four Alberts dollars fifty grofchen, more or lefs, for il. Aterling, at three months date. The old ftyle is ftill ufed at Libau. Kelly's Un. Cambilt, vol. 1.

LIBAVIUS, Anpreco, in Biography, a phyfician and chemilt, was born at Hall, in Saxony. He was profeffor of hittory and poetry at'Jena, in 1588 . But he removed to Rothenburg, on the Tauber, in 1591, and to Coburg, in Franconia, in 1605 , in confequence of an appointment to the office of principal of the college of Cafimir, at that place. He died at Coburg in 1616. Libavius obtained a confiderable reputation in his time by his chemical works, having purfued that fcience upon better principles than moft of his contemporaries. He employed many chemical preparations in medicine; neverthelefs, he avoided the violence of Paracelfus and his difciples, whofe principles he often refuted, and againit whom he frequently defends the doctrines of the Galenical fehool. But, like the chemical philofo. phers of the age, he did not altogether efcape the delufions 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 unneceffary to enumerate the titles of his many works, which have now become obfolete, and are almoft forgotten. His laft work, publifhed at Francfort in 1615 , under the title of "Examen Philofophix Novæ, que veteri abrogandse, opponitur," folio, is remarkable for the firf mention of the transfution of blood from the veffels of one living animal to thofe of another, of which he fpeaks with great confidence. The fuggeltion, however, was not fubmited to the teft of experiment until the middle of the fame century, when the fubject made a great noife throughout Europe, and many phylicians anticipated from it no lefs than a remedy againt all difeafes; nay, fome of them felt a confident expectation of rendering life perpetual. But thefe 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 publifhed abroad, containing injurious reproaches, or accufazions, againit the honour and reputation of any perfon, par.
ticularly of a faperior or governor: or, it is defined to be a malicious defamation of any perfon, expreffed cither in printing or writing, figns or pictures, to afperfe the reputation of one that is alive, or the memory of one that is dead. According to judge Blackltone, libels, in their moft extenfive fenfe, fignify any writings, pictures, or the like, of an immoral or illegal tendency. Confidered particularly as offences againtt the public peace, they are malicious defamations of any perfon, and efpecially a magiftrate, made public by either printing, writing, figns, or pictures in order to provoke him to wrath, or expofe 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 punifhed with death, but in after-times they were only whipped. Auguftus ranked fanofos libellos, defamatory libels, among the crimes lafa majeflatis, of high treafon; and under the emperor Valentinian it was made capital, not only to write, but to publifh or even omit deltroying them. F. Baldwin has publithed a comment on the imperial laws againtt libels. Scandalous pictures are reckoned amongit libels.

A libel, the lawyers fay, may be either in friptis, or fine feriftis : in feriptis, when a writing is compoled, or publifhed to another's difgrace; which may be done either verbis aut contalenis; as where this is malicioufly repeated, or fung, in the prefence of others: or elfe traditione, when the libel, or any copy of it, is delivered out, to fcandalize the party. 3 Inft. 174 .

A libel fine feriptis, may be twofold. I. Pifuris, as to paint the party in a Chameful 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 againt mankind in general, or againft a particular order of men, this is no libel ; in order to make it a libel, it mult defcend to particulars and individuals. (3 Salk. 224.) But a general reflection on the government is a libel, though no particnlar perion is reflected on; and the writing againft a known lav is held to be criminal. (4 St. Tr. $672,903$. ) According to C. J. Holt, fcandalous matter is not neceffary 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 peak fcandalous words, unlefs they are put in writing, he is not guilty of a libel; for the nature of a libel confits in putting the infamous matter into writing. ( 2 Salk. 43 \%. 3 Salk. 226.) A defamatory writing, expreffing only one or two letters of a name, in fuch a manner, that from what goes before and follows after it may be underftood, by the natural conftruction of the whole, to fignify and point at fuch a particular perfon, is as properly a libel as if the whole name were expreffed at large. (1 Hawk. P. C. c. 73. f. 4.) On application for information againft this offence, fome friend to the party complaining fhould in fuch cafe ftate by affidavit his having read the libel, and that he undertands and believes it to mean the party. ( 3 Bac. Abr. 12.) And in the cafe of actions for libels by ligns or pictures, it feems neceffary always to fhew, by proper innuendoes and averments of the defendant's meaning, the import and application of the fcandal, and that fome fpecial damage has followed; otherwife it cannot appear that fuch libel by picture was underftood to be levelled at the plaintiff, or that it was attended with any actionable confequences. (131. Com. iii. c. 8.) Although a private perfon or magiftrate be dead at the time of making the libel, yet it is punifhab!e, as it tends to a breach of the peace. (Hob. 215.5 Co. 125: 1 Hawk. P. C. c. 73.) But an indictment for publifhing libellous

## LIBEL.

matter reflecting on the memory of a dead perfon, not alleging that it was done with a defign to bring contempt on the fanily of the deceafed, and to itir up the hatred of the king's fubjects againtt them, and to excite his relations to a breach of the peace, cannot be fupported; and judgment was in this cafe accordingly arrefted. (4 Term Rep. 12G.) No writing is eftecmed a libel, unlefs it reflect upon fome particular perfon. And a writing full of obfcene ribaldry is not punifhable by any profecution at common law; but the author may be bound to good behaviour, as a perfon of evil fame. (I Hawk. P. C. c. 73.). Priating or writing may be libellous, though the fcandal is not directly charged, but obliquely and farcaftically. Id.

It is certain that he who compofes a libel, or procures another to compofe it, and alfo he who publifhes or procures another to publifh it, is in danger of being punifhed for it; and it is faid not to be material, whether he who difperfes a libel know any thing of the contents or effect of it, or not ; for nothing would be more eafy than to publifl the moft virulent papers with the greateft fecurity, if concealing the purport of them from an illiterate publifher would make him fafe in difperfing them. (x Hawk. c. 7o.) It hath alfo been faid, that if he who hath either read a libel himifelf, or hath heard it read by another, do afterwards malicioully read or repeat any part of it in the prefence of others, or lend or fhew it to another, he is guilty of an unlawful publication of it. (Id.) It hath alfo been holden, that the copying of a libel fhall be a conclufive evidence of the publication of it, unlefs the party can prove that he delivered it to a magittrate to examine it. (Id.) When any one finds a libel, if it be againft a private perfon, he ought to burn it, or deliver it to a magiftrate; and where it concerns a magittrate, he fhould deliver it prefently to a magitrate. ( 5 Rep. 125.) If a libel be found in a houfe, the mafter cannot be punifhed for framing, printing, and publifhing it; but it is faid he may be indicted for having it, and not delivering it to a magiftrate (I Vent. 31.) ; or it may, in fome cafes, be confidered as evidence of his being the author or publifher. ( 2 Salk. 418.) It hath been ruled, that the finding of a libel on a bookfeller's fhelf is a publication of it by the bookfeller, and that it is no excufe to fay, that the fervant took it into the fhop without the matter's kuowledge; for the law prefumes the mafter to be acquainted with what the fervant does. (i Seff. C. 33. R. v. Dodd. 10 G .) The fale of the libel by a fervant in a thop is prima facie evidence of publication, in a profecution againt the matter; and is fufficient for conviction, unlefs contradicted by contrary evidence, fhewing that he was not privy, nor in any way affentiug to it. 4 Term Rep. 126. 5 Burr. 2686, 70 I Hawk. P. C. c. 73.

It is faid to be immaterial, on a criminal profecution, with refpect to the effence of a libel, whether the matter of it be true or falfe, or whether the party againft whom it is made be of good or bad farne; for in a fettled flate of government, the party grieved ought to complain for any injury done to him, in the ordinary courfe of law, and not by any means to revenge himfelf either by the odious courfe of libelling or otherwife. ( 5 Co .125 .) But this is to be underflood, 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 juftify the truth of the facts, and thew that the plaintiff hath received no injury. Although it has been held, agreeably to the doctrine main. tained by lord chief juftice Mansfield, for at leaft two cen. turies, that the truth of a libel is no juflification in a criminal profecution, yet in many inftances it is confidered as an estenuation 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, unlefs the profecutor who appli-s for it makes an affidavit, afferting directly and pointedly that he is imnocent of the charge imputed to him. This rule, however, may be difpenfeel with in particular cafes; as if the perfon libelled refides abroad, or if the imputations of a libel are general and indelinite, or if it is a charge againft 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 courfe of juftice by action or indictment. (Stra. 493.) But the court will not grant this extraordinary remedy by
information, nor fhould a grand jury find an indictment information, nor fhould a grand jury find an indictment, unlefs the offence be of fuch fignal enormity, that it be reafonably confrued to have a tendency to difturb the peace and harmony of the community. (1 Hawk. P. C. c. 73 .) There are authorities, that truth is not a juftification 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 accufation in the libel did not amount to an in. dictable offence. (3 Woodd. 182.). It feems, however, that the contrary is the prevalent opinion; and that in every action for a libel, if fpecific inftances can be ftated upon the record, fo as to fupport the general charge of the libel, the courts would determine them to be a fufficient juftification of the defendant. I Term Rep. 748.

The punifhment of libellers for either making, repeating, printing, or publifhing the libel, is fine, and fuch corporal punihment (as imprifonment, pillory, \&c.) as the court in its difcretion fhall inflict; regarding the quantity of the offence, and the quality of the offender. (I Hawk. P. C. c. 73.) If a printer print a libel againt a private perfon, and much more againft a magiftrate, or againft the king and Itate, he may be indicied and punifhed for it; nor is it any apology to fay, that it was done in the way of trade, or to mainrain a family, (I St. Tr. 982. 986.) Alfo, if book-
fellers, \&c. publith or f.ll fellers, \&c. publith or fell libels, though they know not the contents of them, they are puniifable. It has been refolved, that where perfons write, print, or fell any pamphlits, fcandalizing the public, or any private perfons, fuch libellous books may be feized, and the perfons punifhed by law ; and all perfons expoling books to fale, reffecting on the government, may be punifhed; alfo, writers of news (though not fcandalous, feditious, or reflecting on the government, if they write falfe news) are indictable. St. Tr. 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 falfe; and, therefure, the defendant on an indictment for publifhing a libel, is not allowed to allege the truth of it by way of juftification. In fuch profecutions the only facts to be confidered are, firt, the making or publifhing of the book or writing; and fecondly, whether the matter be criminal. But in the remedy by action on the cafe, which is to repair the party in damages for the injury done him, the defendant may, as for words fpoken, jultify the truth of the facts, and fhew that the plaintiff has received no injury at all. Blackt. Com. vol. iii. and vol. iv.

In information and lawy proceedings, there are two modes of defribing a libel; wiz. by the fenfe, and by the words; the firlt is "cujus tenor fequitur," and the fecond "qua fequitur in hxe Anglicana verba, \&c.". in which the

## I. IB

ecereription 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 defeription by the fenfe; it is not material to be very exact in the words, becaufe the matter is defcribed by the fenfe of them. (2 Salk. 660.) It hath been adjudged, that libels, as having a direct and inmediate tendency to a breach of the peace, are indicable before juftices of the peace. (1 Hawk. c. 8.) A libel murt be proved to be written or publifhed in the county laid in the indictment; all matters of crime being local. An information for a libel need not charge the offence to have been committed " vi et armis," or allege that the libellous matter is falfe. ( 7 T. R. 4.) The declaration for a libel mult lay it to be " of and concerning the plaintiff;" otherwife there can be no judgment. (a Strange, 934.) A very important fubject of litigation has arifen from profecutions for libels, and particularly for tlate libels; and that is, whether juries are, or are not, judges of laze as well as of fac. With regard to libels, it had for a long time been the ufage 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 indictinent, they muft find the defendant guilty; without adverting to any other circumftances, fuch as whether the paper were, in their opinion, a libel, or publifhed 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 queftion of mere law); and allo whether it were publifled with a malicious, feditious, \&cc. intention, as charged,--a complicated queflion of law and fact. Mr. (now lord) Erkine was the nofl flrenuous 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 exprefsly of fettling this queltion by legiflative authority ; and in confequence of it a great, and, as many have deemed it, a very favourable, alteration has taken place in the trials for libels. The ftatute is that of 32 Geo. III. c. 67. After reciting that doubts had arifen whether on the trial of an indictment or information for making or publifhing a libel, where an iffue is joined on the plea of not guilty, it were competent to the jury to give their verdict upon the whole mater in iffue, it enacts that on every fuch trial the jury may give a general verdict of guilty or not guilty apon the whele matter; and fall not be required or directed by the court or judge, before whom ruch indictment or information fhall 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 fenfe afcribed to the fame in fuch indictunent or information. (f. 1.) Provided always, that on every fuch trial the court or judge before whom fuch indictment or information fhall be tried, fhall, according to their or his difcretion, give their or his opinion and directions to the jury on the matter in iflue Detween the king and the defendants, in like manner as in other criminal cafes. (f. 2.) Provided alfo, that nothing herein contained fhall extend, to prevent the jury from finding a fpecial verdict, in their difcretion, as in other criminal cafes. ( f . i.) Provided alfo, that in cafe the jury fhall find the defendant guilty, it fhall and may be lawful for him to move in arreft of judgment on fuch ground, and in fuch man. ner, 3s by law he might have done before the paffing of this act.

When a perfon is brought before the court to receive judgment for a libel, his conduct, fubfequent to his conviction, may be taken into confideration, either by way of aggravation or mitigation of his puniftment. ( 3 Term Rep. 432.)

Judge Blackflone obferves, that in all the inflanees where blafphemous, immoral, treafonable, fchifmatical, feditious, or fcandalous libels are punifhed by the Englift law, furne with a greater, and others with a lefs degree of feverity, the liberty of the prefs, properly underitood, is by no means infringed or violated. See Liblerty of the Paess.
Libec, or libellus, a little book, in the fpiritual court fignifies the original declaration of any action in the civil law. (Stat. 2 Edw. VI. c. 53.) 'The libel ufed in ecclefaltical procecdings confifts of three parts. I. The major propofition, which thews a jult caufe of the petition. 2. The narration, or minor propofition. 3. The cosclution, or conclufive petition, which conjoins both propolitions. Blackit. Com. vol. iii.

Libel, in the Laz of Scotland, is ufed for a criminal acculation or indictment.
libella, in Natural Hiffory. See Libellula.
Librlla, among the Romans, was the tenth part of the denarius.

LIBELLATICI, an ancient kind of apoftates from Chriftianity, under the perfecution of Decius; who, to prevent their being obliged to renounce the faith, and farrifice to idols in public, made application to the magiitrates, 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 fheltered from any farther moleftation on account of their religion.

Thefe 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 fuch as furnifhed the magiftrates with money, to fcreen them from profecution, and from being obliged to renounce Chriftianity.
M. Tillemont retains fumething of each opinion ; he thinks, the Labellatici, applying themfelves to the magiltrates, bought off the facrificing and abjuration; and obtained letters, by which they were declared to have renounced Chritt, and facrificed to idols; though, in effect, they had done neither.

LIBELLU1.A, or Dragon Fly, in Entomology, a genus of the order Neuropteræ; the claracter of which, according to Gmelin, reduced to the arrangement of the "Syttema Naturx,'" confifts in the mouth armed with jaws, more than two in number; lip trifid; antennx wery thin, filiform, and fhorter than the thorax; wings expanded; tail (of the male infect) furnifhed with a forked procels.

In this genus the antennæ are very fhort, being merely a pair of fmall hairs, the wings large and fpreading, and the body lengthened. The libelu're, or dragen-flies, exhibit an inftance fcarcely lefs friking than the butterfly of that diffimilitude in point of form under which one and the fane animal is deftined to appear in different periods of its exiftence. Perfons not converfant with natural hifory, would fcarcely believe that thefe brilliant infects, flying with vaft ftrength and rapidity, and purfuing other infects still fmaller, after the manner and with the velocity of a hawk, had been inlabitants of the water, in which they relided 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 ftagnant waters: the larvx are fix-footed, active inhabitants of the water, furnifhed with an articulate forcipated mouth; and prey with the atmoft rapacioufnefs upon aquatic infects and the larvx of others; the pupa refembles the larva, but, in the former itate, it has the rudiments of wings. 'I'be libellula, or dragon-fies, are fome-
times, though very improperly, called horfe-fingers. There are nearly fixty fpecies: before, however, we come to the e.numeration of thefe, we may relate fome facts common to the tribe itfelf. The addeeffes of the male libeliula to his female feem carried on in a rough but very efficacious manner. He hovers about on the wing, till the object of his smours makes her appearance; he then watches an opportunity of feizing her by the head with thofe pincers with which his tail is armed. In this manuer he travels through the air, till the female, yielding either to fuperior itrength or inclination, forms her body into a kind of circle, adapted to the purpefe of nature ; hence the libellule are frequently feen coupled in the air, exhibiting the form of a ring. The female, at a proper period, retires to fome ftagnant water, where, by the afliftance of a ftick or reed, the mers 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 the depofits 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 preffure of thefe upon each other, the egg is gradually forced from the ovary to the extremity of the tail ; whence it is feparated by thaking that part in the water. The eggs are of a white colour, refembling thofe produced by the common blow-Ay. The larve are difguiting in appearance, but beneath the head is placed an inttrument excellently adapted for feizing and holding their prey. It is furnithed 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 ltate 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 queft of a convenient litaation during the feafon of its inaction. It there attaches itfelf to a plant or piece of dry wood, and the fkin, which has gradually become parched and brittle, at length fplits oppofite the upper part of the thorax. Through this aperture the winged infect quickly pufhes its way, and being thus extricated from confinement, begins to expzod its wings, te flutter, and finally to launch into the air. The complete infect, in its winged flate, continues to purfue food fimilar to that by which it had been fupported before, and remains infectivorous. The lepidopterous infects, the butterflies, and phalxnx, are deftined for the fupport of the larger libeliulx, which are a part of thofe nume. rous tribes appointed to conline thefe prolific genera within due bounds. The life of the libellula, in its winged itate, is fhort in comparifon with that which it pafted in its aquatic form, the frolts of the early autum deftroying all thofe that have not been devoured by birds in the preceding months. It is impoffible not to be ftruck with wonder in contemplating the changes of the libellula, which, while living in the water, would perifh by a long expofure to the air, while the winged infect, having efcaped from the pupa, would be deftroyed by fubmerfion under the water, of which, not an hour before, it was the legitimate inhabitant.

The fpecies are divided into the fections A and B. Section A. Wings expanded when at relt. The infects of this divifion are fubdivided into $\alpha$ Dorfal divifion of the lip very minute; and 6 Divifions of the lip equal ; conftituting the tribe Efhna of Fabricius. B. Wings erect when at refl ; eyes diflinct ; outer divifions of the lip bifid. The tribe Agrion of Fabricius.

## Species.

Seaion A. Wings cripanded when at reft: a Dorfaldivifon of the lip very minutto.

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4-Maculata. Lower wings at the lafe, and all in the middle on the fore-part with a blackifh fpot; abdomen depreffed, downy. It is an European infect, and defcribed by Reaumur.
Depressa. All the wings blackifh at the bafe; abdomen deprefled, yellowifh at the fides. This alfo is an European infect; figures and defeription are given by Edwards and Donovan. The maic is of a bright iky-blue, with the frides of the body yellow; the female of a fine brown, with yellowith fides. The wings in both fexes are anfparent, except at the fhoulders, where they are each marked by a broad bed of brown with a ftripe of yellow; the tips of each wing have alfo a fmall oblong-fquare black foot on the outer margin. The larva is of a greyifi-brown.
Trimaculata. All the wings hyaline, with a ferruginous fpot at the bafe, and band in the middle. It inhabits Carolina.

Bifasciata. Wings hyaline, with a brown fpot at the bafe and two bands. It inhabits America. The thorax is villous-brown, with two yellow lines under the wings; abdomen depreffed, brown, the fides jellowifh.

4-Punctata. Wings white; lower ones black at the bafe with a yellow line; all with a black dot; abdomen cylindrical. It inhabits America. Thorax is of a downy green; front veficular green; abdomen greenifh at the bafe, but towards the tip blackifh; all the wings with a black dot in the middle at the rib, and an oblong ftigma at the tip.
Flaveola. Wings pale yellow at the bafe. Inhabits Europe. Its wing 3 are fometimes without the yellow fpot.

Liseata. Wings white with a yellowifh bafe, and black band and tip; abdomen yellow, with a lateral black line. This fpecies is found in India. Its head and thorax are yellow; abdomen compreffed.

Stigmatizins. This is a yellowifh infect; has wings with a brown fpot, the tip brown with a fnowy fligma. It is found in New Holland. Sir Jofeph Banks has a fpecimen in his mufeum. The abdomen is marked with black lines; wings hyaline.

Oculata. Like the laf, this is of a ye.lowifh colour ; the upper wings are hyaline at the tip, lower ones at the margin, with a fnowy ftigma. It inhabits New Holland.
[xdica. This fpecies has wings varied with yellow and brown, and white at the tip; the lower ones have a blue fpot at the bafe. It is found, as its name imports, in India. 'I'he body is brown ; tip of the wings hyaline.

Muncia. Bronzed; wings are of a whitifl colour fpotted with brown; the lower ones yellow at the bafe. 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 blackifh at the bafe; body fquare. An inhabitant of Europe. In one fex the back is fpotted with red, in the other with yellow.

Vulgatissima. Thorax yellow, with eight black ftreaks. It inhabits Europe.

Obscura. All its wings are ferruginous; the body of a dufky hue; an American infect; the abdomen is cylindrical; wings with an oblong brown marginal dot.

Vulgata. Wings hyaline immaculate; abdomen cylin. drical and reddifh. Inhabits Europe.

Siberica. Wings hyaline, with a tranfverfe broad fero
40
ruginous
ruginous band towards the tip; body reddifh. Inhabits Siberia.
sineata. The wings of this infect are flat, longitudinally finuate, and black on the thicker margin, with a white fligma. The body is blueifh. There is a fpecimen in the Britilh Mufeum.

Cancetata. Wings immaculate at the bafe; back and files of the abdomen interrupted by yellow. . It inhabits Europe.

Premontance. Found among the mountainous parts of Italy; wings flat, cinereous, with a brown band at the tip. It is finall, and the body of an obfcure yellowifh.

Fisclata. Wiags flat, brown, with a white !treak. It inhabits India.
twrbata. Found in America. Wings flat, with a brown band.

Scrra. Wings flat, white, with an oblong black fpot at the bafe 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 mufeum of fir Jofeph Banks.

Dimidrata. Wings flat and black from the bafe to the middle. It is found in America.

Equestris. TVings half black, with a fiowy band in the middle. It inhabits Africa. A fpecimen in the mufeum of fir Tofeph Banks. The head is hrown, with a yellow dorfal line; all the wings are black from the bafe to the middle, then a fnowy band; the tip hyaline with a common brown fpot.

Fiuctuass. Wings black tipt with white. It inhabits India, is fimall, and brown; the front is veficular yellowith.
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.

Cminessis. The upper wings faint teflaceous; lower ones green tipt with brown. It inhabits China.

Vliksicolor. 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.

Vibraxe. Wings flat, white with a black Spot in the middle, the tips ferrnginous.

Americasa. PNotwithitanding the name, this fpecics is found in India. Wings purplith, with a white band; upper pair tipt with white, lower ones with a white line at the bafe.

Margmata. Wings black; upper pair with a white fpot 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 yeliow; thorax black; abdomen brown, whitifh at the bafe."

Flaricumed. Wings white, yellow at the bafe; body sed. It inhabits China.

Tomertos.. The wings of the infeets of this fpecies are alfo white; but the body is downy variegated with brown and green. It is found in Anerica. The front is blue; abdomen cylindrical black, the fegments witly a greenith dot on each fide.

压nea. Wings hyaline; thorax green bronzed. It inhabts Europe.

Cravea. Wings white, with a fnowy fpot terminated by a brown one. The body is blue. It inhabits AmeH14.

6-Maculata. Wings with three black collal fpots, the latt with a fnowy Itigma; lower ones with yellowifh bands. It inhabits China. The head is yellowifh; thorax yellowifh with black lincs; abdomen fat and yellowifh with black lines.

Coxtamisata. Yellowifh; wings whitih, with a ycllowith fhade in the middle. It inhabits India. The head, thorax, and abdomen yellowifh.

Eponixa. Wings yellowifh, with about three black bands. Is found in Carolina. Head and thorax yellowifh; abdomen cylindrical, with a yellowifh dorfal and lateral line; all the wings have a white coltal fpot near the tip.

Vama, or great variegated libellula, the molt remarkable Englifh fpecies, 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 foot 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 greatelt part of the bead, and are of a pearly blue-grey calt, with a varying luftre; the front is greenifh-yellow; the body is long, flender, and black, with, rich variegations of bright blue, and deep grafs-green. The wings are perfectly tranfparent, itrengthened by numerous black reticular fibres, and exhibit a Atrongly iridefcent appearance, according to the different inflections of light. This infeet, in its motions, is extremely rapid, fying abcut in purfuit of it3 prey during the midale of the day, and is at this time taken with extreme difficulty, darting off on the flightelt alarm from the fpot on which it fettled, and in the face of a fecond or two flying to a great diftance. During the early hours of the morning, and the late ones in the evening, it is eafily taken; at fuch times it is obferved to fit with its wings expanded, but in fo inert a ttate, that it will fuffer itfelf to be readily feized by one of its wings, without attempting to move from its place.
Juscea. Wings with a blackifh acceffory membrane; thorax with fix yellow lines; abdomen tapering towards the bafe. Inhabits Europe.

Cabolina. Wings whitif; lower ones indented ferruginons at the bafe; thorax brown. An inhabitant of. America.
Capersis. In this fpecies the whitifl wings are every where fpotted and dotted with brown ; it is found, as its. name imports, at the Cape of Good Hope.
Trucolora. Wings variegated with brown, blueifh, and yellow, the tip hyaline. An inhabitant of India.

Rubra. Is fo named from its reddifh colour ; the wings with a ferruginous bafe and marginal lines. It inhabits Europe.

## 6 Divifions of the Lip equal.

Forcifata. This infect, like the varia, is very large, and expands full four inches aud a half. Nofe yellow, with a black line on the prominent part; thorax black, with feveral broad yellow fripes, two on the frant, and two behind the ligaments of each pair of wings; abdomen blavk, with two itreaks refembling a crefcent on each fegment; wings tranfparent and white, with a tinge of amber; tail with three incurved claws.

Grunds is the largeft of this genus found in Britain, and is...erhaps, net juferior in bulk to any infect which this cu: iy produces; the fore-part of the head is yellow : the eyes brown, and fo large, that they meet at the top of the head. The thorax is of a dun colour, with four ob. lique bands. on each fide of a lemon coloura. The abdomen
is reddifh, often fpotted with white and black upon the top and bottom of each fegment; the fmall appendices which terminate the abdomen are very long; the wings have more or lefs of a yellow complexion, and are diftinguifhed by a brown fpot on the exterior edges. The colours of the infeet vanifl when dead.

Varnegata. Thorax with two yellow lines on each Gide: wings with a white foot at the bafe. It inhabits T'erra del Fuego. A fpecimen is in the mufeum of fir Jofeph Banks. The body is brown; mouth yellowifh, with a black dot at the bafe; the abdomen is round and ferruginous, the fegments are edged with black, and in each a white fpot divided by a black line.

Clayata, has a clavate abdomen, which is gibbous at the bafe, variegated with brown and green. It inhabits China. The head is veficnlar green; thorax green with black lines; abdomen green with black ttreaks, the middle thinner and black with lateral yellow fpots, the tip thickened black with a white tail.

Minuta. Abdomen yellow, with two black lines; dower wings yellow with two black fpots. It is an inhabitant of China. The head is yellow, eycs brown ; thorax with yellow lines beneath; abdomen with two black lines above and beneath ; upper wings black at the bafe with a yellow fpot.
B. Wings erect zwhen at reft; eyes difinct; outer divifions of the lip bifid.

Virco. This is one of the molt elegant of the European infects, but is fmaller than the varia or grandis, and is diftinguifhed by its flender, long, cylindric body, which, as well as the head and thorax, is ufually either of a bright but deep golden-green, or elfe of a deep gilded blue; the wings are tranlparent at the bafe and tips, but are each marked in the middle by a very large oval patch of dark violet blue, accompanied with iridefcent hues, according to the direction of the light; fometimes the wings are entirely violetblack, without the leaft appearance of tranfparency either at the bafe or the tips, and fometimes they are altogether tranfparent, without any appearance of the violet-black patch which diftinguifhed moft of the individuals: laftly, the infect fometimes appears with tranfparent wings, but fhaded with a ftrong caft of gilded greenifh-brown, each being marked by a fmall white fpeck at the exterior edge near the tips. The genus is divided into varieties, viz. a. Body fhining green-blue; wings. blueifh in the middle, the bafe and tip whitifh, the margin immaculate. Donovan. b. Body filky; wings blueifh-green, the tip brown, the margin immaculate. Reaumur. c. Body filky-green ; wings brownith with a white marginal dot. d. Body fllky; wings brown-gilt with a black foot. It inhabits Europe, and is common about waters.

Puella. Wings hyaline, not coloured. This is a much fmaller fpecies than the virgo. It varies in colour, but is generally of a bright and beautiful 0 ky -blue, variegated with black bars on the joints, and with the thorax marked by longitudinal itripes; the wings are tranfparent, and each marked near the tip with a fmall, oblong, fquare, black, markinal fpot: the head in this fpecies 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 diftance from one another. From the brilliancy and richnefs of its colours, it has been called the king's-fifher; it frequents little rivulets of water oyerhaded with bufhes. 'There are Several varieties of this fpecies, 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 fpots. This is given by Mr. Donovan.
6. Body feft colour; wings with a brown marginal dot. c. Body alternately blue and cinereous; wings with a black dot. d. Body beneath blue-green, above brown; thorax with alternate brown and blucilih bands; wings with a black matginal dot. e. Body green with a flefh-colour bluhn; thorax with three black lines; wings with a brown marginal dot. It inhabits Europe, in almoft endlefs varicties.
Ciliata. Green bronzed; abdomen brown; legs fringed black. Inhabits Coromandel. A fpecimen is in iir Jofeph Banks's mufeum. Head and thorax bronzed; abdomen cylindrical.

Nobilitata. Upper wings dulky; lower ones filky green tipt with black. Is found in South America. Body
gloffy green; lower wings beneath black. gloffy green; lower wings beneath black.
Lixearis. Wings with a yellowifh or black figma; abdomen extremely flrong. Is found in India, and is figured by Drury; who, according to Dr. Shaw, has given a beautiful figure of a fpecies not mentioned by Gmeln, viz. the

Lucretia, which is a native of the Cape of Good Hope, and is dittinguifted by the length of its flender body, which is about five and a half inches long, though fcarcely the tenth of an inch in diameter. The wings of this fpecies are tranfparent, flender, and narrow; they meafure from tip to tip five and a half inches. The colour of the head and thorax is brown, with a yellowifh fripe on each fide, and the body is of a deep mazarine blue.

Having defcribed the feveral fpecies of the libellula, we flall clofe our account of this interefting genus of infeets with fome account of the eyes, as defcribed in Adams' Effays. Thefe are finely adapted for microfcopical examination; and by the affiftance of a good inftrument, it will be feen that the eye is divided into a number of hexagonal cells, each of which forms a complete eyc. The external parts of thefe eyes are fo perfectly fmooth, and fo well polifhed, 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 almoft indefinitely, fhifting its beam to each eye according to the motion given to it by the hands of the obferver. Leeuwenhoeck fays, there are twelve ,thoufand five hundred and forty-four lenfes on each eye of the libellula. If one of the protuberant fubitances be nicely taken from the head of the infect, wahhed clean, and placed before the miciofcope, its flructure is elegantly feen, and it becomes an object worthy of the highelt admiration. Each of the eyes is an hexagon, and has the fame 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 microfcope fo as to bring the picture of fome well-defined object under the eye. If turned to a fingle houfe, in the eye of the infect the houfe -is diminifhed 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 inftant of time; if turned towards a candle, there will be a beautiful and refplendent blaze from multitudes of regular flames. See Adams' Eflays, 4to. p. 195 - 6 .
LIBEN, in Geography, a town of Bohemia, in the circle. of Leitmeritz; in miles No of Leitmeritz.
LIBER, in Vegetable Anatomy, 'an ancient Latin word for the thin inner bark or rind of a tree, which being ufed to write upon before the invention of parchment or paper, is Gpppofed to have given its name to a book. For the nature and functions of the liber, fee Babs and Cortex.

Liber Niger, domus Regis, is the title of a book in which there is an account of the houfehold eltablifhment of king Edward IV., and of the feveral muficians retained in his
fervicea

Service, as well for his private amufement, as for the fervice of his chapel. See King's Band, Hocsimoli, and Cuapel Eflabliflument. See alto, N 293 of the Harl. MSS. Brit. Muf. and N' 1 147, 2, 3, 11, of the A flmol. Collect. Oxf. for "ordinances touching the king's houfchold," made in the time of Edward II. as well as in that of Edward IV. And in the Liber Niyer publifhed by Batnaan, with additions.
LIBERA, in Mythologn, the name of a goddefs, which Ciccro, in his book of the Gods, reprefents as the daughter of Jupiter and Ceres. Ovid in his Fafti fays, that the narne was given by Bacchus to Ariadne.

Libera is exhbited on medals, as a kind of female Bacchus, crowned with vine-lcaves.

Libera, in Law, a livery or delivery of fo much corn or grafs to a cuitomary tenant who cut down or prepared the faid grafs or corn, and received fonce part or fmall pertion of it as a reward or gratuity. Covel!.

Libera Cbafra bukenda, a judicial writ granted to a perfon for a free chafe belonging to his manor, after proof made by inquiry of a jury, that the fame of right belougs to him. Reg. Orig. $3^{6} 6$.

Libera Pifcaria, a free fifhery, which being granted to a perfon, gives him a property in the fifh, \&c. ( 2 Salk. 637.) See Fisimerx.

Liberal Arts, are fuch as depend more on the labour of the mind than on that of the hand; or, that confitt more in feculation than operation; and have a greater regard to amufement and curiofity than to neceffiry.

The word comes from the Latin lib:ralis; which, among the Romans, fignified a perfon who was not a flave; and whofe will, of confequence, was not checked by the command of any malter. See Arts.

LIBERALE Verosese, in Biography. By this name Vafari fpeaks of an hiftorical painter, born at Verona in 1451. He was at firit a difciple of Vincenzo di Stefano; but afterwards he imitated the fyle 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 wronght pistures, which were very much efteemed; and of which the author abore-mentioned fpeaks with high encomiums.

His ftyle appears by his account to be of the early dry manner in art. Compofitions confilting of a number of figures, all finifhed with great minutencis; and frequen:ly of fmall proportions.

LIBERALIA, feafts celebrated by the ancient Romans, in honour of Liber, or Bacchus, the fame with thofe which ebe Greeks called Diosty fir, and Dionyfiaca.

They took their name frnm libcr, i.e. free, a title conferred on Bacchus, in memory of the liberty or freedom which he granted to the people of Brotia; or, ferhaps, becaufe 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 feaft from liker, confidered as a noun adjective, and fignifying free; becaufe the priefts were free from their furction, and eafed of all care, during the time of the liberalia, as the old women officiated in the ceremonies and facrifices of thefe feafts.

Liberam Legen. See Lex.
LIBERAN, in Grography, a fmall inand of the Eaf Indian fea, near the N.E. coatt of the ifland of Borneo, on which are many deer. N. lat. $6^{\circ} 2^{\prime}$. E. long. $116^{\circ} 8^{\prime}$.

Liberandis Terris. See Terris.
LIBERATE, in Lase, a writ that lies for the payment of a yearly penfion, or fum of money, granted under the
great feal, and directed to the treafurer, chamberlains, and barons of the exchequer, \&ec. for that purpofe.

In another feafe it is a writ to the fheriff of a county, for the delivery of poffeffion of lands, and goods extended, or taken upon the forfeiture of a recoznizance.

Liberate is allo ufed for a writ iffuing out of the chancery, directed to a gaoler for delivery of a prifoner, who hath put in ball for his appearance. I. N. B. 132 G Inlt 116.

LIBERATI, Astmo, in Biography, a finger in the pontifical chapel at Rome in the $17^{7}$ h century. When a youth, he was a choiritter in the chapel of the emperor Ferdinand 1II., and his brother Leopold, previous to his admiflion into the pope's chapel: where, befides his vocal abilities, he diltinguifhed himfelf as a compofer. He was, likewife, organitt della fantiffina Trinita di Pellegrini, and maeftro di cappella, and organilt 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 Adani, in his Offervazioni per ben reg. il coco de i Cantoci della Cap. Pont. This letter is addreffed to Ovidio Perfapegi, in anfwer to fome queries he had fent to him, concerning the thate of mufic in the pontifical chapel ; and the character of fome muficians in its fervice, who were candidates for the place of maeflro di cappella of the Metropolitan church at Milan.

This letter, printed at Rome 168 , contains characters of the great Roman malte:s, and defriptions of fyles, more refembling found criticifm than any mufical work of the laft century; but it is, unluckily, written in fuch a vein of general panegyric, as is more likely to generate fcepticifm in the minds of modern readers, than conviction. Liberati. was a difciple of Benevoli, and his voice a foprano.

LIBERATUS, a deacon of the church of Carthage, flourifhed about the middle of the fixth century. In the year 534, he was fent to Ronie by a council of African bifops held at Carthage for the purpofe of confulting with pope John about fome dubious points; and he was frequently employed refpecting affairs of importance. He drew up an hitorical memorial of the contelts which arofe about the opinions of Neforius and Eutyches, entitled "Breviarum de Caufa Nelturii et Eutychetis, \&c." The materials made ufe of on this occafion were collected from the relations of various credible perfons, the hiltory of the church, tranflated out of Greek into Latin, authentic acts of councils, and the letters of different bihhops. An ap-1 pendix to this Breviarum is given by father Crabbe, in the fecond volume of his edition of the Councils. Mureri.

LIBERGA, in Geograply, a torn of Pruffia, in the palatinate of Culm: 26 miles E. of Culm.

LIBERHOF, a town of Pruffia, in the province of Pomerelia; 18 milles S.S.E. of Dantzic.

Liberi Tauri Libertas. See Tauri.
LIBERIA, a fealt held among the Romans, on the day whereon their children laid alide their juvenile habits, and anumed the robe called zoga liberia.

The liberia were kept on the 16 th of the kalends of April ; that is, on the 17 th of March.

LIBERIUS, pope, in Biography, a native of Rome, who, having difcharged the duties of different ecclefiaftical offices with reputation, was chofen bifhop in 352. Immediately after his election he wrote to Athanalius, fummoning him to appear at Rome, and clear himfelf from the accufations preferred againt him by the eaftern bilhops. It fhould feem he had afterwards a much better epinion of Athanafius, and undertook his defence with great zeal. With this view he fent legates to a council which the emperor Conftantine had fummoned to meet at Arles, but had
the mortification to hear they had betrayed the caufe enirulted to them. When Liberius was told of the conduct of his deputies, he was filled with refentment and forrow, and difavowed it in the ftrongett terms, as well in his decla. rations, as is his correfpondence. He requelted the emperor to affemble a new council, for the purpofe of examining the matters in difpute between Athanafius and his opponents, and of reftoring peace and tranquillity to the Catholic church. A council was accordingly held at Milan in 35), at which there were 300 weltern bihops, and a few from the eaft. So far from calm difcuffion into the merits of the queftion, the emperor infifted upon it, as a preliminary meafure, that they fhould give their fignatures to the condemnation of Athanafius, and alfo to an edict containing the chief tenets of Arius, which had been publifned in his name. Thofe who had refolution to oppofe the will of the emperor were threatened with intlant execution, and were actually banifhed. Such were the means ufed by Conltantius in obtaining the fignatures of by far the greater part of the weftern bifhops to the condemuation of Athanafus; but Liberius fill declared in his favour, and exerted himfelf, 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 bifhop; he was carried firlt to Milan, and thence to Berrea in Thrace. The hardhips which Liberius experienced in exile, difpofed him to yield to conditions which at one time he would have rejected with the utmoft indignation. He not only fubfribed to the condennation of Athanafius, but received, as Catholic, the Arian confeftion, and made other conceffions ftill more difgraceful to his reputation as bifop 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 courfe, was always the infallible head of the church, avowed himfelf an Athanalian, an Arian, and a Semi-Arian. On account of his obedience, be was permitted to return to Rome, on condition that he fhould govern the church jointly with Felix Il. (See the article.) Liberius arrived at Rome in Auguft, 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 prefided over the Roman fee fourteen years; and notwithftanding his repeated change of religious opinions, he is honoured both by the Latin and Greek churches as a faint. "A Dialogue with the Emperor Conftantius" is afcribed to Liberius; fo, likewife, are twelve "Letters," inferted in the fecond volume of the Collect. Conci). Bower. Moreri.

LIBERO, Ital., free, unconfined, in Mufic, the fame as fciolto: oppofed to Legato, reftrained by particular laws. Thus, a free fugue, is diltinguihed from a canon; fuga fciolta, or Livera, from Fuga perpetua. Sce Sciolta, and Legato.

Libertas Ecclestastica, Church Liberty, a frequent phrafe in old writers, who treat of ecclefiaftical immunities. The right of inveltiture, extorted from our kings by the papal power, was at firit the only thing challenged by the clergy', as their liberias ecclefiafica, but by degrees, under the title of church liberty, they contended for a freedom of their perfons and poffeflions, from all fecular power and jurifdiction; as appears by the canons and decrees of the councils held by Boniface, archbihop of Canterbury, at Merton, A. D. 1258, and at London, A. D. 1260, \&ic.

See Lord Littlcton's Hitt. of Hen. II., and Robertion's Hitt, of Ch. V.

LIBERTATE PRObANDA, in Law, an ancient writ that lay for fuch as being demanded for villains, offered to prove themfelves free; directed to the fheriff, that be fhould take fecurity of them for the proving of their freedom before the jultices of affize, and that in the mean time they fhould be unmolelted. IF. N. B. 77.

LIBERTA'ILBUS Allocandis, a writ lying for a citizen or burgets, impleaded contrary to his liberty, to have his privilege allowed. Reg. Orig. 262.

If any claim a fpecial liberty to be impleaded within a city or borough, and not elfewhere, there may be a fpecial writ de libertatibus allocandis, to permit the burgefies to ufe their liberties, \&c. Thefe writs are of feveral forms, and may be fued by a corporation, or by any fingle perfon, as the cafe fhall happen. (New Nat. Br. 509, 510.) The barons of the Cinque Ports, \&c. may fue forth fuch writs, if they aredelayed in having their liberties allowed them. Id.

Libertatibus Exigendis in Ifinere, an ancient writ by which the king commands the jultices in eyre to admit of an attorney for the defence of another man's liberty. Reg. Orig. 19.

LIBERTATIS Anglie Cuftodes. See Custodes,
LIBERTE' de la Miufique, is the title of one of the late M. D'Alembert's Effays in his "Melange de Litterature," publifhed in 1767. After being the champion of Rameau's fyftem, and his baffe fondamentale, he became his opponent, and a convert to Italian mufic. He enters into all the reafoning of Rouffeau againft the French ft yle of compofition, but in a more guarded manner. Indeed, he appears never to have heard good Italian mufic well performed. The Suva Paderna of Pergolefi, exccuted by a troop of Italian burletta fingers, not of the firft clafs, was his ftandard of perfection. He tries hard to perfuade the French that their mufic is bad, without knowing very well in what the Italian was fuperior. Rouffeau had refided at Venice a confiderable time, and feems forcibly to have jelt all the lyric beauties of Metaftafio's poetry, as well as the merit of the great compofers and enchanting powers of the great fingers of his time. This, D'Alembert only knows by tradition. It was eafy for a man of his abilities to ridicule the old French mufic, and praife the Italian; but he was too little acquainted with its real beauties to know why Italian dramatic vocal mufic was fuperior to all other mufic, and the French inferior. But it may, perhaps, be roundly afferted that the French vocal mufic suas, 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 expreffion founded upon it, by which the vocal organ is vitiated from infancy to age, and its tones in their expreffion rendered unpleafing to all ears but thofe of the natives.

The French, fince the time of Rameau, have often had fine compofitions performed in their theatres, and a well difciplined band to execute them infrumentally; yet, for want of good fingers, the vocal part, which is the beft and molt interefting in an Italian opera, is the worlt in the mufical dramas of France. And for this there are two caufes which affect the compofition as well as the perfurmance of French opera fongs: the compofer, be he a Gluck, a Piçcini, or a Sacchini, having no great vocal talents to difplay, dares not give way to fancy, or aim at new paffages, but, of necef. fity, underwrites the vocal part fo much, that the productions of thefe great mafters for the French ftage are never in favour elfowhere with their greateft adrairers. And even the fumple

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Fmple and common paffages given to the voice, are fo ill fung, that they give pleafure to no ears but thofe which are accuitomed to nothing better.

In $1766_{7}$, when $D^{\prime}$ 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 difcourfe on the liberty of Mufic, is but a commentator on the citizen of Geueva's "Letter concerning French Mufic."

On the fubject of adapting Italian melody to French words, the great geometrician has not taken into his calculation all the objections to its fuecefs. In Italian poetry each verfe is terminated by a double rhyme; and in the French poctry, the mafculine and feminine rhymes are alternate. This mult affect the melody. The mute fyllables in French poetry (which are dogrel in Englifh), can alone receive Italian melody: the mafculine rhymes admit of no imitation.
M. D'Alembert, however, modeftly fays; that all his refections are not worth, a fingle line air in mufic; and adds (after Rouffcau), that "inventing what fucceeds is infinitely preferable to philofophical reafoning: a compofer never thinks of giving precepts who is able to furnifh models : Raphael produced pictures, not differtations. In mufic, we (the French) write reveries; and the Italians compofe and execute mufic." The two nations, in this refpect, refemble the two architects who were candidates at Athens for the erection of a monument which the republic wifhed to raife to a deceafed hero; one of them fpoke a long while with great eloquence on his art ; the other, after liftening with great attention, only uttered thefe words: "What he fays, I have donc."

## Liberties. See Fravcimes.

LIBERTINES, in Scripture Hifory, the denomination of a clafs of Jews, or Jewifh profelytes, who had a fynagogue at Jerufalem, 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 becn a flave, and was afterwards made free. Several learned men have fuppofed, that the libertines above-mensioned were Jews, or profelytes of the Jewifh religion, who had been flaves to Roman matters, and had been made free, or the children of fuch. In proof of this, the learned Lardner alleges, that there was a great namber of Jews at Rome; and, according to Philo, they occupied a large quater of the city; and they were chie?y fuch as had been taken captive at feveral times, and had been carried into Italy, and were made free by their Roman matters. That thefe Jews were called Libertines, appears plainly from paffages, which Lardner has cited from Tacitus, Jofephus, and Suetonius, in which they fpeak of the banifhment of the Jews from Rome in the reign of Tiberius. Jofephiss and Suetonius exprefsly call thofe Jews, whom Tacitus calls men of the Libertine race; and as there were many of them at Rume, it is not at all unlikely that they had a fynagogue at Jerufalem. Such are the fentiments of Grotius and Vitringa, adopted by Lardiner's Works, vol. i. p. Ir4.

Limertines, Libertini, in Ecelfiafical Hiffory, a religious rect, which arofe in the year 1525 , whofe principaltencts were, that the Deity was the fole operating caufe in the mind of man, and the immediate author of all human actions: that,
confequently, the diftinctions of good and evil, which had been eftablifhed with regard to thofe actions, were falfe and groundlefs, and that men could mot, properly fpeaking, commit fin ; that religion confifted in the union of the fipirit, or rational foul, with the Supreme Being ; that all thofe who had attained this happy union, by fublime contempla. tion and elevation of mind, were then allowed to indulge, without exception or reftraint, their appetites or paflions; that ali their actions and purfuits were then perfectly innocent; and that, after the death of the body, they were to be united to the Deity.

They likewife faid that Jefus Chrift was nothing but a mere je ne Sçai quoi, compofed of the fpirit of God, and of the opinion of men.
Thefe maxims occafioned their being called Libertines: and the word has been ufed in an ill fenfe ever fince.

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 difciple.
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 churcbes. This fect was probably a remnant of the more ancient Beghards, or Brethren of the Free Spirit. Mofheim's Eccl. Hitt. vol, iv.

Libertines of Genevà, were a cabal of rakes rather than of fanatics: for they made no pretences to any religions fyftem, but pleaded only for the liberty of leading volup. tuous and immoral lives. This cabal was compoled of a certain number of licentious citizens, who could not bear the fevere difcipline of Calvin, who punifhed with rigour not only diffolute manners, but alfo whatever bore the afpect of irreligion and impiety. In this turbulent eabal there were feveral perfons who were not only nutorious for their diffolate and feandalous manner of living, but alfo for their atheitical impiety and contempt of ali religion. To this odious clafs belonged one Gruet, who denied the divinity of the Chriftian religion, the immortality of the foul, the difference between moral good and evil, and rejected with difdain the doctrines that are held moft facred among Chriftians ; for which impieties he was at laft brought before the civil tribunal, in the year 1550, and condemned to death. The Genevan firit 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, Sebailian Caftalio, mafter of the public fchool at Geneva, who was a man of probity, and diftinguihed by his learaing and tafte, was, neverthelefs, depofed from his office and banifhed the city, becaufe he difapproved fome of the meafures that were purfued, and fome of the optnions entertained by Calvin and his colleagues, and particularly that of abfolute and unconditional predeftination. Jerome Bolfec, alfo, a man of genius and learning, who became a convert to the Proteftant religion, and fled to Geneva for protection, was calt into prifon, and, foon after, fent into banihment, becaufe, in 155 I , he imprudently and indecently declaimed, in full congregation, and at the clofe of pubhic worfhip, againft the doctrine of abfolute decrees. Mofheim's Eccl. Hiit. vol. iv.

Libertus, or Libertinus, among the Romans, a freedman, or a perfon fet free from a legal fervitude.

Thefe fill retained fome mark of their ancient ftate; he who made a flave free having a right of patronage over the libertus; fo that if the latter failed of the wing due refpect to his patron, he was reftored to his fervitude ; and if the liber-
tus died without children, his patron was his heir. Sce Slave.
In the beginning of the republic, libertinus denoted the fon of a libertus, or freed-man; but afterwards, before the time of Ciccro, and under the emperors, the terms libertas and libertinus, as Szetonius has renarked, were ufed as fy. nonymots.

LIBERTY, in Geggraphy, a poftoown of America, in Virginia; 15 miles from New London. This is the chief town of Bedford county; it has a handfome court-houfe, and contains 50 or 60 houfes.-Alfo, a county of Georgia, bounded N. by Brian, S. by Mackintofh, 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 bufhels of corn. It derives its name from the circumftarice, that its inhabitants were the firt in the fate who declared for libert $y$, and fent a delegate to the congrefs at Philadelphia. It is divided into five towns, and contains 53 r 3 inhabitants, of whom $394^{\circ}$ are flaves.-Alfo, a polt-town of Maryland, in Frederick county; 12 miles N.E. of Frederickfown, and about 44 miles N.N.W. of the Federal city.

Liberty, Libertas, is ufually underfood of that fate wherein a man acts freely; or that power by which he determines himfelf voluntarily either to good or evil, to this thing or that.

This is what fome have denominated a liberty of indifference, natural liberty, philofopbical liberty, or liberty of choice; defining it to be a power of doing an action or its contrary, all the previous circumitances remaining the fame. In this fenfe it flands oppofed to neceffity, and is diftinguifhed from ezternal liberty, or liberty of aation, 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 exicrnal liberty is oppofed to compulfion from external force, as philofopbical liberty is to ne--ceffy, or the definite influence of motises, in definite circuusflances. Accordingly it is faid; that liberty of alion may exit independently of liberty of choice ; that is, the mind may be wholly unreitrained in the execution of its volitions, though in the fame circumilances it could not have made a different choice. Liberty of choice likewife, if it exits at all, is perfectly independent of hiberty of azion.

Molt of the fchoolmen confound liberty and the will torether, and make one definition ferve for both. Whereas Mr. Locke offerves, that liberty does not belong to the will, but to the man or agent; and therefore, that the queftion, in the ufual manner of ftating it, whether man's will be free or not, is abfurd and unintelligible. Liberty, which is but a power, belongs only to agents, and canoot be an attribute or modification of the will, which is alfo but a power. They diftinguifh liberty into a great many kinds ; as liberty of contrariety, and liberty of contradifion. (See Freedmar.) Alfo, next liberty, provima, which is a full abfolute freedom of doing any thing : remote liberty, which is a liberty that comprehends a natural power, though embarraffed with obftacles, which it is in our power to remove, and to attain to a next liberty. Some writers have divided liberty into

Liberty, Phyfical, or Pbilofopbical, or liberty of choice, which is that principle of fpontaneity or felf-determination, that contitutes 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 caufe. Without this liberty, or being under a neceffity of always following fone will different from his own, man would be a machine acted upon by mechasical fprings, laving no principle of motion in himfelf
or command over events: and, therefore, incapable of all merit and demerit.
Whether man is enducel with this kind of liberty or felfdetermining power has been a fubject of much controverfy: it was agitated at the beginning of the lait century, between Leibnitz, Collins, \&c. on one fide, and Clarke, Jackfon, \&c. On the other; and has been more kately revived by

Cicero defines liberty the power of living after a mari's own wifh, without any caufe or impediment to oblige him to do one thing rather than another.
F. Malebranche gives us a thill more philofophical definition: the will he defines to be that imprefion, or natural motion, which inclines towards good in the general ; and by liberty, he underitands, that power which the mind has of determining this general imprefion towards fuch objects as pleafe us; and fo of directing our general inclinations to fome 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 whieh our natural inclinations lead us to. For though it is voluntarily and freely that we leve good in general, it is abfurd to fuppofe we fhould love any thing without the will, or that the will can ever be conftrained; yet we do not love it freely (in the fenfe juft laid down) becaufe it is not in the power of the will not to defire to be happy.
It mult be obferved, however, that the mind, confidered as determined towards good in general, cannot divert its motion to any particular good, unlefs the fame mind, confidered as capable of ideas, have fome knowledge of that particular good : that is, in plainer terms, the will is a blind power, that cannot direct itfelf to any thing but what the underitanding reprefents to it; fo that the power which the will has to determine its impreffion towards general good, or its natural inclinations, varioufly, confifts in the power it has to com. mand the underitanding to reprefent fome particular good.

Thus, a perfon, for inftance, reprefents fome dignity to himfelf, as a good to be wifhed for, immediately the will defires this good; that is, the impreffion which the mind continually receives towards good in general, determines it zo this dignity. But as that dignity is not the univerfal grod, nor is perceived clearly and dittinctly as fuch by the mind (for the mind cannot conceive a thing clearly which is not), the impreffion we have towards grod in gexneral, is not entirely exhaulted by that particular good; the mind has an inclination to go farther; it does not love that dignity necelfarily or invincibly, and in this refpect is free.

Now its liberty confifts in this, that, not being fully convinced that this grood contains in it all the good it is capable of enjoying, it may fufpend its judgment and its defire.
The cafe is nearly the fame with regard to the knowledge of truth: we love this, as we do the enjoyment of good, by a natural impreffion; which impreflion is not invincible in the latter, excepring evidence be full, and our knowledge of the object complete. We have the fame liberty in our falle judgments, that we have in our irregular appetites. See Ildggient 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 himfelf wallis it : and he obferves, that fo far as a man has power to think or not to thiniz, to mave or not to move, ac.
cording
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 molt part, by the moft preffing unealinefs or defire of happinefs. The liberty for which he contends, and for the exiltence of which he appeals to experience, is a liberty of fufpending our determination. The mind, he fays, having in molt calcs, as is evident in experience, power to fufpend the execution and fatisfaction of any of its defires, and fo all, one after another, is ar 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 fufpend the profecution 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 latt judgrment 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. 2 r.

From thefe concelfions the advocates for neceflity have pleaded the authority of Mr. Locke, though he does not feem to have been apprized of the confequences of his principles. Mr. Hubbes, who feems to have been the firtt who underftood and maintained the proper doctrine of philofophical neceffity, defines liberty to be the abfence of all impediments to action, that are not contained in the nature and intrinfic quality of the agent. And Mr. Collins, the principal writer on the fide of neceffity, defines liberty to be a power in man to do as he wills, or pleafes; 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 conlidered, 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;" becaufe they may either denote the lalt perception or judgment of the undertanding, which is entirely paffive ; or the firft exertion of the felf-moving power, which is effentially active. Now, though the felf-moving power is an adequate caufe of action, yet underltanding, or judgment, or allent, or approbation, or liking, or whatever name it is called by, can no more poffibly be the efficient caufe of action, than reft can be the caufe of motion. Nothing can poffibly be the caufe of an effect more contiderable than itfelf. Nothing that is paffive can poffibly be the caufe of any thing that is active: an occafion indeed, it may be; and action may be confequent upon perception or judgment; it may eafily be fuppofed to be always confequent upon it, and yet at the fame time there may be no manner of phylical or neceffary. 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; fuppofing the balance endued with fuch a fenfationor intelligence, as enabled it to perceive which way the weights turned it, and to approve the motion, fo as to fancy that it moved itfelf, 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 acting: whereas the whole effence of liberty confifts in the
power of acting: fo that action and liberty are identical terms.

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 neccffary confequence of fomething involuntary in the ftate of his mind, or of fomething in his external circumftances, he is not free; he has not the liberty of a moral agent, but is fubject to neceffity. This liberty fuppofes the agent to have underttanding 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 underitanding at leaft, 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 fome degree of practical judgment or reafon. For if he has not the judgment to difcern one determination to be preferable to another, either in itfelf or for fome purpofe which he intends, what can be the ufe of a power to determine? His determinations muft be made perfectly in the dark, without reafon, motive, or end. They can neither be right nor wrong, wife nor foolifh. Whatever the confequences may be, they cannot be imputed to the agent, who had not the capacity of forefeeing them, or of perceiving any reafon for acting otherwife than he did. The author now cited reltricts his attention to the liberty of moral agents, who are capable of acting well or ill, wifely or foolinhly ; and this liberty he calls, by way of difinction, " moral liberty." By neceffity he underitards 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 inllinct, 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 madnefs; it may be impaired or loft by vicious habits ; and, in particular cales, it may be reftrained by divine interpofition. In fact, man is a free agent in the fame way as he is a reafonable agent. His realon is liable to be impaired or loft by his own fault, or by other means. It is alfo the cafe with refpect to his freedom of action. The liberty above ftated and explained has been reprefented by fome philofophers as inconceivable, and as involving an abfurdity. "Liberty," fay Hobbes and others who have adopted his reafoning, "confilts only in a power to act as we will; and it is impoffible 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 depending 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 fuppofes the will to be determined by a prior will; and for the fame reafon, that will mult 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 neceflity maintain, that this is the only liberty that is pofible, 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 oppofed to external force or confinemeut of the body; liberty as oppofed to obligation by law, or

## LIBERTY.

by lawful authority; and liberty as oppofed to neceffity; in which latter fenfe it extends to the determinations of the will only, and not to what is confequent to the will. It has been a queltion among philofophers, whether, in every inftance, the determination of the will, which is the firf part of the action in every voluntary action, and upon which alone the moral eltimation of it depends, be the neceffary confequence of the conftitution of the perfon, and the circumittances in which he is placed; or whether he has not power, in many cafes, to determine this way or that? This has, by fome, been called the "philofophical" notion of liberty and neceffity; but it is by no means peculiar to philofophers. The lowelt of the vulgar have, in all ages, had recourfe to this neceffity for exculpating themfelves or their friends when they do wrong, though, in the general tenour of their conduct, they ait upon the contrary principle. Whether the notion of moral liberty, above fated, be conceivable or not, every man mult judge for himfelf, "To me," fays Dr. Reid, "there appears no difficulty in conceiving it. I confider the determination of the will as an effect. This effiect mult have a caufe which had power to produce it; and the caufe mult be either the perfon himfelf, whofe will it is, or fome other being. The firit is as eafly conceived as the latt. If the perfon was the caule of that determination of his own will, he was free in that action, and it is jullly imputed to him, whether it be good or bad. But if another being was the caufe of that determination, either by producing it immediately, or by means and inftruments under his direction, then the determination is the at 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 fenfe which it was never intended to convey, and in a fenfe contrary to what it neceflarily implies. To fay 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 neceffary to that end are not in his power, which is a contradiction.

The principal arguments in favour of liberty, as it is popularly undertood, and as it is defined in the beginning of this article, are the following: this principle is neceffary to conttitute man an agent (fee Agevt); for, as far as it is true of a being that he acts, fo far he muft himfelf be the caufe of the action, and, therefore, not neceflarily determined to act: but if he has no abfolute 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 mult be afcribed to fome other power, by which he is led on to perform them; as a good clock or watch performs the motions afiigned to it by the artilt. This argument is excellently illuftrated by Dr. Clarke: man, fays he, either has within himfelf a principle of action properly fpeaking, i. c. a folf-moving faculty, a principle or power of beginning motion, or he lias not. If he has within himfelf fuch a principle, then he is a free, and not a neceffary agent: for cvery neceflary agent is moved neceffarily by fomething elfe; and then that which moves it, not the thing itfelf which is moved, is the true and only caufe of the action. That any other thing operating upon an agent, fhould efficiently and neceflarily produce felf-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 fome extrinfic caufe; which caufe muft be either what we ufually call the motive or reafon upon which a man

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acts; or elfe it maft be fome infenfible fubtile matter, or fome other being or fubftance making an impreflion upon him. If the reafons or motives upon which a man acts be the immediate and efficient caufe of the action, then either abftract notions, fuch as all reafons and motives are, have a real fubfiftence, that is, are themfelves fubitances; or elfe that which has itfelf no real fubfiftence can put a body into motion ; either of which is manifeftly abfurd. If infenfible fub:ile matter, or any other being or fubllance, continually making impreffion upon a man, be the immediate and efficient caufe of his acting; then the motion of that fubtile matter or fubftance mult be caufed by fome other fubftance, and the motion of that by fome other, till at laft we arrive at a free agent; and then liberty is a pofible thing, and man poffibly may have liberty: and if he may poffibly lave it, then experience will prove that he probably, nay, that he certainly, has it. If we never arrive at any free caufe, then there is either in infunitum a progreffion of motions without any mover, of effects without any caufe, of things acting without any agent; which is a manifelt contradiation: or elfe motios exilts neceflarily of itfelf. If motion exifts neceffarily of itfelf, it mult 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 neceffary, and confequently all other determinations impoffible, which is contrary to experienoe; or elfe there mult be a particular reafon of that determination, and ro backwards in infinitum, which comes to the forementioned abfurditf, of effects exifting without any caufe.

Farther, hberty is the ditate of our own confcioufnefs: we have, really, the fame conftant and necefiary confcioufnefs of liberty that we bave, that we think, choofe, will, or even exilt ; and whatever men may fay to the contrary, it is impoffible for them, in earneft, to think they have no active felf-moving powers, and are not the caufes of their own rolitions, or not to afcribe to thomfelves what they mult be confcious 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 fhould be fo made, as to feem to ourfelves free; that the whole conflitution of things is as if we were free; and that being under a neceflity of approving and difapproving actions and charasters, we are fo far under a neceffity of believing ourfelves and others free. After thefe conceffions, it can hardly be imagined that the conftitution of nature fhould be altogether impofition and deceit.
"We have by our conflitution," fays Dr. Reid, "a natural conviction or belief that we act freely; a conviction fo early and fo univerfal, that it mult be the refult of our conftitution, and the work of him that made us." And he alds, "the genuine dictate of our natural faculties is the voice of God no lefs 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 fenfe," that is, to the irrefiftible convittion and univerfal confent of mankind. To this purpofe it has been faid, that very fow have denied the cxitence of liberty of choice even in theory; but "this," fays a neceffarian writer, " is only faying that there have been very few philofophers," as if the denial of liberty of choice were a teft of true philofophy. All men, it has been alleged, without excepting profeffed neceffarians themfelves, are under the necefify of acting upon the principles of liberty, whatever their hypothetical fpeculations may be.

All men agree in applauding fome actions and condemning 43 others,

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others, which would be abfurd upon the fuppofition that men were dellitute of free will; all men make a diltinction betwcen harm and injury, e. g. between a blow given by defign and another occationed by accident; and the laws of all nations agree to punifh an action performed by a man in poffeffion of reafon, when they excufc a lunatic; the former being free, and the latter not.

Befides, if man be not, in the ftricteft fenfe of the word, a free agent, he can be no moral agent. It is hard to fay, what virtue and vice, commendation and blame, mean, if they do not fuppofe agency, voluntary motion, free choice, and an abfolute dominion over our refolutions. Can we applaud or reproach ourfelves for what we were no more the caufes of than of our own beings, and what it was no more poffible for us to prevent than the returns of the feafons, or the revolutions of the planets? On the fyltem of neceflity, confcience is an inexplicable principle: its cenfures or applaufe are equally futile and groundlefs: the approbation of mankind is an infult with regard to thofe on whom it is beftowed, becaufe they can have no merit; and the reproach of men unjuft and cruel, becaufe there can be no demerit and ground of blame. Whatever difficulties, therefore, may attend the nature of that influence which we afcribe to motives, (fee Motive,), they cannot be the efficient neceffitating caufe of human actions: fince, on this fuppofition, there could be but one agent in the univerfe; who mult equally be the author of all the good and evil in the world, and on whom muft ultimately be charged the fin and mifery, as well as the virtue and happinefs of his creatures.

Morenver, it has been urged by the advocates of liberty, that if men's determinations and actions flow neceflarily from the previous ftate of their minds and the motives or influences refulting from a nature or condition, impofed upon them without their own confent or choice, the idea of refponfibility or accountablenefs mult vanifh, and there can be no propriety or ufe of rewards or punifhments. God cannot reward without virtue, and there can be no virtue without a felf-determining power : he cannot punifh without guilt, and there can be no guilt when men do what they cannot avoid doing, and when their actions arife from circumfances in which their Creator placed them.

It is alfo equally unjuit and ufelefs to threaten punifhment or inflict it on'men to prevent crimes, when they are neceffarily determined in all their actions. And if men are neceflary agents, though we cannot well admit this verbal contradiction, it can be of no ufe to reafon with them, to admonifh or intreat them; and God muft be infincere in his addrefles and invitations, and cruel in his requirements and commands. But fuch is the whole tenour of revelation, and, therefore, the conclufion is neceffary, that man is a free agent, capable of good or evil, and of determining his purfuit of either, from the fole power of his own judgment or will.
"If we adopt the fyltem of neceffity," fays Dr. Reid, "the terms moral obligation and accountableness, praife and blame, merit and demerit, juflice and injuflice, recward and punij/3ment, wifdom and folly, virtue and vice, ought to be difufed, or to have new meanings given to them when they are ufed in religion, in morals, or in civil government; for upon that fyftem, there can be no fuch things as they have been always ufed 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 fyftem of conduct, which he has before conceived in his mind, and refolved to profecute. If all the particular determinations, which concurred
in the exccution of the plan which fuch a perfon had formed ${ }^{2}$ ? were produced, not by himfelf, but by fome caufe acting neceffarily upon him, then there is no evidence left that he contrived this plan, or that he ever §pent a thought about it. The caufe that directed all thefe determinations fo wifcly, mult be wife and intelligent. If it be faid, that this whole courfe of determinations was produced by motives, motives furely have not underftanding to conceive a plan, and intend its execution. We muft therefore revert to fome intelligent being, who had the power of arranging thefe 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 ia 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 conduct in a man demonifrates that he has fome degree of wifdom, it demonitrates, with equal force and evidence, that he has: fome degree of power over his own determinations. We fhall ciofe this article with obferving, that Mr. Abraham Tucker, the acute author of a work entitled "The Light of Nature purfued," by Edward Search, efq. after having argued ftrenuouly againt the exitence of a liberty of indifference, contends for the eaiftence of free-will, the exercife of which he conceives "to be only a particular fpecies: of action, performed in raifing up ideas, or fixing them on the mind, which fhall determine us to fuch volitions as we want." He exprefsly difavows the doctrine of neceffity. See on this fubject Collins's Enquiry concerning Human Liberty, firft printed in 1717. Clarke's Remarks, 1717\%. and Collection of Papers which pafled between Mr. Leibnitz and Dr. Clarke, in $1 / 15$ and 1716 . Jackfon's Vindication and Defence of Human Liberty, 1730. Price's Review of the principal Queftions, \&c. in Morals, P. 315, \&c. edit. 1758. Hartley on Man. Priefley's Doctrine of Philofophical Neceffity, 1777. Reid's Eflays on the Active Powers of Man, efl. iv. Gregory's Philofophical Eflays. Edwards on the Will. Palmer on Liberty. Beattie on Truth. Belfham's Elements of the Philofophy of the Mind, \&c. For the objections againfl liberty, and the arguments in fupport of neceffity, fee Necessitx.

Liberty of corfcience, a right or power of making profeffion of any religion, or of ferving God in any manner that: a man fees fit.

This feems to be a natural right; it is vigoroully oppofed by the generality of the Romanitts, andeven 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 circumflances, our fenfe of right and wrong; or of aeting in conformity to our reflecting and moral principles, without being controlled by any contrary principles or habits. See Liberty, fupra.

Liberty, Religious, is the fame with liberty of confcience, and fignifies the power of exercifing, without moleflation, that mode of religion which we think belt; or of making the decifions of our own confciences, refpecting religious truths, the rule of our conduct, and not any of the decifions of others.

Liberty, Civil, is the power of a civil fociety or ftate, to govern itfelf by its own difcretion: or by laws of its own making, without bcing fubject to any foreign difcretion, or to the impofitions of any extraneous will or power. Civil liberty, fays judge Blackflone, adopting the definition of the Inflitutes, confifts 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 reftraint or controul, unlefs by the
law of nature, fo far reitraincd by human laws, and no farther, as is neceffary and expedient for the general advantage of the public. Others have defined civil liberty, in contradiftinction from political liberty, to be that power over their own attions, which the members of the flate refery too themfelves, and which their officers mult not infringe. extends no farther than to a man's ove conduct, and fign wes the right he has to be exempt from the controul of the foc ety or its agents, that is, the power he has of providing for his own advantage and happinefs. It is a man's civil liberty, which is originally in its full force, and part of which he facrifices when he enters into a flate of focicty.

Civil liberty, according to the definition of archdeacon Paley, " is the not being reftrained 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 intereft of the community to which we belong, is civil liberty; that is, the only liberty to be defired in a fate of civil fociety. The definition abore laid down imports that the laws of a free people impofe no reftraints upon the private will of the fubject, which do not conduce in a greater degree to the public happinels; by which it is intimated, itt, that reftraint itfeif is an evil; zdly, that this evil ought to be overbalanced by fome public advantage; $3^{\text {dly }}$, that the proof of this advantage lies upon the legiflature; $4^{\text {thly }}$, that a law, being found to produce no Fenlible good effects, is a fufficient reafon for repealing it, as adverfe and injurious to the rights of a free citizen, without demaniding fpecific evidence of its bad effeets. This maxim, our author adds, might be remembered with advantage in a revifion of many laws of this country; efpecially of the game laws; of the poor laws, fo far as they lay reftrictions upon the poor themfelves; of the laws againt papits and diffenters; and amongft a people enamoured to excefs, 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 reftrictions, which are either ufelefs, or the utility of which does not outweigh the evil of the reltraint, it follows, among other conclufions of a more general nature, that we may hence be enabled to apprehend the diftinction between perfonal and civil liberty. A citizen of the freet republic in the world may be imprifoned for his crimes; and though his perfonal freedom be reitrained by bolts and fetters, fo 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 conftraint of ufelefs and noxious laws and acts of dominion, but in being free from the danger of having any fuch hereafter impofed or exercifed. The definitions which have been framed of civil liberty are moft of them adapted to this idea. Thus one political writer makes the very effence of the fubject's liberty to confilt in his being governed by no laws but thofe 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 legifative and executive offices of government; another in the being governed by lazv, that is, by known, preconitituted, inflexible rules of action and adjudication; a fifth in the exclufive right of the people to tax themflelves by their own reprefentatives; a fixth in the freedom and purity of elections of reprefentatives; a feventh in the controul which the democratic part of the conflitution poffeffes over the military eflablifhment. Of thefe and fimilar accounts of liberty, it may be obferved, that they all labour under one inaccuracy, viz. that they defcribe not fo
much liberty itfelf, as the fafeguards and prefervatives of liberty ; e. g. a man's being governcd by no laws but thofe to which he has given his confent, were it practicable, is tro otherwife neceflary to the enjoyment of civililiberty, than as it affords a probable fecurity againit the diftation of laws, impofing fuperfluous reftrictions upon his private will. 'The fame remark is applicable to the relt. We may farther obsferve, that in molt of thefe definitions civil liberty, and pulitical liberty are confounded. Upon the whole we may remark, that whatever definitions of cither kind of liberty we adopt, that people, government, and conltitution is the freef, which makes the bett proviiion for the cnactiog of experient and falutary laws.

Liberty, Political, fometimes ufed, but improperly, as fynonimous with civil liberty, in a diftinet fenfe, confitts in the fhare which the members of the ftate poifefs in the direction of its affairs, and the power which they referve to themfelves of arriving at the public offices, or, at lcalt, of having votes in the nomination of thofe who fill them: and this is that which a man may or may not acquire in the compenfation he reccives fur it. In a flate of civil liberty, a man retains the molt important of his natural rights: in is ttate of political liberty, he moreover acquires a contron! over the conduct of others. It is, therefore, for his advantage to lofe as little of the former, and to gain as much of the latter as he can. In countrics where every member of the fociety enjoys an equal power of arriving at the fupreme offices, and confequently of directing the flrength and the fentiments of the whole community, there is a thate of thee molt perfect political liberty. On the other band, in countries where a man is, by his birth or fortune, excluded from thefe 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 orer his own actions he may have, has no power over thofe of another; he has no fhare 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 cafes, directed by others.

Political liberty is the only fafe-guard of civil liberty; and it is chiefly valuable on that account. Civil liberty flands firft 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 abfolute and unslienable right to civil liberty; and for the fecurity of it, political liberty fhould be extended as widely as poflible. No man fhould be excluded from the exercife of it, excepting from circumftances of unavoidable neceffity. It may appear, at firlt fight, to be of little confequence whether perfons in the common ranks of life enjoy any fhare of political liberty or not. But without this, there cannot be that perfuafion of fecurity and independence, which alone can encourage a man to make great exertions. A man who is fenfible that he is at the difpofal of others, over whafe 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 muft feel himfelf a mean and degraded being. But a fenfe of liberty, and a knowledge of the laws by which his conduct mult be governed, with fome degree of controul over thofe who make and adniniter the lavs, give him a conttant feeling of his own importance, and lead hinn 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 diftinction here made between civil and folitical liberty was, we believe, firlt laid down by Dr. Priettley in his "Treatife oal Government."

Mr. Chriftian, in his edition of Black ttone's Commentary
has fuggefed the difference between civil and political libert), "unnoticed by the learned judge and by other eminent writers. He defines pulitical liberty to be the feenrity with which, from the confitution, form, and nature of the eftablithed government, the fubjects enjoy civil liberty.
The importance of liberty, civil and political, as well as religious, to the honour and profperity of a nation, is fulficicutly cyinced by both ancient and modern hillory. It has been obferved by the aucients, that all the arts and feiences arofe among free nations; and that the Perfians and Egyptians, notwithftanding their eafe, opulence, and luxury; made but faint efforts towards a relifh in thofe fince plea'ures, which were carricd towards fuch perfection by the Greeks, amidit continual wars, attended with poverty, and the groatel limplicity of life and manners. Greece, fays Mr. Hume, was a clufter of little principalities, which foon became republics; and being united both by their vicinity, and by the ties of the fame language and interelt, they entered into the clofert intercourle of commerce and learniug. There concurred a lappy clinate, a foil not unfertile, and a molt harmonious and comprchentive language; fo that every circumitance among thefe people feemed to favour the rife of the arts and feiences. Each city produced its feveral artilts and philofophers, who refufed to yield the preference to thofe of the neighbouring republics. Their contention and debutes tharpened the wits of men: a variety of objects was prefented to the judgment, while each chailenged the preference to the reft; and the fciences, not being dwarfed by the reftraint of authority, were enabled to make fuch confiderable thoots, as are, even at this time, the objects of our admiration. Hrnce, and from other circumilances detailed by Mr. Hume, he concludes, that it is impuffible for the arts and fciences to arife, at firtt, among any people, unlefs thefe people enjoy the bleffing of a free government. It has been further obferved, that when the Greeks loft their liberty, though they increafed mightily in siches, by means of the conquefts of Alexander; yet the arts, from that moment, declined among them, and have never fince been able to raile their head in that climate. Learning was tranfplanted to Rone, the only free nation at that time in the univerfe; and having met with fo favourable a foil, it made prodigious fhoots for above a century ; till the decay of liberty produced alfo the devay of letters, and fpread a total barbarifin over the world. From thefe two experiments, of which each was double in its kind, and fhewed the fall of learning in abfolute governments, as well as its rife in popular ones, Longinus thought himfelf fufficiently jultified in afferting, that the arts and fciences could never Hourifh, but in a free government; and in this opinion he has been followed by feveral eminent writers in our own country, particularly Mr. Addifon and lord Shaftefoury, 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 eftablifhed among us. This writer has alleged, as inftances which ferve to reitrain the extent of the opirion maintained by the celebrated authors above cited, thofe of modern Rome and of Florence. The former carried to perfection all the finer arts of fculpture, painting, and mulic, as well as poetry, though it groaned under tyranny, and under the tyranny of priefts: while the latter made its chief progrefs in the arts and Iciences, after it began to lofe its hberty by the ufurpation of the family of Medici. Ariofto, Taffo, Galileo, any more than Raphael and Michael Angelv, were not born in republics. Ind though the Lombard fchool was famous, as well as the Roman, yet the Venetions have had the fmalleft fhare in its honours, and feem rather inferior to the other Italians in
their genius for the arts and fciences. Rubens eflablifled his fchool at Antwerp, not at Amfterdam. Drefden, not Hamburgh, is the centre of politenefs in Germany. France has, at a former period, to fay nothing now of its prefent condition, furnifled an eminent instance of the fourifhing of learning in abfolute governments. Although it had fcarcely ever cnjuyed any eiteblifhed liberty, it has neverthelefs carried the arts and fciences as near perfeftion as any other pation. The Inglifn are perhaps greater philofophers, the Isalians 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 philofophiers, pocts, oratcrs, hiltorians, painters, architects, iculptors, and muficians. With regard to the ftare, they have excelled the Grecks, who far excelled the Englih. And in common life, continues the fame author, they have, in a great meafure, perfected that art, the molt ufeful and ayrecalle of any, "l'art de vivre," the art of fociety and, comerfation. He adds, if we confider the ftate of the fciences and polite arts in our own country, Horace's obfervation, with regard to the Romans, may, in a great meafure, be applied to the Britifh.
" Manferunt, hodieque manent veftigia ruris."
It has become an eftablifhed opinion, that commerce can never flourih but in a free governmeut; and this opinion feems to be founded on a longer and iarger experience than the foregoing, with regard to the arts and fciences. If we trace commerce in its progrefs through 'Tyre, Athens, Sy racufe, Carthage, Venice, Florence, Genoa, Antwerp, Ho land, England, \&c., we fhall always find it to have fixed its feat in free governments. The three greateft trading towns in Europe now, fays Mr. Hune at the time when he wrote, are London, Amflerdam, and Hamburgh; all free cities, and proteftant cities; that is, enjoying a double liberty. Hume's Effays, vol. i. Eff. xii. and xiv. See Liberal Arts and Commence.

Liberty, Perfonal, confilts in the power of locomotion, or of changing fituation, or removing one's perfon to whatfoever place one's own inclination may direct, without imprifonment or reftraint, unlefs by due courfe of law. See Habeas Corpus, Imprisonment, and False Imprijomment.

Liberty of the Prefs. See Liberly of the Press.
Liberty of the Tongue, in the Manege, is a void fpace left in the middle of a bit, to give place to the tongue of a horfe, 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 fratch-mouth, a Pignatell, i. $\epsilon$. with the liberty after Pignatelli's fathion, and a canon-mouth, with the liberty like a pigeon's neck.

In forging the bit, care mult be taken not to make the liberty too high, left it hurt, or at lealt tickle the palate, and make the horfe carry low. See Bits.

Liberty', in AIythology, was a goddefs both among the Greeks and Romans. Among the former the was invoked under the title Eleutheria; and by the latter fhe was called Libertas, and held ia fingular yeneration; temples, altars, and itatues, 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 $f_{\text {Facious court, }}$ called atrium libertatis. The Romans alfo erected a new temple in nonour of Liberty, when Julius Crefar eftablifhed 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, helding in
one hatid a cap, the fymbol of liberty, and two poniards in the other, with the infeription idibvs marmis.

LIBETEN, in Geography, a town of Hungary; 54 miles E.N.E. of Leopoldtadt. N. lat. $48^{3}+7^{\prime}$. E. long. 19) $3 \%^{\circ}$.

LIBETHRA, in Arcient Geagraphy, a town of Greece, placed by Paulanias on mount. Olympus, on the fide of Macedonia. M. d'Anville places it upon the river Sus, at a fmall diftancé from Heracleum, which lay to the calt, 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 deltroyed by an inundation of the river Sus.

LIBETHRIDES, in Mytbology, a furname given to certain nymplis which were fuppofed to inhabit near mount Libethra in Bueotia, which was diltant about 40 lladra from Coronsa; and the Libethridian fountan, in Theflaly, led the poets to call the Mules by this name. Virgil, Eclog. vii. v. 21.

LIBICI, in Ancint Geograpisy, a people of Italy, who were planted eaftward of the Salaffi, in a diftrict now called the lordfhip of Vercelli. Vercellse, or Vercelli, the capital, ftood ou the right bank of the Seflites, now Selia, between Turin and Milan. Ietimulum, 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 to Apollo.
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 Chrudim; 13 miles N . of Chrudim.

LIBITINA, in the Roman Mythology, a goddefs which pretided over funerals. This goddefs was the fame 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 perfon who died, whofe name was recorded in a regilter called Libitinæ ratio. This practice was eltablifhed 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 increafe or decreafe of its inhabitants.

LIBITUM, in Mufic. Sometimes, in the courfe of a compofition, the Latin words ad hlitum occur, which fignify, at the pleafure of the principal performer, who is at liberty to do what he pleafes, in order to manifeft his fancy, tatte, and execution; and to return to the text of the compofer whenever he pleafes: as to the reft 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 lilitum is, that a cadence, or ciofe, is terminated by a fhake, whereas an ad libitum may be allowed to the performer by the compofer, at any part of the piece he pleafes. Thefe Latin words are likewife joined to fome inftrument of accompaniment, in the title page of a work ; as at the beginning of a piece, to fay that fuch an inttrument is non obligato, or not abiolutely neceffary; as in a fymphany, when the corni, or French horns, may be difpenfed with; and in a compofition for a pianoforte, when the violin has no folo parts or paffages, that will be miffed, notice is then given by the words corni ad livitum, 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 ifland in the Eaft Indian fea; on the S.E. coalt of Gilolo. S. lat. $10^{\circ} 4^{\prime \prime}$. E. long. $128^{\prime 2} 5^{\prime}$.

LIBOCH, a town of Bohemia, in the circle of Leitmeritz; 14 miles S.E. of Leitmeritz.

LIBONA, in Ancient Cecouraply, a town of Spain, in Celtiberia. Pitolemy.
LibONATI, in Gcography, a town of Naples, in Principato 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 Phyfiology, one of the twelve winds of the ancients. See Wixis.

LIBORA, in Ancient Gcography, a town of Spain, in the Tarragonenfis, in the country of the Carpetaniars; lituated on the Tagus, N.E. of Augultobriga, and almoft bordering on Lufitania.
LIBOURNE, in Geography, a town of France, in the department of the Gironde, and principal place of a diltrict. The place contains 8076 , and the canton 17,370 inhabitants, on a territory of $117 \frac{1}{2}$ kiliometres, in nine communes. N. lat. $44^{\circ} 55^{\prime}$. W. long. $0^{\prime} 9^{\prime}$.
LibkA, Balance, one of the mechanical powers. See Balavef.
Libra is one of the twelve figns of the zodiac; exactly oppolite to Aries; fo called becaufe when the fun is in this fign, at the autumnal equinox, the days and niglits are equal, as if weighed in a balance.
The ftars in this conitellation, according to Ptolemy, are feventeen; Tychoten; Hevelius twenty; and Flamflead fifty-one. See Constellation.

Libra alfo denotes the anciert Roman pound, borrowed, as fome have faid, from the Sicilians, who called it litra, 2.0pos.

Mr. Pinkerton (Effay on Medals, vol. i. § 7.), though he allows that the Greek pound in Sicily was called גnise, as it was in Greece, and divided into 12 ovyraus, or ounces, and that the Roman word libra is derived from the Greek $\lambda$ niez , will not admit the as or libra, a coin, to have been deduced from a Sicilian medal. The Sicilians had a coin called $\lambda .0 \eta_{\mathrm{g}} x$, but it was of tilver, and equal to the obolus of the Eginean ftandard, ten of which conftituted the Sicilian eiskerifigove The Syracufans, it is :vell known, were the clief people of Sicily, and they were a colony from Corinth. Gronovius takes pains to prove, that the flandard of Egina was ufed at Corinth, and of courfe in Syracufe; but all the Corinthian coins now remaining are upon the Attic model, which circumItance at once confutes all his arguments; and it appears from Ariltotle, as quoted by Pollux, that the Sicilians had a money talent, or flandard, of their own. The $\lambda$ 佔 $x$, or Sicilian filver obolus, contained alfo, like the Roman primitive $a s, 12$ coyxsxs, or chalci, fo callied at firft becaufe they weighed an ounce, but afterwards becaufe twelve of them went to the filver $\lambda \eta_{\rho} x$, as twelve ounces to the pound. It
 Varro fpeaks, when he fays it was of filver; and not of the Roman libella, or as, which we may fafely fuppofe was never ftruck in that metal. For after the Punic wars, of which Sicily was the grand fcene, the Sicilian coins muft have been frequent at Rome, and the Roman in Sicily. But the Greeks, or Phoenicians, 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 muft be granted, that the Sicilians had their own ftandard, it yet bore a refemblance of the Greek ; their $\lambda r i j^{\circ} \alpha$ being equal to the Eginean obolus,
 be fuppofed that when the Greek brafs coinage was always of: the moft minute form, they mould cois pieces of that metal weighing

## LIB

weighing a pound. Mr. Pinkerton cannot agree in opinion with thole, whottrenuoufly maintain, that the Roman filver denarius owes its origin to the Sicilian $\Delta$ enzinifor. 'I'he $\Delta$ exa $\alpha \lambda_{\text {ifgov, }}$ containing 10 入injx, or Egina oboli, would weigh about iso graius, 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 convineed, that the Romans did not derive one idea of their coinage from Sicily; but that the Sizilians had their $\lambda \hat{H}_{3} x$, divided into 12 ovyabas, from the Etrufcans; though, according to the more elegant Greek plan, they made the firlt a fmall coin in filver, and never ftruck any brals coin larger than the curxazs, or piece of an ounce weight ; if, indeed, the Sicilians had not this idea of I2 oujwas to the inigx from the Romans themfelves, which is much more probable, than that the Romans had it from Sicily. It is a further and Itron;er argument againft 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 divifions, in the very finalleft degree. This argument Mr. Pinkerton deens to be conclufive. Befides, in moft cabinets there are Etrufcan coins upon the exact feale of the As libralis, and of its feveral parts; whence it follows of courfe, that thefe, and thefe alone, muit have afforded a pattern to the primitive Roman coinage. The Etrufcaus, to whom the moft ancient brais coins found in Italy are known to belong, are more a colony from Lydia, a country to which Herodotus afcribes the firft invention of coinage. Sce Convage.

The libra was divided into twelve uncix, or ounces, and the ounce into twenty-four fcruples.

The divifions 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 feptunt. , feven; the bes, eight; the dodrans, nine ; the dextans, ten; deunx, eleven; latly, the as weighed twelve ounces, or one Kbra.

Learned writers are not agreed as to the true weight of the Roman pound. Villalpandus and Greaves, relying on the congius of Vefpafian for its flandard weight, have from hence attempted to determine this intricate queftion. This Roman congius contained ten pounds weight of wine; Villalpandus foend by filling it to the narrow part of the neck, with fpuing waler, that it contained jult ten modern Roman pounds, which are equal to 52560 Troy grains. Azout filled it to the fame height, and, having weighod its contents twice, found a refult very nearly agreeing with Greaves's meafure, itated by Millet, in Phil. Tranfo vol. li. p. 790. His greater weight was 63024 Paris grains, equal to $51699 \frac{3}{8}$ Troy; his leffer, 62760 Paris grains, equal to $51482 \frac{4}{3}$ Troy. The mean between both is $51591{ }^{\mathrm{r}}$. Troy grains, which, divided by 10 , give 5159 ITO $^{\circ}$ 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, ulii infra, has collected into one view; from which he infers, that it is more probable, that this flandard fhould give too great a Roman pound, than too fmall a one. But as the relult from hence mult be uncertain, he has recourfe to the coins. Having weighed nine gold pi ces in the Pembroke collection, containing $34 \frac{1}{2}$ Roman fcruples, he found their weight to amount ta 608 Troy grains, which divided by $3+\frac{1}{2}$, give $17 \frac{18}{\frac{1}{5}}$ for the fcruple, whence the Roman pound hould weigh $5075^{\frac{1}{3}}$ grains. From fome other coins of the fame kind, a feruple appears to be $17 \frac{\pi}{2}$ grains. Inftead of this fcrupular ftandard, an-
other was introduced by Sylla; ard from the heavieft of four pieces of this ftandard, allowing thirty of them to have been coined out of the Romitn pound, its weight is found to be 50.40 graius. The flandard of forty in the pound, mentioned by Pliny, fucceeded this of Sylla, and continued to the eftablifhment of the monarchy under Augultus: and froma ten different coirs of this itandard, he deduces a mean aureus of $126 \mathrm{I}_{\mathrm{T} 7}^{\frac{8}{7}}$ grains ; and fuppoling the aureus of forty in the pound to weigh 526 Troy grains, the Roman pound muft weigh 5040. In Pliny's time forty-five aurei were Atruck out of the pound; and the mean aureus from Nero to Titus, in whofe reign Pliny died, was under 112 grains: and if the tlandard weight of the imperial auress 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 whofe time the aureus came to be called folidus, the coinaze became very irregular, till Conftantine entirely modelled it anew, by coining feventy-two folidi of four fcruples out of the pound of gold. From twenty-nine of thefe folidi in the interval from Contantine to Heraclius, it appears that the mean weight is 69 grains, which, multiplied by 72 , gives but 4958 grains for the Roman pound. But if the flandard 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 fcruple will weigh $17 \frac{1}{2}$ grains; the confular aureus 126 ; the imperial aureus 112 , and the folidus $; 0$; and the confular denarius of 84 in the pound will weigh jult 60 Troy graius. (Phil. Tranf. vol. lxi. part ii. p. 462, \&c.) The common Roman pound, till ufed at Rome, confifted of 12 ounces, of 458 grains each, equal to ose ounce avoirdupois; but the money ounce feems to have had only 420 Troy grains in the pound 5040. See farther on this fubject the articles Devarids and Miliarevsis.
The Roman libra was ufed 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 livere.

Libra Penfit, in our Law Books, denotes a pound of money in weight.

It was ufual, in former days, not only to tell the money, but to weigh it; becaufe many cities, lords, and bifhops, having their mints, coined money, and often very bad too ; for which reafon, though the pound confitted of twenty fhillings, they always weighed it.

LIBRARII, among the ancients, were a fort of copyifts, who tranfcribed in beautiful, or at leaft legible, characters, what had been written by the notarii in notes and abbreviatures.

LIBRARY, an edifice or apartment deftined for the placing of books; or the collection of books themfelves lodged therein. -See Book.

Some authors refer the origin of libraries to the Hebrews; and obferve, that the care thefe took for the prefervation of their facred books, and the memory of what concerned the actions of their anceftors, became an example to other nations, particularly to the Egyptians. Ofmanduas, king of Egypt, is faid to have taken the hint firft ; who, according to Diodorus, had a library built in his palace, with this infeription over the door, 世XXHE IATPEION. Nor were the Ptolenies, who reigned in the fame country, lefs curious and magnificent in books.

## LIBRARY.

The feripture allo fpeaks of a library of the kings of Perfia, Ezra, v. 17. vi. I. which fome imagine to have confifted of the hiltorians of that nation, and of memoirs of the affairs of ttate; but in effect it appears rather to have been a depofitory of laws, charters, and ordinances, of the kingss The Hebrew text calls it the boufe of : ireafures, and afterwards the boufe of the rolls, where the treafures were laid up. We may, with more juitice, call that a library, mentioned in the fecond of Efdras to have been built by Nehemiah, and in which were preferved the books of the prophets and of David, and the letters of their kings.

The firtt who erected a library at Athens, was the tyrant Pifiltratus ; and yet Strabo refers the honour of it to Ariftotle. That of Piiftratus was tranfported by Xerxes into Periia, and was afterwards brought back by Seleucus Nicanor to Athens. Long after, it was plundered by Sylla, and re-eftablihed by Hadrian. Plutarch fays, that under Eumenes there was a library at Pergamus, containing two hundred thoufand books. Tyrannion, a celebrated grammarian, contemporary with Pompey, had a library of three thowfand volumes. That of Ptolemy Philadelphus, according to A. Gellius, contained feven hundred thoufand, all in rolls, burnt by Crefar's foldiers. See Alexandrian.

Conftantine, and his fucceffors, erected a magriificent one at Conitantinople; which, in the eighth century, contained three hundred thoufand volumes, all burat by order of Leo Ifaurus: and, among the reft, one in which the Iliad and Odyfley were written in letters of gold, on the guts of a ferpent.

The molt celebrated libraries of ancient Rome, were the Ulpian, and the Palatine. They alfo boaft much of the libraries of Paulus Æemilius, who conquered Perfeus ; of Lucilius Luculus, of Afinius Pollio, Atticus, Julius Severus, Domitius, Serenus, Pamphilus Martyr, and the emperors Gordian and Trajan.

Anciently, every large church had its library ; as appears by the writings of St. Jerom, Anaftafius, and others. Pope Nicholas laid the firft foundation of that of the Vatican, in 1450. It was deftroyed by the conitable Bourbon in the facking of Rome, and reftored by pope Sixtus $V$. and has been confiderably enriched with the ruins of that of Heidelberg, plundered by count Tilly in 1622 . One of the moft complete libraries in Europe, was faid to be that ereeted at Florence by Cofmo de Medicis; over the gate whereof is written, Labor absqve labore: though it has been fince exceeded by that of the late French king ; begun by Francis I., aúgmented by cardinal Richelieu, and completed by M. Colbert.

The emperor's library at Vienna, according to Lambecius, confirts of eighty thoufand volumes, and fifteen thoufand nine hundred and forty curious medals.

The Bodieian library at Oxford, built on the foundation of that of duke Humphry, exceeds that of any univerfity in Europe, and even thofe of all the fovereigns of Europe, except the emperor's, and late French Ling's, which are each of them older by a hundred years. It was firt opened in 1602 , and has fince found a great number of benefactors; particularly fir Robert Cotton, fir H. Savil, archbifhop Laud, fir Kenelm Digby, Mr. Allen, Dr. Pococke, Mr. Selden, and others. . The Vatican, the Medicean, that of Beffarion at Venice, and thofe juft mentioned, exceed the Bodleian in Greek manufcripts ; which yet outdoes them all in Oriental manuicripts.
As to printed books, the Ambrofian at Milan, and that of Wolfenbuttle, are two of the molt famous, and yet both inferior to the Bodleian.

Library, Kimg's, at St. James's, was founded by Hensy, eldeft 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 Ifaac Cafaubon, and shers.

Library, Cottonian, originally confited of nine hundred and fifty-eight volumes of original charters, granss, intruments, letters of fovereign princes, tranfations between this and other kingdoms and flates, gencalogie', hillorivs, regitters of monafteries, remains of Saxon laws, the book of Genefis, thought to be the moft 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 Adexandruax.) This library is kept in the Britinh Mufenn, with the large and voluable library of fir Hans Sloane, amounting to upwards of fortytwo thoufand volumes, \&c. There are many public libraries belonging to the fevrral colleges at Oxford and Cambridge, and the univerfitics in North Britain. 'The principal public libraries in London, befide that of the Mufeum, are thofe of the College of Heralds, of the College of Phyficians, of Doctor's Commons, to which every biflop, at the time of his confecration, gives at lea!t 201 . fometimes $50 \%$ for the purchafe of books; thofe of the Gray's Inn, Lincoln's Inn, Inner Temple, and Middle Teirple; that of Lambeth, founded by archbifhop Bancroft in 1610, for the ufe of fucceeding archbihhops of Canterbury, and increafed by the benefactions of archbifhops Abbot, Sheldon, Tenmifon, and Secker, and faid to confilt of, at leaft, fifteen thoufand printed books, and fix hundred and feventeen volumes in manufcript ; that of Red-Crofs threet, founded by Dr. Daniel Williams, a prefoyterian divine, and fince enriched by many private benefactions, and by an annual fum appropriated to its increafe ; that of the Royal Society, called the Arundelian or Norfolk library, becaufe 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 Norfolk; in 1666; which library has been increafed by the valuable collection of Francis Afton, efq. in ${ }_{17} 75$, and is continually increafing by the numerous benefactions of the works of its learned members, and others; that of St. Paul's, of Sion Colltge, 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 Weftminfler library, the library of the Royal Intitution, incorporated in 1800 ; the library of the London Talitution, eltablifhed in 1805, thefe of the Surry Inititution and Ruffell Infitution, \&cc. \&c.

Where a library is erectel in any parifh, it thail be preferved for the ufes directed by the founder; and incumbents and minifters of parifhes, \&c. are to give fecurity for it, and make catalogucs of the books, \&c. None of the books faall bealienable, without confent of the bifhop, and then only when there is a duplicate of fuch books. If any book fhall be taken away and detained, a jultice's warrant may be iffued to fearch for, and reltore the fame: alfo, a Sion of trover may be brought in the name of the proper ordinary, \&e. And bilhops liave power to make rules and orders concerning libraries, appoint perfons to view their condition, and enquire of the ftate of them in their vifitations.. (Stat. 7 Anne, cap. 14.) . Bray's Inflitution for parochial libraries is under the direction and management of a number of affociates, a treafurer and fecretary. See the biographical article Thomas Bray.

Library, Mufical. Dr. Burney complains, in the fecond vol, of his General Hittory of Mufic, p. 44t, that in

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his travels through France, Italy, Germany, Holland, and the Netheriands, in fearch of materials for his work, he was able to tind no complete mufical library. "Something like a chain or feries of mufical theoritts (he fays) may perhaps be found at Vienna, where the emperor Leopold I. began to form a mufical 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 confufed and inperfect ftate. Nor is a complete feries of mulical compofitions by the beft mafters, from the carlieft period of counterpoint to the prefent time, to be found in any public or private library in Europe, to which I have ever had accefs. Indeed the collectors of books for royal, collegiate, or public librarics, feem never to have had an idea of forming any regular plan for making fuch a collection; and though many individuals have been poffeffed 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 clafs or fpecies of compolition has been completed by them, and even this, at the death of the proprietor, is ufually difperfed.
"In a library, formed upon fo large a fcale as that of the king of France at Paris, the Bodleian, and Mufeum in England, it feems as if mufic fhould 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, fpecimens at lealt of every great painter are purchafed, and no private library is thought complete while the writings of a lingle 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 Ecyclopódie Methodique, we fhall 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 hittorian, and afford a comparative view of the flate of the art at every period of its exiftence, it were to be wifhed that the books, when collected, were claffed in a way fomewhat like the following:
\(\left.\left.$$
\begin{array}{l}\text { Maffes } \\
\left.\begin{array}{l}\text { Motets } \\
\text { Madrigals } \\
\begin{array}{c}\text { Songs in parts, } \\
\text { and fingle fongs }\end{array}\end{array}\right\} \text { to Latin words, }\end{array}
$$\right\} \begin{array}{l}In modern lan. <br>

guages,\end{array}\right\}\)| From the infancy |
| :--- |
| of counterpoint to |
| the year 1500. |

The fame continued to the year 1600 ; to which floould be added:
Services and full anthems
Verfe and folo anthems Pfalmody, in two or more parts


The fame claffes completed to the year 1700, with the addition of mafques, intermezzi, ferenatas,

Operas, ferious and comic.
Oiatorius.
Cantatas.
Fantalias and Recercari, for various inftruments.
All the above continued to the prefent time, with an ad-
tien of full ditien of full

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Sonatas, or trios, ducts, and
Solos for every inftrument for which mufic lias been eome pofed, including voluntaries for the organ, and leffons for every fpecies of keyed inftrument.
The mufic publifhed in fingle parts fhould be fcored, and that publifhed in partition tranfcribed, in fingle parts; to be alike ready for the eye or the ear, for the theorift to exa. mine, or the practical mulician to perform.
And in order that fcience and criticifm may keep pace with the mechanifm and practice of the art, all the treatifes, tracts, and eflays, both in the dead and living languages, flould be collected, arranged chronologically, and afligned a particular portion of the library.

The Bodleian library, the Mufcum, and Royal Society, with fome other libraries, have copies of new books fent to them, by the Stationers' company, and by individuals either by law or by courtefy; and when once fuch a foundation of old mufic is laid as we have here fletched out, it would foon become a cuftom, or might be made one by the legillature, for copies of all mufic that is publifhed in England, as well as books on the fubject, to be prefented by the authors or editors to the public library. And the fame means mould be ufed for procuring all foreign mufieal publications as are employed in accumulating books from all parts of the globe, where the prefs is at work.
The librarian, cuflode, or kecper of thefe books, fhould be a good practical mufician, as weil as theorift and fcholar, in order to know the worth of the productions he has in charge, and to be enabled to give inftructions at lealt how to draw fingle parts from a fcore, and fcore fingle parts; to explain difficulties to the ignorant, and difplay curiofities to the learned; to know the rank each compofer fhould hold in every clafs, and perhaps record the degree of refpect that has been paid to him by his contemporaries, and which is due to him from polterity.
LibratA Terre, a portion of ground, containing four oxgangs, and every oxgang thirteen acres.

It was anciently fo much land as was yearly worth 20 . 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 obferved in the divifion of laads; and, therefore, as quadrans fignifies a farthing, fo 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 fame with what in Scotland is called pound-land of old extent.

LIBRATION of the Moon, in Affronomy. Few perfons are unacquainted with the remarkable circumftance, that the moon always prefents nearly the fame face to the earth. Sometimes, however, we fee rather more of the eaftern, and fometimes rather more of the weftern hemifphere than at other times. The fame occafional variation is likewife obfervable in the north and fouth hemifpheres. This fenfible ofcillation, partly real and partly apparent, is called the libration of the moon.

Galiteo was the firft aftronomer who obferved and attempted to explain the libration of the moon; his explanation was, however, very imperfect, not being aware that the moft confiderable part of the libration arifes from the unequal motion of the moon in its orbit, as was firft difcovered by Hevelius in $165+$ Laplace gires the following popular explanation of the aftronomical appearances connected with the libration. For the phyfical explanation the reader is re-
ferred to a memoir of Lagrange (Memoires de l'Academie). which obtained the prize in 1764 , and likewife to the Berlin Memoirs, 17 M 0 , in which the lame author has inveftigated this fubject at great length.

To form a juit idea of the principal caufes of this phenomenon, we thould conlider the difk of the moon, when feen from the centre of the earth, as terminated by a great circle of the lunar glube, perpendicular to its radius vector (a line joining the centres of the earth and moon); on the plane of this great circle, that hemifiphere of the moon which is prefented to the earth is projected, and the various appearances of this hemifpheye are connected with the rotatory motion of the moon on its axis. If this motion did not exit, its radius vector would trace a great circle on its furface, every part of which would be fuccefively turned towards us, during every lunar revolution. But at the fame time that the radius vector would defcribe this circumference, the moon, by its revolution, brings very nearly the fame point of its furface to the radius, and confequently turns the fame hemifphere towards the earth. The inequalities in the moon's motion produce fome flight variation in the appearance of this hemifphere; for as the motion of rotation does not partake perceptibly of thefe inequalities, it is sariable with refpect to the radius vector, which thus in terfects its furface at different points. The lunar globe, therefore, makes, with refpect to this radius, ofcillations correfponding to the inequalities of its motion, which caufe fome part of its furface to be alternately concealed, and expofed to our obfervation.

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 fuppofe the axis of rotation to be perpendicular to the ecliptic. When the moon is in its afcending node, thefe two poles will be at the northern and fouthern extremity of the vifible hemifphere. In proportion as the moon is raifed 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 vifible, till the moon, having arrived at its greatelt northern latitude, will return again towards the ecliptic. Thefe phenomena will then be reproduced in the reverfe order; and when the moon, having reached its defcending, node, paffes below the ecliptic, the north pole will prefent the fame phenomena as the fouthern 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 underftood by fuppofing the moon to move upon the plane of the ecliptic, fo that its axis Thould always remain parallel to itfelf; it is obvious that then each pole will be vifible during half a revolution of the moon round the earth, and invifible during the other half, fo that the regions which furround them will be alternately vifible and in. vifible.

And laftly, the obferver is not at the centre of the earth but at the furface. It is the vifual ray drawn from his eye to the centre of the moon, which determines the middle of the vifible hemifphere, and it is clear shat from the effect of the lunar parallax, this radius cuts the furface of the moon at different points, according to its height above the horizon.

All thefe caufes produce only an apparent libration of the lunar globe; they are mére optical illufions, and do not affect its real motion of rotation; it is neverthelefs true, that this rotation may be fubject to fome fmall irregularities, but they have not yet been detected by obfervation.

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It is not the fame with the inequalities of the lunar equator. In endeavouring to deternine its pofition by obfervations of fpots on the moon, Donimique Caffini was led to this remarkabe refuit, which contains all the attronomical theory of the real libration of the moon. If we conceive a plane to pafs through the centre of the moon, jicro pendicular 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 plates will always have a commor interfection. The fesurei plane, fituated between the two others, forms with the firit an angle of about $1^{\circ} 30^{\prime} 10^{\prime \prime}$, and with the fecond, an angle of $5^{\circ} 8^{\prime} 49^{\prime \prime}$. Thus the interfections of the Junar orbit with the ecliptic or its nodes, always coincide with the mean nodes of the lunar orbit, and, like them, have a retrograle motion, whofe period is $18^{y} 223^{3} 7^{n} 13^{\prime} 17^{\prime \prime} \cdot 7$. In this interval the two poles of the equator and of the lunar orbit defcribe fmall circles parallel to the ecliptic, in fuch a manner, that thefe three poles are conitantly fituated on a great circle of the beavenly fphere.
Libiation of the Earth, is a term applied by fome aftronomers to that motion, whereby the earth is fo retained in its orbit, as that its axis continues conftantly paraliel to the axis of the world. See Parallelism.

This Copernicus calls the motion of filration; and may be illuftrated thus: Suppofe a globe, with its axis parallel to that of the earth, painted on the flag of a maft, moveable on its axis, and conitantly driven by an calt wind, while it fails round an ifland; it is evident, the painted globe will be fo librated, as that its axis will be parallel to that of the world, in every fituation of the fihip.

LIBSHAUSEN, in Geography, a town of Bohemia, in the circle of Leitmeritz; 15 miles S.W. of Leitmeritz.

LIBUN, a town of Bohemia, in the circle of Bolellaw; 16 miles N.E. of Jung-Buntzel.

LIBURNIA, in Ancient Geography, a province of Illyria, along the Adriatic fea, over-againtt Italy, between Dalmatia on the fouth, and Iftria on the north. This peninfula runs into the fea between the rivers Tedanius and Titius, now the Zermague and Kerka, the latter of which was in the Reman 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 defert 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 firft people who penetrated into Italy by its northern part, about the fixteenth century before the Chriftian era, and in procefs of time fettled along the fea-coaft. In Italy they were divided into three branches, wiz. the Apuli, the Pxdiculi, or Padicli, 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, Numidja, Mauritania, Libya or Africa interior, Ethiopia, \&c.; and bounded on the N. by the Mediterranean, on the E. by the ifthmus 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 Atlantic fea. In a more reltricted fenfe, the name has been ap. plied to that divifion of Libya or Africa called. "Li-

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bya Interior," which lay weftwards with regard to the other divilicn of P'tolemy denominated Ethiopia fub Aigypto. The line of divifion between thefe two parts, marked by this geographer, paffes through Darnis, a city on the confines of Cyrenaica. In this weftern part, called Libya interior, the inhabitants confilted chiefly of the Gxtuli, Garamantes, Nigritx, and Hefperian Ethiopians, befides many other people, lefs confiderable and lefs known. See Geetulia, Garamantes, and Ethiopia.

Libys, a town of Hifpania'interior. Anton. Itin.
Libya Palus, a lake of Africa, properly fo called. Ptolerny.

LIDYARCHE, a people of Africa, in Libya, and more particularly in Marmarica, of which they occupied the northerm part. Ptolemy.

LIBYCUMMARE, or fea of Libya, a name given by the ancients to part of the Mediterrancan fea, which adjoined the coaft of the Marrotide Libya; bounded on the W. by the fea of Africa, and on the E. by the fea of Egypt.

LIBYCUS Moxs, a mountain of Egypt, near the city. of Thebes. The Nile ran between this mountain and the sacred mountain.

LIBYPH ENICES, a name given by fome authors to the Phoenician colonies eftablifhed in Africa, in contradiftinction to the Syro-phernicians, or the Phenicians of Afia.

LIBYSSA, a maritime town of Afia, in Bithynia, fituated between Chalcedonia and Numidia. It was the place of Hannibal's retreat for avoiding the hatred of the Romans.

LICANIA, in Botany, Aublet. Guian. 119. t. 45. See Hedscrea.

LICAVO, in Geograppy, a town of the ifland of Cor. fica; 20 miles E . of Ajazzo.

LICE. See Louse.
Lice of trees. See Aphis.
LICEA, in Botany, a genus of Furgi, Schrad. Nov. Gen. 16. Perf. Syn. 195, the fpecies of which have been, fome of them, referred to Trichia, Spherocarpus, (not the true Sphurocarpus of Micheli, which belongs to the order of Alga), and Didymium. Its charaster is thus given by Perioon.

Peridium, (or cafe, ) naked, roundih, or fomewhat indeterminate in fhape, brittle. Internal membrane wanting. Seminal pozeder deftitute of fibres.

The ipecies he enumerates are five, all very minute productions, fcarcely bigger than pins' heads, found chiefly on rotten wrond of the fir kird.
I. L. bicolor, the firlf fpecies, (Didymium parietinum; Schrad. Nov. Gen. 24- t. 6. f. 1.) is fingular for being found on white-wafhed mud walls. Its outer cafe is dark olive, enclofing a quantity of bright yellow powder, which, according to Schrader's generic character of Didymium, fhonld be intermixed with fibres. Within is amother, much fnaller, brown, likewife globular, rather hard and rough cafe, full of a coarfer brown powder.
2. L. circumfcifor (Spherocarpus feffilis; Bulliard t. 417. f. 5.), is brown and cluttered, opening by a circular divifion. Found in authinn or winter, between the bark and wood of the Afpen-tree.
3. L puflla, Schrad. Nov. Gen. 19. t. 6. f. 4, is hemiPpherical, polifhed, chefnut-coloured, with a blackifh powder.
4. L. varialifis, ibid. 1S. t. 6. f. 5, 6, is varions in fyare and colour, reddifh-brown; the powder dirty yllow.
5. L. flexuofa, is defcribed by Perfoon as creeping or

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oblong, fhining red brown, fomewhat wavy, with faw like incifions. Thefe three laft are found on fir wood.

Some of Schrader's fpecies are removed by Perfoon to other genera. Albertini and Schweiniz, in their Confpectus Fungorum, have defcribed two new fpecies.
L. flrobilina, n. 303. t. 6. f. 3, found on the inner fides of the feales of cones of Pinus Picea, growing regularly in clutters, brown, with a dull yellow powder.
L. incarnata, n. 304.t. 10.f. 6, obferved once only, on rotten fir wood in a moilt foreft, the beginning of October. It is crowded, flefh-coloured with a fteely glofs ; the powder at firlt white, then flefl-coloured, finally deep rofecoloured.

Licence, Licentia, in Law, a power or authority given to another to do fome lawful act.

A licence is a perfonal power, and cannot be transferred to another; though a licence may be granted to a man and his affigns. ( $x_{2}$ 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 paffes no intereft. (2 Nelf. Abr. 1123.) By licence a man may practife phyfic and furgery in Lundon: licences are allo neceffary for carrying on various trades and profeffions, on which a duty is laid, for the purpofe of raifing a revenue to government. If a Ieffor licenfe his leffee (who is reftrained by covenant from aliening without licence) to alien; and fuch leflor dies before he aliens, this is no countermand of the licence: fo it is if the leffor grants over his eftate. (Cro. Jac. 133.) But where a lord of a manor for life granteth a copyhold tenant to alien, and dieth, the licence is deftroyed, and the power of alienation ceafeth. ( 1 Init. 52.) Copyhold tenants lealing their copyhold for a longer time than one year, are to have a licence for it; or they incur a forfeiture of their eftates. (I Init. 63.) If any licence is given to a perfon, and he abufes it, he fhall be adjudged a trefpafer ab initio. 8 Rep. 146.

Licence to alien in mortmain. Alienations in mortma in to ecclefiatical perfons, \&c. are reftrained by feveral ftatutes; but the king may grant licence to any perfon or bodics politic, \&c. to alien or hold lands in mortmain. 27 Ed. I. 7 \& 8 W . III. cap. 37.
Licence is alfo ufed, in the Civil Lawv, for a permifion or leave granted by a fuperior.

Juftinian appointed four years to be fpent in the fudy of the law ; after which, thofe who had difcharged this obligation, were faid to have licence or permifion to retire from fludy.

Licence is alfo applied to the letters, or certificates, taken out in univerfities, whether in law, phyfic, or divinity.

Licence in the Sorbonne, denotes a period of two years, which the bachelors are obliged to pafs in affilting at acts, and difputing in them, to qualify themfelves for being admitted doctors. See Degree.
Licence, letter of. See Letter.
Licence to arije, in Law, Licentia furgendi, is a liberty, or fpace of time given by the court to 2 tenant, who is effoined de malo lecti in a real action, to rife out of bis bed, and go about his bufinefs.

Licence for elecion of biblops. See Conge d'Elire.
Licence of marriage. Bilhops have power to grant licences for this purpofe; and parfons marrying any perfon without publifhing the banns of matrimony, or without licence, incur a forfeiture of rool. \&cc. by 7 \& 8 W. III. cap. 35. See alfo flat. 26 Geo. 1I. c. 33. See Marariage.

Licence, in Painting, are the liberties which the painter
takes in diipenfing with the rules of perfective, and the other laws of this art.

Licence, poctical, 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 recourfe to the feveral dialects of their tongue, could lengthen out a word, if it were too flort, or retrench fomething from it, if it were too long. The old poets did what they pleafed with their language, and fubjected it not only to all their neceffities, but their caprices too:

> "Et data Romanis venia eft indigna poetis."

But thefe became ridiculous in courfe of time; and the poets are now defpoiled of molt of their ancient privileges.
Licence, in Mufic, a feeming breach of rule.
There are licences in harmony as well as in melody. As the laws of counterpoint were at firft arbitrary, and formed of narrow and contracted principles, they became fubject to change at the caprice or tafte of the compofer, and at all times, the breach of an old rule by a great nalter became the eftablifhment of a new one for a compofer of inferior fame. At prefent, except the two fundamental prohibitions of two 5 ths and two 8 ths in regular progreffion, there is no rule that has not been happily infriaged, 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 mufic. Of the difallowances of former times; there was none that feemed fo inviolable as falfe relation, fuch as naturals againft fharps, or fharps againft naturats: in the perfect concords, as a redundant 5 th, a diminifhed 4 th, or a falfe octave. Yet thefe licences, of late years, have been fo frequently practifed, as almoft to eftablifh them into rules. The good or bad efict determines the expediency.

If the effect be good, it is a licence, if bad, a faulto. Emanuel Bach, we believe, was the firit who ventured to hazard a falle 8th, or a farp. againft a natural in melody. But Haydn and Mozart having fince frequently violated the rule with effect, it almoft ceafes to be a licence, and every fonatteur in compofition affumes the fame privilege. Thefe licences, however, can only be defended on the principle of appogriaturas, as they are certainly inharmonic.

Lícensed Curate. See Curate.
Licensing of Books. See Liberty of the Preess, and
Printing.
Licentia Concordandr, in Law, is that licence for which the king's filver is paid in paffing 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 feaport, commanding them to let fuch perfons pafs over fea, who have obtained the king's licence for the purpofe. Reg. Orig. 193.

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 pafs licentiate in the common law, civil law, or phyfic, they mult have fludied feven years ; in divinity, ter.

Licentiate, among us, is ufually underfood of a phyfician, who has a licence to practife, granted him by the College of Phyficians, or by the bilhop of the diocefe.

A perfon practiting phytic withous fuch licence, in cafe
his patient dics under his hands, is guilty of felony in the eye of the law.

LICETO, Fortunio, in Biography, a celebrated phy-: fician and philofopher, was borin at Rapallo, in the itate of Genoa, on the 3d of of October, 1577, where his faw ther, Jofeph Liceto, was alfo a phyfician. His education was conducted with great care, and he afterwards fpent four years in ftudy at Bologna, which he quitted in 1599. He then futtled at Pifa, where he foon obtained the profefforflhip of philofophy, which he filled with fo much reputation, that he was invited to the fame chair in the univerfity of Padua in 1609, which he occupied until 1636. He removed at that time to Bologna, in confequence of failing to obtain the profeflorfhip of medicine, which became vacant by the death of. Cremonini. But the Venetian Itates very foon perceived, and acknowledged the lofs which the univerfity of Padua had fultained by the retirement of Liceto; and when a vacancy occurred in the firtt chair of the theory of phyfic in 1645 , he was induced, by the preffing invitations which were made to him, to return to Padua, where he held the profeflorfhip, at an advanced falary, till his death in 165\%. He was a very copious writer, having publifhed upwards of fifty treatifes upon medical, moral, philofophical, antiquarian, and hifterical fubjects; but they are no longer fufficiently interefting to require a detail of their titles. He was a man of confiderable erudition, and an ardent admirer of the doctrines of Ariftotle; but difplayed little acutenefs in refearch or originality of conception. He wrote a treatife "De Lucernis Antiquorum reconditis," in which he maintains the opinion, that the ancients were poffeffed of a fecret procefs for making inconfumable lamps, by fome mode of condenfing the vapour into oil, which returned to the refervoir, and was extremely credulous in refpect to the pretended difcoveries of fepulchral lamps of this fort. But his opinions were pofitively refuted by profeffor Ferrari of Padua, in a treatife, "De veterum lucernis fepulchralibus." Among his medical writings, his treatife, "De Monftrorum Caufis, Naturâ, et Differentiis," is beft known; but it is replete with inflances of credulity, and with the fables and fuperftitions of his predecefiors, and contains a claffification of the monfters, which had been previoufly defcribed, without any correction from his own obfervations. The belt edition is that of Gerard Blafius, in 1668. Eloy Dict. Hilt. Gen. Biog.
Liceto, in Ornithology. Sce Cenotzqut.
LICH, in Geography, a town of Gersany, in the principality of Hohen-Solms, on the Wetter; 12 miles E.S.E. of Wetzlar. No lat. $50^{\circ} 3 \mathrm{I}^{\prime}$. E. long. $8^{3} 49^{\prime}$.
LI.CHAN, a town of Corea; 17 miles E.S.E. of Het-fin.

LICHANOS, in the Ancient Muyfic, is the name of the 3 d found of the two loweft tetrachords in the fyftern of the Greeks; as this found was produced by the index or forefinger, which was called licbanos.. The 3 d found of the loweft tetrachord afcending, 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-meforo or Mefon diatonos.
LICHEN, in Botany, $\lambda_{\text {anx }}=1$, a name borrowed by the Romans from the Greeks for the difeafe called a tetter, or ringworm, and applied by both to fome plant of a moffy nature, growing on ftones, which was thought a cure for fuch complaints. What the Lichen of the ancients may have been is very obfcure, and the enquiry is given up by

Dilleuius

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Dillenius himfelf in defpair. He lass applied this name to the Marchantiu of other writers, under which he comprehends the very diftinet genera of Targionia, Riccia and Sphosrocarpus ; fee his b. 78. Linneus much more happily adopts the Lichen of Tournefort and Micheli, whofe crultaceons and fcurfy nature, in many inflances, is affociated with the original idea of the word. This Dillenius terms Lichenoides, from which he dittinguifhes Coralloides and Ufinca, but all three are comprehended in the Linuzan Lichcn.-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, 3 1. Lamarck. Hluftr. t. 878. (Lichenoides; Dill. Mufc. 12+. t. 18-30. Coralloides; ibid. 75. t. 14-17. Ufnea; ibid. 56.t. 11-13.)-Clafs and order, Cryptogamia Alya. Nat. Ord. Alyes Linn. Juff.

Eff. Ch. Male, fcattered powdery warts ?-Female, fhields or tubercles, in whofe diik the feeds are lodged.

Obf. Linnxus takes for male what are now known to be the female flowers, and, vice ver $/ \hat{a}$, takes for the female thofe powdery heads, warts or fillures in the frond, which are by fome thought buds, by others the male blofioms. We have therefore ventured to reverfe his character of this valt genus, which properly embraces an entire natural order. (See Lichenes.) It is neceffary however here to give a compendious view of Lichen, as undertood by Linnxus. The fpecies defined in the 14th edition of his Syflema $V$ egetabilium amount to 130; but the infufficiency of this catalogue, to comprize all the Lichens in the world, will be ftrikingly evident, when we confider that about 345 Britifh Species have already appeared in Englifh Botany, and that feveral more remain to be publifhed there. We fhall on this occafion prefer illuftrating the nine fections, into which Linnæus has divided his genus, by fpecies of his own, rather than by new ones. Molt of thefe exilt in his herbarium, few or none of them being adopted from Dillenius or other cryptogamits, which cannot fo generally be faid of the Linnæan proper Mufci.

Sect. I. Leprofi tubercslati. Twenty-one fpecies.
Thefe confitt of a leprous perennial cruft, of more or lefs denfity, hardnefs and fmoothnefs, its furface often granulated, fometimes powdery, of various colours, (white, grey, greenifh, or yellowih,) in different fpecies; the internal fubttance however is generally very white, often with a green ftratum immediately below the actual furface. This etuft fpreads circularly, with more or lefs regularity, over ftones, rocks, earth, the bark of trees, or even dead wood, to which it frequently adheres fo ftrongly, that, being moreover in fome cafes very thin, it cannot be feparated entire. Fibrous roots, of the cartilaginous or chalky fubftance of the cruft, may be detected in fpecies that grow upon uneven bodies, or on the ground. The circumference or border of the cruft is always thin; often marked with a dark-coloured line; occafionally beautifully fibrous and branched. The central part firit decays, and finally crumbles away, young plants, of the fame or a different fpecies, foon afterwards fpringing up there from feed; while the marginal boundary of the original cruft, if its fituation be convenient for the purpofe, is fometimes extended to ten times its ufual limits.

The cruft of the thicker or tartareous fpecies, more efpecially, is liable to affume a red or purplifh hue, from the accefs of volatile alkali; which is feen when certain animal fubitances fall upon thefe plants in their native fituations. The obfervation of this has led to the ufe of fome of them in dyeng; but feveral of the next and following fections are preferable for this purpofe.-The female fruct.
fication, or rather the fruit itfelf, of this firf fection; is, or onght to be, convex, without any border ; except in a young flate, when there is ufually a thin margin of its own fubftance. The difk is moft frequently black, in fome brown, pale grey, or reddifh; and in its folid internal fubitance are innumerable, vertical, clofed cells, each containing about cight minute feeds. It may be obferved that the increafing convexity of this difk feems well calculated to allow room for the fwelling of the feeds; and finally, by feparating or expanding the cells, to promote the efcape of their contents. The fubjacent cruft, under each tubercle, is elevated into its core or centre, fo as to form a nucleus there.- Difcoveries fubfequent to the time of Linnxus have found this fection to be rather heterogeneous, as to the affinities of the feveral kinds, as will be explained hereafter. (See Licinenes.) Our purpofe is now merely to indicate the molt remarkable fecies, for the elucidation of our author.
L. fcriptus. Syft. Veg. ed. 14. n. I. Linn. Sp. Pl. 1606. (Lichenoides crultâ tenuiflimâ, peregrinis velut literis infcripta; Dill. Mufc. 128.t. 18. f. I. Opegrapha fcripta; Engl, Bot. t. 1813.)-Leprous, whitifh, bearing fmall, black, branched, letter-like lines. - Common on the fmooth bark of young trees. The $c r u / t$ is a fine, infeparable, whitifh film. The fructification conveys an idea of Hebrew or Chinefe writing, in a very ftriking manner. This plant however, as underftood by Linnzus, Dillenius, and moft of their followers till lately, embraces at lealt 30 known fpecies, together conftituting a moft natural and diftinct genus, of which we fhall fpeak hereafter more than once, under the name of Opegrapba.
L. geographicus. n. 2. Sp. Pl. 1607. Engl. Bot. t. $245 \cdot$ (Lichenoides nigro-flavum, tabulx geographicx inftar pictum; Dill. Mufc. 126. t. 18. f. 5.)-Leprous, yellowifh, with black lines refembling a map. - Frequent on the hard rocks of mountainous countries, and almoit as hard itfelf, at lealt to the touch, forming broad infeparable patches, of a vivid greenifh-yellow, or lemon-colour, curioufly Atreaked and dotted with black marks, compofed of the tubercles, which are flat, not elevated above the cruff, frequently confluent or crowded.

Of this fpecies, atrovirens, $n .3$, is thought to be a variety, or rather an early ftage of its growth.
L. fanguinarius. n. 9. Sp. Pl. 1607. Engl. Bot. t. 155. (Verzucaria fanguinaria; Hoffm. Pl. Lich. t. 41: f. I.)Cruft tartareous, white, polifhed, uneven. Tubercles black, without a border; bright red within.--Found on granite rocks; copioully upon Cromford Moor, Derbyfhire ; very rarely on the rugged barks of trees. This is extremely rémarkable for the internal ftains of bright red, perceived when the tubercles, and even fome parts of the crufl, are broken; which refembling blood, gave occalion to the very apt name. Several fpecies, deflitute of that property, and which otherwife but imperfectly refemble this, are confounded with it by Linnæus, Hudfon, Lightfoot, and others.
L. ventofus. n. 1\%. Sp. Pl. 1607 . Engl. Bot. t. 906. (L. cruentus; Web. Goett. 184. t. 1. L. flavefeens ; Jacq. Mifc. v. 2.79. t. 9. f. 1. L. gelidus ; Hudf. 528. Lichenoides tartareum lividum, fcutellis rufis, margine exili; Dill. Mufc. 133. t. 18. f. I4.)-Crult tartareous, rugged, pale fulphur-coloured. Shields irregular, a little fwelling, bloodred, with a narrow pale border. - Found on large expofed granite or fand-ftones, in mountainous places, forming patches as broad as the hand, eafily pared from the rock when moit. The cruft is of an elegant pale lemon or fulphur-colour, turning white the fecond year, but in either cafe it is ftrikingly contrafled with the crimfon/biclds. Thefe having a permanent border, of a different fubiltance and

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cotour from their dilk, are foields, not tubercles, fo that the -plant belongs properly to the fecond fection of its genus, of which we flall next give a few examples, and to which it is referred by Murray in Syft. Veg.ed. If, under Jacquin's name of fluvefcens, fo that it occurs twice in that edition.
$\mathrm{S}=\mathrm{Ct} .2$. Leproff futellati. Twelve fpecies.
The cruft of thefe is almoft univerfally tartarcous, fometimes very thick, lefs hard than in feveral of the former, and more eafily feparable from the ftones or bricks on which it may happen to grow. The effential difference refides in the fructification, which conlitts of flattin fhields, or, as Dildenius terms them, faucers, whofe elevated permanent margin is of the fubtance and colour of the cruft, not of the dik.
L. tartareus, n. 25. Sp. Pl. 1608. Engl. Bot. t. 156. (Lichenoides cruftaceum et leprofum, acetabulis majoribus luteis, limbis argenteis; Dill. Mufc. 132.t. 18. f. 13.)Crult tartareous, rugged, granulated, whitifh. Shields tawny bulf-coloured, with a white margin. -The largett of the crultaceous Lichens; very frequent upon rocks in the north, and important as an article of commerce. The diameter of the cruft is fix, eight or ten inches, and its thicknefs a quarter or half an inch. The /bields are frequently half an inch wide, confpicuous for their full buff colour, and white, fmooth, wavy border. This fpecies is much ufed in dyeing, being fcraped 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 flade of its own colour that may be delired, but does not dye vegetable fubitances. This colour is by no means permanent, being far inferior, in that refpect, to what is given by the Orchall of the Levant, Licben Roccella.
L. frigidus. n. 24. Swartz Meth. Mufc. 36. t. 2. f. 4 . Engl. Bot. t. 1879, found on the Scottifh mountains, is pretty generally believed to be a mere variety of tartareus, with a thinner cruft; but it feems to differ in throwing out תlender branched briltly proceffes, not found in the former.
L. Perellus. n. 32. Linn. Mant. 132. Engl. Bot. t. 727 , is like tartarcus on a fmaller fcale, with 乃ieields of the fame white colour as the crufl, and is ufed likewife for dyeing purplifh colours, chiefly in the fouth of France.
L. upfalienfis, n. 33. Sp?: P1. 1609. Engl. Bot. t. 1634, differs from Perellus as frigidus does from tartareus, in having flender awl-fhaped brifles protruded from the crult.
L. fubfuftus. n.-30. Sp. Pl. 1609. Engl. Bot. t. 2109. (Lichenoides cruftaceum et leprofum, [cutellis fubfufcis; Dill. Mufe. 134. t. 18. f. 16.)-Crult thin, continued, fmoothilh, brownih-white. Shields feffile, flightly convex, reddifh-brown, with a tumid, whitifh, entire border.-This is one of the thinneft, and ufually leaft tartareous, of the prefent fection, and is very common every where on the fmooth barks of trees, being diltinguifhed by its copious, bay or chefnut /bields, whofe white fmooth border renders them confpicuous. Their difk is fometimes curioufly prolifcrous, which happens alfo in tartareus. Sometimes it is parti-coloured, or mixed with a pale waxy hue, as if withered or abortive there. Numerous fpecies greatly refemble this, but have been diftinguifhed from it and from each other, generally very fuccefffully, by the acutenefs of the learned profeflor Acharius and others.

In this fame fection Limmeus places his candelarius, fee Engl. Bot. t. 1794, but improperly; doubtlefs from his having, at ous time or other ${ }_{3}$ confounded with it, as others
have done, the vitellinus of authors, Engl. Bot. t. 1792, and citrinus, t 1793. Thefe are all yellow in their crufl or frond, as well as the Joields of their margins; and ferve to give a golden colour to candles, ufed on fetival days in the Swedifle churches, by being mixed with the melted wax or tallow.

Some of this fection have a lobed, though not eafily feparable, crult, as lintigerus, n. 29. Engl. Bot. t. 871 ; and geclidus, t. 699 . The true /bields of the latter, whofe difk is of a fine pink colour, were not known to Limnaus, who miftook for the fructification of this rare fpecies certain brown warts, or proliferous excrefcences of the cruft, which he termed pelta; fee his Mantifa, 133. Having neverthelefs true fhields, it properly belongs to this fecond fection. L. mufcorum, n. 3 I. Engl. Bot. t. G26, on the contrary, having only a black and evanefcent border to its black convex tuberkles, thould have been placed in the firt.

Sect. 3. Imbricati. Thirteen Ipecies.
The plants of this fection do not confit of an adherent cruft, but approach more or lefs to a leafy ftructure, being either of a membranous, cartilaginous or gelatinous texture. The fegments fpread from a centre, lying over one another like tiles, the central ones being moft divided and elevated, the marginal part more depreffed, rather plaited than deeply cut, and moft dilated outwards. The two fides differ remarkably ; the upper being ufually either pitted, wrinkled, warty, or befprinkled with mealy cracks, but deftitute of hairs, and frequently polifhed, varioufly 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 ftones on which the plants grow. The fhields are horizontal, fcattered over the upper furface, to which they are attached chiefly by their central part. Their border is of the fubllance and colour of the frond; the dik fomewhat deeper in hue, and much inclined to a chefnut or tawny caft. The mealy warts or cracks in the upper fide of the frond are prefumed to be the male bloffoms, becaufe no other are known. This is a mifcellaneous and unnatural combination of fpecies, as will be explained under the next fection.
L. centrifugus. n. 34. Sp. Pl. 1609. Fl. Lapp. ed. z! 357 n. $44^{8 .}$ t. 11 . f. 2.-Imbricated, membranous; green-in-white and fmooth above; white, with brownifh fibres, beneath: fegments linear, divaricated, bluntifh. Shields fcattered towards the circumference, reddifh-brown, with an inflexed, almoft entire, burder.-This is, according to Linnæus, extremely common on large ftones throughout Lapland, where Lichens that grow on flones are more rare than in other places. It is of all others moft 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 whitifh band two or three inches broad, while the central part is quite decayed and obliterated. Linnaus errs in citing under this a fynonym of Dil. lenius, t . ${ }^{24}$. f . 75 , which is the con/perfus of Acharius and Engl. Bot. t. 2097, a fpecies found in various parts of Europe, of a more compact manner of growth and greener colour, with" broader lobes and larger, concave, dark chefo nut flields.
L. favatilis. n. 35. Engl. Bot. t. 603; and omphalodes, n. 36. Engl. Bot. t. 604 ; are of a more lax and leafy habit than the laft, as well as different in colour. The former of them is very common; the latter confined to mountainous rocky heaths or moors. Both are ufed to dye browns or dull reds in the ruder ftates of human fociet $\%$, or among at the inhabitants of the alps.
L. garietinus. n. 43. Sp. Pl. 1650. Engl. Bot.t. 194. (Lichenoides
(Lichenoides vulgare finuofum, foliis et fcutellis lutei? ; Dill. Mufc. 180. t. 24 . f. 76.) Imbricated, membranous, Ateliated, roundly lobed and crifped, orange-coloured ; pale and fibrous bencath. Shields of the fame colour, with a thin entire border.-One of the moit common of its genus, very confpicuous on old walls, as well as on rocks, wooden buildings, trees and buthes. Its rich golden colour is molt vivid in expofed fituations; affuming an olive, greenifh, or greyinh calt in the thade and damp. Several fpecies however are perhaps confounded under this by Linnæus and his followers.
L. Acllaris, n. 45 Sp. Pl. 1611 . Engt. Bot. t. $169{ }^{2}$, coloured too green.-" Imbricated; leaflets oblong, laciniated, narrow, afh-coloured. Shields brown." Linn.Very common on trees. Under this a great number of Ipecies are undoubtedly confounded by Linnæus, though Acharius may poffibly have gone too far in dividing them. Some are green when wet; others continue grey, whether moift or dry. The fbields in all of them are of a greyihblack, not verging towards red, and are ufually plentifully produced.

Sect. 7. Foliatei. Twenty-fix fpecies.
What Linneus refers to this fection are all naturally allied to one or other fpecies of the laft, fo that the two fections ought to form but one, there of the prefent being only more leafy, leîs imbricated, and in fome cafes quite erect. Nothing however can be more mifcellaneous than this divifion of the genus.
L. Burgeffii, n. 48. Lightf. Scot. 827. t. 26. Engl. Bet. t. 300.-Gelatinous, membranous, crifped and fringed, of a dark glaucous grees. Shrelds deprefied, dark brown, with a leafy, crifped, elevated border.-Found on the trunks of old trees in Scutland and Wales. One of the moft elegant of its tribe, conlilting of dark-green patches as broad as the hand, of delicate pellucid curled and wavy leaves, bearing numerous fizelds, very remarkable on account of their leafy, complicated, wreath-like borders. L. ornatus, ${ }^{n}$. 71, is the very fame fpecies. When dry the whole frond becomes more opaque, verging towards a lead colour. This belongs to a tribe called gelatinous Lichens, which conftitute a very natural genus, now named Coltema. All agree in their peculiar dark-green colour, femi-pellucid pulpy texture, and reddifh or tawny-olive, generally fmall, fhields. Some of them are placed by Limmeus in the former fection, others in this.
L. cillaris. n. 49. Sp. Pl. IGrı. Engl. Bot. t. 1352; is of the fame natural fami y as flcllaris of the laft order; only larger, more lax, and remarkably fringed.
L. caperatus. n. $65 . \mathrm{Sp}$. Pl. 1614. Engl. Bot.t. 654 ; is in like manner allied to faxatilis, \&c. and is properly an imbricated fpecies.
L. iflandicus. n. 50. Sp. Pl. 161 1. Engl. Bot. t. 1330. Fl. Dan. t. 155. Hoffm. Pl. Lich. t. 9. f. I; is celebrated as a reftorative medicine in confumptive complaints. This with the three following of this fection, nivalis, n. 5 1. Engl. Bot. t. 1994 ; juniperinus, n. $6_{4}$. Hoffin. Pl. Lich. t. 7. f. 2 ; and glaucus, n. 67 . Engl. Bot. t. 1606 , all elegant fpecies, form a natural affemblage, which Acharius has feparated, with fome others, under the generic name Cetraria. See Lichenes.
L. ampullaceus. n. 54. Sp. Pl. r6ı3. (Lichenoides tinctorium glabrum veliculofum; Dill. Mufc. s88.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 fpecimen of this, having been folen by a foreigner, more curious than honeit, from the Dillerian herbarium about thirty or
thirty five years ago, was detected by the late profeffor Sib. thorp when abroad, in this perfon's collection, and recovered. It is not however reftored to its original place, where the figure only is now found. But this is of the lefs confequence, as Mr. Menzies has gathered the plant in the very fame ftate, which has been diffected in our prefence, and its importance as a fpecics thus falls to the ground. By the manner in which the hiltory of this Lichen is related by our friend Mr. Turner, Tr. of Linn. Soc. v. 7. 112, it might feem that the excellent profeffor Von Jacquin was the thief, from which we think it effential to exculpate him, ner did Mr. Turner mean to imply any fuch thing.

To the fection in queition belong feveral fpecies of a very diftinct tribe, named $P$ bygcia by Acharius (but fince funk in his Parmelia, the above Cetrarie being feparated from it), of which the following are examples.
L. farinaceus. n. 56. Sp. Pl. 1613. Engl. Bot. t. 889. (Licheneides fegmentis argutioribus, ad margines verrucolis et pulverulentis; Dill. Mufc. 1/22. t. 23.f.63.)-Leafy, much-branched, upright, leathery, glaucous-alh-coloured, froooth, pitted; the branches tapering, ftudded with lateral, convex, pale, mealy warts. Shields icattered, italked, fat, pale-buff.-Common on trees, but the תhields are extremely rare, whence L. fafligiatus, Ach. Prod. 175. Engl. Bot. t. Sgo, came to be taken for the fame thing. Its very abundant fhields are nearly of the greenifh-white hue of the frond, and the mealy warts are wanting:
L. fraxineus. n. 61. Sp. Pl. 1G14. Engl. Bot. t, 1781, is fo common on trees, confificuous for its large fize, and lanceolate 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. Mufc. 168. t. 22, 23. f. GI.)-Leafy, divided, pointed, flat, nearly upright, tapering at each end, greyih-white, obfcurely downy, with white mealy warts. Shields convex, blackifh.-This is found on granite rocks upon the Cornifh coalt, but more plentifully in the Mediterranean, the Canary iflands, and the Eaft Indies, in which laft climate it grows to the length of a foot. It is extremely important as an article of commerce, being ufed irdifcriminately with, and according to fome preferred to, the famous L. Roccella, for dyeing. See féction 8.

Sect. 5• Coriacei. Thirteen fpecies.
This is in itelf a very natural fection, but Linnzus has referred to it one or two fpecies totally foreign to the nature of the reit; as perlatus, n. 82. Engl. Bot. t. 34 1. (Lichenoides glaucum perlatum, fubtùs nigrum et cirrofum ; Dill. Mufc. 147. t. 20. f. 39.)-This is in habit, texture, and natural affinity, clofely -allied to faxatilis, in fect. 3.L. aquaticus, n. 73. Sp. Pl. 1615 ; for which a fynonym of Dillenius, t. 20. f. 44, is quoted with doubt, has always been involved in much obfcurity. The plant of Dillenius is perforat:s of Jacquin and others, well figured in Hoffm. Pl. Lich. t. 13. f. 1. That of Linuæus, preferved in his herbarium, is faid in the Flora Suecica to have been found in moffy boggy places at Norrby, near Upfal, his own country refidence ; but no one has ever difcovered what was meant. On a careful examination of the fecimen, it proves to be
L. corrugatus. Sm. Tr. of Linn. Sac. v. 1. 83. Engl. Bot. t. 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 Linnxan botanifts, fome of the molt diftinguifhed of whom have mittaken it for divaceus.

The real coriaceous Lichens, which conflitute this fifth feation, are, as their denumination inplies, of a tough ked-

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thery testure; fmoothifh above; firongly veined and bearing numerous coarfe radicles beneath. 'Their fhields, called pelte, or targets, are peculiar, perfectly feffile, and as it were glued to the frond towards its margin, fometimes at its under fide! They are oblong or kidney-flaped, often flightly convex ; their border merely a thin film which, in a tender ftate, cavers their dikk, and finally recedes to the edge as it withers. The plants of this fection mollly grow on the ground, either at the roots of trees, or on fhady mofly banks.
L. refupinatus. n. 74. Sp. Pl. 1615 . Engl. Bot. t. 305. (Lichenoides fufcum, peltis polticis ferrugineis ; Dill. Mufc. 206. t. 28. f. 105.)-Coriaceous, creeping, lobed, brownifhgrey. 'Targets oblong, at the under lide of each fmall afcending lobe.-Native of moilt fhady rocks, or of the molfy roots of trees in mountainous countries. The fronds are imbricated, fmooth, of a dull brownifh lead-colour, compofing broad depreffed patches; the targets reddilh-brown, concave, plentifully produced, but each folitary at the concave extremity of its own fmall lube.
L. ardicus. n. 77, and antarticus. n. 78, both one fpecies, are united by Acharius under the name of Pctfidea polaris, being found in very high northern or fouthern latitudes only. They are remarkable for the great fize of their targets, which grow at the back of the greenilh-white frond, and are as big as the thumb-uail, orbicular, of a dark livid flefh-colour.
L. caninus. n. 79. Sp. Pl. 1616. Engl. Bot. t. 2299. (Lichenoides digitatum cinereum, lactucæ foliis finuotis; Dill. Mufe. 200. t. 2\%. f. 102.)-Coriaceous, dilated, afcending, furrowed, grey; white, with brown veins and fibres beneath; lobes very broad, with marginal fruit-bearing proceffes. Targets in front, vertical, revolute, roundifh, red-brown, with a pale border. The largeft, moft common, and moft famous of its tribe, being the celebrated "Afh-coloured Ground Liverwort," fo extolled by Dr. Mead as a cure for the bite of a mad dog, whence the alove fpecific name. It was given with black pepper in milk, the patient being firlt bled, and afterwards bathed in cold water; but whatever accidental circumitances might confirm that famed phyfician in his opinion, the medicine has long been entirely laid afide.
L. factatus. n. 83. Sp. Pl. 1616. Engl. Bot. t. 288. (Lichenoides lichenis facie, peltis acetabulis immerfis; Dill. Mufc. 221.t. 30. f. 12 I.)-Slightly coriaceous, roundifh, creeping ; green above; white beneath. Targets fcattered, blackifh, funk 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. ${ }^{4} 0^{8 .}$ (Lichenoides fubtùs croceus, peltis appreflis; Dill. Mufc. 221. t. 30 f. 120.)-Coriaceous, creeping, rounded at the extremities ; green abdve ; orange and veiny beneath. Targets fcattered, brown, flat.-Found only in the molt alpine fituations, near the limits of perpetual fnow, growing on the ground. -Thefe two laft, elegant and rare productionso are not exactly of the habit of the reft. Acharius, in Schrader's New Journal, v. I. fafc. 3. 20, 21, has referred them to his new genus Artbonia (fee Lichenes); from the true fecies of which they differ in their leafy, not cruftaceous, habit, nor is it eafy to fay to what family they properly belong.

Sect. 6. Umbilicati. Eleven fpecies.
A mort diftinct and natural tribe, conflituting the genus Gyrophora of Acharius, of which we have fpoken in its proper place. (See Gyropiora.) Linnæus defines thefe plants as umbilicated, or attached by their centre, and dirty as it were with foot. The latter perhaps may be their male
warts. The fruit exhibits the moft effential charafter in the concentric folds obfervable in its difk. The firft fpecies however, miniatus, n. 86. Engl. Bot. t. 393, though it agrees with the rett in its umbilicated habit, differs from them in fructification, in which latter refpect it accords with Endocarpon; fee that article. True Gyrophore are
L. velleus. n. 87. Sp. Pl. 1617 . (Lichenoides coriaceum, latiffimo folio umbilicato et verrucofo ; Dill. Mufc. $545^{\circ}$ t. 82. f. 5.)-Umbilicated, talked, dilated, wavy ; brown-ifh-grey and fmooth above; covered beneath with black, branched, crowded fibres. Tubercles cluftered, 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 refpect indced it accords with the much fmaller, green or olivecoloured, Britifh pellifus, Engl. Bot. t. 931, which Hudfon mittook for vellcus.
L. Puffulatus. n. 88. Sp. Pl. 161\%. We need not repeat what is laid of this under the article Gyropmora.
L. viridis. n. 96. Linn. Suppl. 451, gathered at the Cape of Good Hope by Thunberg, is Endocarpon Thunbergii, Ach. Meth. I29, has ncthing of the character of a Gyrophora.

Sect. 7. Scyphbiferi. Nine fpccies.
The natural family of cup-bearing Lichens, or pyxidati; being one of the mett diftinct and Atrongly characterized, has been feparated as a genus of iifelf by moft who have confidered the fubject. (See Lichenes.) The fpecies are extremely confufed and difficult to define, being variable in themfelves and much refembling each other. Their frond or bafis confifts of fmall, rounded, more or lefs difperfed, horizontal fcales, or leaflets; fmooth and green or greyih above ; pure white beneath, as well as at the edges and withinfide. In fome few inftances they are dilated, and: lobed or pinnatifid. From thefe arife upright falks, terminating in a cup-fhaped figure, of a large proportion compared with the leaflets, of a greenilh-grey colour, and mealy or fcaly furface; the edges of the cup producing the fructification, which confifts of fmall globular tubercles, either brown, or of a moft beautiful fcarlet, feffile, or varioully ftalked. Sometimes the cup is proliferous from its edges or centre; fometimes obfolete, or, as it were, ftarved. Thefe plants come under the Coralloides of Dillenius, t . 14, 15.-Examples are
L. cocciferus. n. 97. Sp. Pl. 1618. Engl. Bot. t. 205 r. (Coralloides fcyphiforme, tuberculis coccineis ; Dill. Muic. 82. t. 4. f. 7.)-Cup-haped, leathery, pale greenifh-grey, mealy. Cups dilated, fomewhat toothed. Tubercles fungous, fearlet. Leaves minute, lobed and crenate.-A beautiful fpecies, not uncommon in woods, or on heaths; among ling, or in various dry fandy places. The large fcarlet tubercles render it very confpicuous. Several other fpecies indeed have the fame-coloured fructification, but. fmaller, and they differ in other refpects. The cups in this are fhorter, broader, and more perfect than in any other with fcarlet tubercles.
L. pyxiliatus. n. 99. Sp. Pl. 16i9. Engl. Bot. t. 1393. (Coralloides fcyphitorme, tuberculis fufcis; Dill. Mufc. 79 . t. 14. f. 6.)-Cup-fhaped, leathery, greyih-green, fcaly, often proliferous. Cups dilated, nearly entire. Tubercles brown. Leaves ninute, imbricated, crenate. - The moft common of this tribe, occurring every where, in broad patches, on heaths, fandy banks, and under hedges. Its cup-like fhape is ufually pretty regular, at leaft before the tubercles appear; but the edges of the cup, or its centre, occationally throw up otbers, even to four or five ranks or
flages $_{3}$

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Aages, one upon another, in beautiful luxuriance. More frequently the firlt cup bears unequal and imperfect cups, or tubular tenlki, crowned with the brown tubercles. The flulks of all are frequently deafy or fcaly, efpecially their lower part.
L. gracilis, n. ro1. Sp. Pl. 161 . Engl. Bot. t. 1284. (Coralioides ferphiforme ferratum elatius, caulibus gracilibus glabris; Dill. Mufc. 88. t. I4. F. 13.)-Cup-fhaped, long, llender, fmooth, cartilaginous, greenifh-brown; at Iength fomewhat branched. Cups conical, fharply 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 flevder form, and fharp teeth or terminal branches. The tubircles are dark brown. Leaves very minute, and frequentiy obliterated.
L. flammeus. n. 105. Limn. Suppl. 451 . Hoffm. Pl. Lich. t. 3.f. I.; is very improperly referved to this fection by Murray, merely, as it feems, on account of its tubular ftem and branches. It ought, according to the Linnman arrangement, to ftand in fection 3, after parietinus, n. 43, and before pbyfodes, n. 44, agrecing with the former in colour, with the satter fomewhat in firucture. We mean not, however, to fay there is any confiderable real affinity between thefe three fpecies.

Sect. 8. Fruticulofo. Ten fpecies.
A vague fection, comprifing, though fmall, feveral dif. cordant things, of which no general definition can be given, except that they are of an upright bufhy habit.
L. rangiferinus. n. 1o6. Sp. Pl. 1620. Engl. Bot. t. 173 . (Coralloides montanum, fruticuli fpecie, ubique candicans; Dill. Muic 107. t. 16. f. 29 ; et corniculis rufefcentifus; zio. t. I6. f. 30.)-Buhy, tubular, very much branched, white and hoary; the little branches divaricated and drooping. Tubercles terminal, globofe, molly cluftered, 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 forelts of thofe northern regions, it covers the ground like frow, rifing to the height of a foot or more; with us it is much humbler and more difperfed; always choofing the molt fterile heathy foil, and not very generally producing fruit. Its texture is thin and brittle, foft to the grafp of the hand, and excellent for package, the only ufe for which it can ferve in this climate. The branches are occafionally, 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. so8. Swartz Meth. Mufc. 37. Engl. Bot. t. 2029 .
L. fubulatus. n. 109. Sp. Pl. 162I. (Coralloides corniculis longioribus et rarioribus; Dill. Mufc. 102. t. 16. f. 26.)

Thefe three are naturally akin to rangiferinus. The following are very different.
L. globiferus. n. 1 10. Mant. 133. Engl. Bot. t. 115. (Coralloides cupreffiforme, capitulis globofis; Dill. Mufc. 317. t. 17. f. 35 .)-Shrubby, folid, much branched, cylindrical, brownih and polifhed; branches with minute divaricated terminations. Fruit globular, fmoothifh, enclofing a ball of black powder.-This very pretty coral-like production occurs on monntainous rocky heaths, or in dry ftony woods. Its ficins compofe loofe entangled tufts, of a tawny light polifhed brown, and are white and folid within; the ultimate branches are innumerable, fhort, flender, tufted, and divaricated. The fruaification is altogether different
from every thing we have hitherto defcribed, confifting of terminal folitary balls, the fize of a vetch feed. fmooth, of the fubftance of the item, opening by a wide irregular perforation at the top, and containing a globular mals of black condenfed powder, prefumed to be the feeds. This plant therefore, by its fructification and habit, has every right to conititute a dillinct genus, and is now, with the two following, admitted as fuch by the name of Spharophorono See Lichenes.
L. fragilis. n. 113 . Fl. Suec. ed. 2. 425. Fl. Lapp. n. 44. i. 11. f. 4. (Coralloides fragile; Hoffm. Pl. Lich. 34 t. 33. f. 3. Splxxophoron fragile; Ach. Meth. 135. t. 3. f. 5 )-Shrubhy, folid, brittle, afhy brown; brarches level-copped, cy lindrical, crowded, naked. Fruit globular, rugofe, enclofing a ball of black powder.-Found in fimilar places with the laft, with which moft botanitts, in Britain and elfewhere, have confounded it, taking the following for the true fragilis.

L comprefus. (L fragilis; Ach. Prodr. 2 II. Hudf. 558. Engl. Bot. t. 114. L. melanocarpus; Swartz Prodr. 147. Spharophoron compreffim; Ach. Meth. 135. Coralloides alpinum, coraihnæ minoris facie; Dill. Mufc. 116. t. 17. f. 34.)- Shrubty, folid, cartilaginous, white, branched, conipreffed; branches ciuftered, fomewhat palmate Fruit depreffed, containing a cake of black powder.-The moit elegant of this new genus, remarkable for its white corallike appearance, laving the fplendour of porcelain when frefh. The above characters mark it fufficiently. The fruit is rare, produced in moilt flady fituations only. This. fpecies feems to prefor line tlone rathr rihan granite rocko.

To a very different famely belongs
L pafchalis. n. 11F. Sy. Pl 1621. Engl. Bot. t. 282. (Coralloider crifpum et betryforme alpinum; Dill. Mufc. 114. t. 17. f. 33.) Shrubby, folid, clothed with minute cruflaceous leaves. Tubercles terminal, prominert, brown. -This Lichen, found on incecenus alpine rocks, is dettined to perform an inportant office in the economy of nature, being the firf vegetable that takes ro t upon liva, whofe porous furface will admit no crattaceous fpecies, Thus it compofes in decaying a portion of vegretable mould, fit for the reception of the feeds of othir plan's. Its rocts and Aem are very tough and ftrong, and the affen blage of minute greyilh-brown leaves, that cover the whole, gives it a peculiar and diftinct afpect. 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. trifis. n. 112. Web. Goett. t. 5. Swartz. Meth. Mufc. 37. Engl. Bot. t. 720. This alpine Lichen has real fhieids. It occurs anong the imbricated fpecies, by Jacquin's name of rigidus, n. 42 ; and it is curious that Murray, the editor, has quoted in both places the fame fynonym of Haller, n. 1966. t. 47. f. 1.
L. verrucofus. n. 114. Suppl. 451. (Stereocaulon tabulare; Ach. Meth. 316. to 7. f. 3.)-Found at the Cape of Good Hope: It confifts of denfe, broad, white tufts of low branched falks, tumid and globole at their fummits, and agrees altogether in genus, very nearly in fpecies, with Mr. Dickfôn's oculatus, Engl. Bot. t. 1833. Yet profeffor Acharius confiders the fructification of verrucofus as unknown, and refers the plant to his genus Stereocaulon, of which pafohalis, n. 11x, above-mentioned, is a genuine example.
L. Roccella. n. 115. Sp. Pl 1622. Engl. Bot. t. 11 1. (Coralloides corniculatum fafciculare tinctorium, fuci teretis facie ; Dill. Mufc. 120. t. 17* f. 39 )-This we have mentioned in Speaking of tartareus, n. 25 , and fucijormis, n. 61 It

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It agrees very much with the latter, except in being cylindrical, and lefs foft or flexible, and their thields are exactly alike. - A Cape variety, as it is thought to be, of Rocrella, is partly cylindrical, partly flat, and much dilated.

Sect. 9. Filamzntofi. Fifteen fpecies.
A very curious, thriking, and, for the moit part, very natural aflemblage. Many of them hang in long, black, grey, or white cluiters, from the branches of aged pines, oaks, or chefnuts, in alpine forefts, to which they give a fingular and romartic afpect. Their fronds are filamentous, often a foot or more in length, repeatedly branched, cither folid, or apparently jointed, in a beard-like manner, with a central tough fibre; fometimes they are compreffed, fometimes pitted ; in one nondefcript fpecies exquifitely reticulated like lace. The fructification is various and uncertain; in fome perfect frields with a true difk, and a border like the frond; in others a fpurious kind of thield, orbillus, is found, along with coloured feed bearing tubercles; in others, again, powdery warts only are difcoverable.

A few examples will fuffice.
L. plicatus. n. IIG. Sp. Pl. 1622. Engl. Bot. t. 257. (Ufnea vulgaris, loris longis implexis; Dill. Mufc. 56. t. II. f. I.)-Filamentous, cylindrical, pendulous, whitifh; branches entangled. Shields (fpurious) whitifh-green, radiated. Tubercles yellowifh.-Found in ancient woods. The fionds are exceffively and finely branched, a foot or two long, pendent in denfe clufters from the trees. Their furface is minutely warty. The proper tubercles, defcribed by Acharius, we have never feen. The fpurious fbields, his orbilli, are rare. The latter are improperly made reddifh in Englifh Botany.
L. divaricatus. n. I19. Syit. Nat. ed. 12. v. 2. 713. (Ufnea mollis, ramis longis compreffis; Dill. Mufc. 62. t. 12. f. 5. 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 fubftance of the frond. - Native of fir woods on the alps of Savoy, Switzerland, \&c. Often a foot and a half long, foft and flexible, confpicuous for its yellowifh hue. The fbields are thofe of an Acharian Parmelic. See Lichenes.
L. aurantiaco-ater. n. 128. Jacq. Miic. 369. t. 11. f. 2, (very badly drawn,) feems to us allo a true Parmelia, though retained in UJfrea by Acharius; fee his Methodus, 307.
L. capenfis. n. 130. Suppl. 45 I . (Ufnea capenfis; Hoffin. Pl. Lich. t. 10. f. I.) is properly referred by Acharius to his Parmelia.
L. floridus. n. 129. Sp. Pl. 1624. Engl. Bot. t. 872. Ehrh. Crypt. 148. Ufnea vulgatifima tenuior et brevior, cum orbiculis; Dill. Mufc. 69. t. 13. f. 13.)-Filamentous, with a central thread, bufhy, erect, greenifh-grey; branches round, fibrous, warty, with radiated fpurious fhields. Tubercles on the branches, "lateral, flefh-coloured, rugged. -Not uncommon on dead branches of oaks in old woods, but the orbilli feldom occur except on the higher trees, and the real tubercles are extremely rare. The latter were fuppoled to have been publifhed for the firt time in Engl. Bot. vol. xiii. in 1801, but the celebrated Schrader appears to have defcribed though not figured them two years earlier. They are conformable to what have long been known in other genuine fpecies of this tribe. We cannot but think L. birius, n. 125 , Engl. Bot. t. I354, fpecifically diftinct from floridus, of which profeffor Acharius makes it a variety. The zubcrcles of birfus grow chiefly on the ftem or large branches, which are continued ftraight beyond them, not ftrongly bent backwards, as in floridus. Thefe fpecies VoL. XX.
boiled with wool, without alum, dye it of a rich tawny yellow.

The moft minute fpecies of this great genus, or natural order, hold a much more important place in the economy of nature than is apparent to fuperficial obfervers. They are the firt beginning of vegetation on ftones of all kinds expofed to the air, whofe decompofing furfaces are the receptacle of their imperceptible feeds, and foon afford nourifhment to the fprouting plants, whofe minute fibrous roots ftill further infinuate themfelves. The larger fpecies take poffeffion of every cavity and fiffure, both of ftones and the decaying external bark of trees. In time they all decay, and furnifh a portion of regetable mould, capable of nourifhing mofles, or Atill larger plants. The refiduum of thefe, being ftill more confiderable, is wafhed by rains into larger cavities, where even forelt trees can fcatter their feeds, by the penetrating power of whofe roots, great maffes are difodged from the moit lofty rocks. Thus the vegetable kingdom exercifes dominion over the tributary foffil world, and, in its turn, affords the fame no lefs neceffary aid to animal exiftence. Nothing in nature is allowed to remain ftationary, idle, or ufelefs, and the moft inconfiderable agents frequently appear, in the hands of Divine Providence, to be the moll irre. fittible. S.

Licuess, in the Materia Medica. The Lichen iflandiciss is a rative of Britain, particularly on the mountains of Wrales and Scotland. In Iceland this is ufed as focd. For this purpofe, a difh of it is prepared by chopping it fmall, boiling it in three or four fucceffive portions of water to take off its natural bitternefs, 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 difh. The medicinal qualities of this lichen have of late been fo well eftablifhed at Vienna, that the plant is admitted into the Materia Medica of the Edinburgh Pharmacopeia, and into the London Pharmacopeia of the year 1809. It is extremely mucilaginous, and to the tafte fomewhat bitter and aftringent; but its bitternefe, as well as the purgative quality which it manifelts in its recent ftate, are in a great meafure diffipated by drying, or, as we have already obferved, may be extracted by infufion 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 fir preparing the mucilage from the lichen. The lichen hâs an outer k in, covering a green refinous fubfance; and the remainder of the plant confilts chiefly of gum and of filrous matter, on which water does not act. In order to feparate the outer fkin from the refinous matter, the plant mult be fcalded two or three times with boiling water, which caules the fkin to crack, fwell, and peel off. It is then putinic a boiler with about three quarts of water for every pourd of the plant, and about half an ounce of potaih or foda, and the boiling fhould be continued till the liquor accuires a confiderable degree of gummy confitence. The liquor is then to be taken out and ftrained from the pian., and frefh water added to the fame material, for the purpofe of further exhaulting the gum. 'The feveral liquors, after ftanding fome hours to fettle, and then remuvi:g the dre ${ }_{2} s$, are to be boiled down in a regulated heat to the confiltence which is required for ufe, but not further, lidt it fhould burn and become coloured. Two or three boll n: $s$ will be neceflary for entirely exhaufting the lichen of its mucilage.

The medical virtues of this lichen were probably firf $+R$
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learned from the Icelanders, who employ it in its fref ftate as a laxative; but deprived of this quality and properly prepared, it is faid to be an efficacious remedy in confumptions, coughs, dyfenteries, and diarrhoeas. 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 iflandicus tried in phthifis pulmonalis at the General Hofpital, and he confeffes, "that it by no means anfivered 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 fpecies of this difeafe, when this fort of lichen promifes a cure. The two fpecies I hint at, are the phthifis bemoptaica, and the phothifis pituitofa, or mucofa. In feveral cafes of thefe I have feen the patients fo far get better of their complaints, as to be difmiffed the hofpital cured; but whether they remained long fo or not, I cannot take upon me to fay." That this lichen ftrengthens the digeftive 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 courfe of the day. If milk difagree with the ftomach, a fimple decoction of the lichen in water is to be ufed. Care fhould 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 cincreus terrefris, which grows on heaths, dry paftures, and woods, has a weak faint fmell, and a fharpifh tafte. 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 antilyflus," a powder compofed of equal parts of this lichen and black pepper, was firt recommended as a prefervative againft the rabies canina by Mr. Dampier, brother of the celebrated circumnavigator, and by the authority of fir Hans Sloane, is was publifhed in the Philofophical Tranfactions, (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 ufed, with the affiltance 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 fafting, in half a pint of cow's milk warm, for four mornings fucceffively. After thefe four dofes 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 antilyflus was long retaincd in the London Pharmacopeia; but on the revifion 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 diforder, and ufually terminating in fcurf. It is not contagious.

Such is the character of an eruption, to which Dr. Willan has appropriated the term lichen, in his valuable treatife
on cutaneous diforders. (Order i. Genus ii.) In the writings of Hippocrates, he remarks, the term lichen, or lichenes, ( $\lambda_{\epsilon 6 \chi \text { nves, }}$ ) is employed to exprefs an eruption of papulx, and he did not include under that appellation any puftular difeafe. There is, however, an extreme confufion, as in the cafe of almoft every other denomination of cutaneous affections, among the fubfequent writers, in the acceptation of the word. The later Greek authors extend the application of it, fo as to comprehend a puftular affection of the face, fometimes called fycofis, and likewife the mentagra, a contagious difeafe, together with the fimple and
 1. xx . cap. 1.) feems to ufe the term lichen as fynonimous with the impetigo 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 refpect, correfpond to that which the Greeks have given of the lichenes. Under the denomination of papula, Celfus has comprifed, and accurately defcribed, two varieties of lichen, the L. agrius, and L. circumfcriptus; and he has correctly ftated 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.) Neverthelefs, all the tranflators of the Greek medical writers have ufed impetigo as fynonimous with the original term lichen; and their example has been followed by many refpectable authors on the fubject of cutaneous diforders.

By more modern writers, again, the lichen has been arranged under other genera of difeafe, with which it has ftill 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 fcabies. By adopting the character of the lichen, ftated by Dr. Willan, we may avoid this extreme degree of confufion.

An eruption, thus characterized, occurs under five or fix varieties of form, to which Dr. Willan has appropriated the following titles: I. Lichen fimplex is preceded by fymptoms of feverifhnefs, or rather by a flate of irritation not amounting to fever, which is relieved after five or fix days, on the appearance of the eruption. This conlifts of diftinct red papulx, with but little infammation round their bafe, firft 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 fpecies, annually about the beginning of fummer, or in autumn, in perfons of a very weak and irritable conftitution. 2. Lichen pilaris is merely a modification of the foregoing fpecies, the papulx appearing only at the roots of the hairs of the fini. 3. In the lichen circumfcriptus, 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 fuc. ceffion 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 caufes of irritation, and is at firft attended with flight febrile fymptoms for a day or two. 4. Lichen agrius is preceded by naufea, pain in the ftomach and limbs, with fhivering and depreffion of ftrength for feveral days, which fometimes diminifh when the eruption appears. The papula are diltributed in great numbers in yarious parts of the body, face, and limbs, having a high

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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 wafhing, efpecially with foap, by violent exercife, or wine. Its duration is uncertain. Women are more liable to it than men; and it affects thofe efpecially who have undergone long continued fatigue, watching, and anxiety. In men it is often produced by the intemperate ufe of fpirituous liquors.

Cure.-Every thing heating or fimulating fhould be avoided, whether great exercife, or ftimulant food and liquors; gentle laxatives fhould be ufed; and the fkin fhould be wafhepd with warm-water, or thin gruel, by which the irritation and itching are alleviated. All ftrong applications are improper, and aggravate the complaint, producing intolerable fmarting. Mild cooling ointments, as the role-pomatum, relieve the uneafy fenfations 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 thefe is characterifed by papulæ of a dark or livid hue, is more permanent than the fpecies before defcribed, and principally affects perfons of weak conftitutions, who live on a poor diet, and labour hard, or refide in clofe fituations. The lichen is fometimes intermixed with petechice in the latter cafes, or larger purple patches, which point out its affinity with the purpura, or land-fcurvy. It is cured alfo by the fame means as are fuccefsful in the latter diforder; namely, by nourifhing food, moderate exercife in the open air, with the ufe 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 beat, 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 Jungermanita.

LICHENES, a Natural Order oir vegetables of the Cryptogamic clafs, (A/pididfere of Wiggers's Holfat. 85.) allied on one hand to the Alga, in which it was included by Linnxus, and on the other to the $F u n g i$, with many of which it nearly agrees in habit, and with fome of them very ftrikingly in the charater and fituation of its feeds. This family has rifen gradually to the confequence it now holds among botanitts, firft by the labours of Dillenius and Micheli, and next by thofe of Linneus and his pupils; but the celebrated Dr. Acharius, profeffor at Vadttena in Sweden, has finally elucidated it fully, with refpect to charaterss and fynonyms, in feveral feparate works; not merely as a genus, but as a natural order, comprifing many genera. Profeflor Hoffmann indeed, and other German betanits, had already confidered it in the fame light; but none has fo completely treated the whole fubject as this learned Swede. For a general view of the nature of this family, with the leading fections to which its fpecies have been reduced, fee Lichse. We fhall now proceed to explain what has been done towards its. generic fub-divifion, the firt attempt at which, by the fruit, was made in Wiggers's Primitic Fl. HolJatice, a work of which Weber, in a copy before us, claims being the author.
It would be tedious and difficult to trace minutely every ftep in the progrefs of thofe who have at any time adverted to the generic diftribution 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, publifhed in 1795, eftablifhed an order of Cryptogamia Scutellata, as ditinet 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 fhields, radiated or naked, bordered or without a border, or fpirally twilted, fixed to the frond cither by their centre or their margin; and this frond is cither gelatinous, coriaceous, umbilicated, caulefcent, ftrap-like, filamentous, leafy, tartarcous, or leprous; its duration perennial, throwing out various buds or offsets. Each fhicld contains feeds within its fibrous or fpongy fubftance. - This order contains nine genera.

1. Collema. Frond pellucid, gelatinous. Shields bordered. -This comprehends the gelatinous Lichens of other authors, of which 26 fpecies are here defcribed as natives of Germany. (See Licien ; fect. 4. n. 48.) Collcma 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 conftituting one of the moit naturai genera to be found in any order.
2. Peltigera. Frond coriaceous. Shields (or targets) compreffed, attached by their margin.-The true coriaceous Lichens, fect. 5, as refupinatus, caninus, \&c.; nine fpecies in Germany.
3. Umbilicaria, Frond leafy, peltate. Shields contorted. -Ten fpecies. The umbilicated Lichens, fect. 6; Gyrophore of Acharius.
4. Cladonia. Frond caulefcent, cylindrical, hollow. Shields tubercular. -Thirty-feven fpecies.-This genus embraces not only thofe of the Linnæan fruticulof $i$, fect. 8 , to which rangiferinus belongs, but likewife all the fcyphyferi (or pyxidati) fect. 7. -Thirty-feven fpecies are defcribed.
5. Stereocaulon. Frond caulefcent, cylindrical, folid. Shields tubercular, globofe.-This is, perhaps, the moft exceptionable genus, confounding L. pafcbalis, (fee Liceen, fect. 8. n. III.) along with the powdery-fruited kinds, globiferus, fragilis, and compreffus; and with thefe the coralcrufted tribe, which make the Acharian genus Ifidium hereafter mentioned. Even L. niger of Hudion and Linnæus, Engl. Bot. t. II6I, perhaps more akin to Collema, though its fhields have no border, is joined with them. The whole however make but nine fpecies.
6. Ufnea. Frond ftrap-like, or filamentous. Shields radiated or naked. - Equivalent to the filamentof, fect. 9, of Linnæus. Sixteen German fpecies.
7. Lobaria. Frond lobed, laciniated, much divided, erect, or depreffed. Shields bordered,-This large and rather multifarious genus, comprehending 62 German fpecies, is divided into four fections, which perhaps run fo much into each other as to juftify the whole affemblage. 'They are

* Platifma. Frond (moftly) pitted.

To this belong many of Linnæus's fect. 4, foliacei, as the farinaceus, fraxineus, and their allies. To thefe rigidus, which is triftis, n . II2. of the Linnzan arrangement, is fub. joined. Then follow iflandicus, \&c. ; then furfuraceus, Linn. n. 53. Engl. Bot. t. 984, and ciliaris. All thefe are characterifed as having a pitted or cellular frond, which is more or lefs erect. They are however a very various tribe. -Five fpecies have a pitted depreffed 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 expreffive, if it means abfolutely that the frond is never pitted, or that it is more dilated than in the preceding ones.
** Phyfia. Frond inflated, as in L. ployfodes, Linn. n. 44. Engl. Bot. t. 126.
*** Squamaria. Frond narrowly divided, as in Rellaris, and its nemerous allies.
**** Placodium. Frond cruftaceous, obfcurely imbricated. In the beginning of this fection, feveral fpecies occur which are not really cruftaceous, and which are clofely akin to fellaris, though more depreffed. True exam. ples of Placodium are L. faxicola, Engl. Bot. t. 1695; as well as candicans, t. 1778; and gelidus, Linn. n. 23.
8. Pfora. Cruft figured.' Shields bordered, convex--Twenty-fix German fpecies are enumerated under this genus, many of which are among the imbricated Lichens of Linneus, others amongft his leprous or crultacenus ones. In all of them the crutt is either formed into leaflets, or pranulations of a determinate flhape, feated on a homogeneous white ckalky bafis, the outer furface being varioully coloured.
9. Verrucaria. Cruft leafefs, leprous, tartareous. Shields with or without a border--This genus comprehends molt of the leprous Lichens of Linnæus. See Lichen, fect. I and 2. Seventy-one German fpecies are defined, difpofed according to the colours of their fhields.

Such is the method of Hoffmann, who in his fumptuous and truly excellent work, entitled Planta Lichenofa, conlifting of three thin folio volumes, with feventy-t wo fine coloured plates, has defcribed and figured a great number of fipecies from all parts of the world. This book however does not exactly agree in generic diftribution with his Flora Germanica, but they are eafily compared together. The fame writer has left unfinihed an Enumeratio Lichenum, in quarto, begun in $1_{7} 84$, of which we have 102 pages, and 22 uncoloured plates, very finely drawn by the author. In this book Lichen ftands as one genus, divided into feveral fations; improperly termed orders.

Profeffor Acharius, above-mentioned, having previouly in feveral papers, with plates drawn by himfelf, in the Stockholm Tranfactions, elucidated various fpecies or tribes of Lichens, publifhed in 1798 his Lichenographic Suecice Prodromus, in one volume octavo, with coloured figures of five fpecies only. This work marks an era in cryptogamic botany. Though it profeffes to treat of Swedinh Lichens only, it in fact indicates all of which the learned writer could difcover any tidings, with their fpecific characters, fynonyms, and places of growth, befides innumerable valuable obfervations. 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 Hoffinann form the balis. Thefe tribes compofe three families, under whofe fubdivifions we fhall indicate them all. The peculiar terms which occur will be explained hereafter.

## Family 1. Crustaceous Licuens.

Having a cruftaceous, more or lefs expanded, bafe.
A. Crult irregular, powdery, or in fibrous flakes.
I. Lepraria. Receptacles fcarcely known.-(Moft of there come under the genus By fous in Linnæus.)
B. Cruft folid, flattifh, unitorm, nearly orbicular.
2. Verrucaria. Receptacles (thalami) hidden in the cruit, roundifh, concave, opening by a perfuration at the top.
3. Opegrapba. Clefts (lirelle) clofely attached to the cruft, and opening longitudinally.
4. Variolaria. Powdery little maffes (glomeruli) attached to the furface of the crult.
5. Urceolaria. Shields hollowed, funk in portions or warts of the furface of the crult.
6. Patellaria. Shields attached to the furface of the cruft, either concave or flat, with a border, or convex and hemifpherical, with fcarcely any.
7. Beomyces. Tubercles fmooth and even, nearly globofe, fungus-like, terminating elevated ttalks,
8. Calicium. Tubercles ftalked, lenticular, opening by a torn border, difcovering a powdery elevated difi.
C. Cruft unequal, compofed of coral-like, crowded little branches.
9. Iffidium. Tubercles terminal.
D. Crult rather leafy.
10. Pforoma. Cruft irrcgular, covered with minute fomewhat imbricated fcales. Shields lateral, as well as marginal.
11. Placodium. Cruft clofe-preffed, flat, orbicular, with a lobed permanent margin. Shields lateral.

## Family 2. Leafy Lichens.

Without a ftem, and confifting of a fimple or multiplied, feffile, divided, fomewhat membranous leaf.
E. Receptacles fcattered, feffile on the leaf.
12. Imbricaria. Shields and powdery malfes (glomeruli) lateral. Leaves membranous, depreffed, imbricated, fpreading circularly, minutely fibrous underneath.
${ }_{13}$. Collema. Shields lateral and marginal. Leaves gelatinous.
14. Endocarpon. Receptacles (thalami) hollow, immerfed in the leaf, opening by a prominent mouth. Sce Endocarpon.
15. Umbilicaria. Receptacles (trice) convoluted, raifed. See Gyrophora.
16. Lobaria. Shields and powdery maffes lateral. Leaves fomewhat coriaceous, widely fpreading, afcending, villous underneath.
17. Stiala. Shields fcattered; or Targets marginal. Leaves fomewhat coriaceous, ftamped beneath with little bald pits, amonglt down.
18. Peltidea. Targets lateral and fomewhat marginal, on the front or back of the leaf. Leaves coriacoous, moflly veiny, as well as downy, beneath.
19. Platifma. Shields target-like, fcattered. Leaves membranous, aifending, crifped, naked on both fides.
20. Pbyfcia. Shields fcattered. Leaves rather cartilaginous, fmooth, tufted, linear and jagged.
F. Receptacles elevated far above the leaves, on the tops of falks.
21. Scyphophorus. Tubercles on hollow ftalks, dilated upwards, and clofed.
22. Helopodium. Tubercles fungrous, on nearly folid, fimply fub-divided Italks, fcarcely dilated upwards.
23. Cladonia. Tubercles nearly globofe, on taper-pointed, elongated, tubular, branched and fhrubby ftalks.

## Family 3. Caulescent Lichens.

Stems either folid, branched, round and Mrubby, or elongated and thread or ftrap-like.
G. Shrubby, with folid rigid ftems.
24. Stereocaulon. Shields globofe, folid, feattered.
25. Spherophorus. Cellules terminal, finally burtting.
26. Cornicularia. Shields radiated, at length rather con-
vex, 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 nightly bordered, fcattered; as well as powdery maffes. Branches with a cruftaceous, fomewhat jointed, coat.

It will eafily be feen, by comparifon, how far thefe fections anfwer to Hoffmann's genera. The firlt five have nothing correfponding with them. Patellaria is equivalent to his

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Vcrrucaria, at leaft in idea. Beomyces, Seyphophorus, Helopodium, and Cladonia, are included in his Cladonia. Pforoma and Placodium are his Pfora. Collema, Peltidea, (his Peltigera,) Umbiliaria, and Ufnea, agree with his. Calicium, Iffidium, Endocarpon, Stiaa, Spharophorus, and Cornicularia, are not found in his fyitem, except that Spharophorus is, in his Pl. Licb., called Coralloides. Imbricaria, Lobaria, Platijma, and Pbyfcia 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 philofophical Linnæan, had objcctions, which induced him to confider thefe different affemblages of fpecies rather as fections of one great natural genue, the fructification being fitll much in the dark. In 1803 how. ever he publifhed his $I M_{t}$ thodus, in 8 vo . with eight coloured plates, and, foon after, a fupplement. In this new work, itill keeping the Linnean principle in view, he aimed at diftinguifhing the Lichenes, as a natural order, into feveral genera; by the fructification alone. Before we detail thefe, it is neceffary to take a view of the phyfiology of the order, as explained in his able preface, as well as of his technical terms. Both thefe fubjects are treated alfo in the preface to his Prodromus; but it is beft to confider here his latter view of them only, and they are fo united together, that an explanation of the terms will fufficiently elucidate the phyfiological ideas of the author.

Thallus is ufed by Acharius for the whole plant, or herbage, of a Lichen, the frons of Linnæus (fee Frond) ; diftinct from every thing belonging to the fructification. It is root, ftem, ftalk, and leaf, all in one, its fubttance feeming to affume the nature of either, according to circumftances; but this is, in fome meafure, the cafe with every vegetable body, and by no means peculiar to a Thallus or Frond. Acharius is unvilling to ufe the latter word for a mere fhapelefs cruit or mafs of powder; but we confefs ourfelves unable to difcover any ufe, or indeed any diftinct meaning, in the new term, unlefs it were reftricted to fuch cruft or powder. Its meaning moreover, Ta入入os, a green bough, is precifely equivalent to frons; but this objection is not mate-rial.-Of the different forms and textures of this part, we have fufficiently fpoken under the article Lichen. It is an effential part, though fometimes nearly or quite deftroyed by age, though the fructification may ftill, for a while, remain.

Apothecium ( $\alpha \pi \div 9 n \times n$, 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 fubfervient to the propagation of Lichens; dittinet in figure, generally in colour and nature, from the thallus, or frond, on which it is fituated, and which fometimes furnifhes it with an exterior covering." The fecundation having taken place, in fome manner unknown to us, within the frond, thefe receptacles, (as we mulf itill beg keave to call them,) gradually increafe, and finally expofe their internal part, which is either occupied by a fibrous texture, more or lefs denfe, or is, when moilt, in fome meafure gelatinous, rarely appearing hollow. Their fhape is moft frequently roundifh, but otherwife very various, as has been already explained. (See Lichen, fect. I.) When xipe they difcharge their feeds, either naked, or contained in cafes. Sometimes, though rarely, their under-fide produces naked feeds. To the various fituations of thefe receptacles, the generic characters already explained have fufficiently alluded ; their varicus kinds have alfo been mentioned, but will now be more fully defcribed. Hedwig and Gærtner differ about the feeds of Lichens; the latter fuppofing them (for it is entirely fuppofition) to be rather of the
nature of buds or offsets, which he terms propagines, and not actual feeds produced by fexual impregnation. The reaton for this opinion feems to be, that the mode of fuch impregnation has not been difcovered, any more than in ferns or fea-weeds.

Acharius defines thirteen forts of receptacle, or apothecium.

1. Scutclla, hields. Thefe are open, orbicular, compared by Dillenius to a faucer; their border, and under-fide, of the fubltance, and ufually of the colour of the cruft, or leaf. Their difk, (ftratum proligerum of Acharius) almott always differing in colour, and totally diftinct in fubftance from the margin, contains the feeds in the vertical parallel cells of its internal fubftance. Their border is termed an accefory, not a proper, one. The flields are either thick, tumid, entirely feffile, or even funk, as in many crultaceous Lichens; or membranous, often elevated, fomewhat ftalked; very rarely they become perforated in the centre.
2. Patellule. 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 diff, as in the former ; and the difk is furrounded by a proper border, that is, of its own fubltance and colour. Their feeds are ob. ferved to be naked in the cellular fubilance of the difk, not inclofed in cafes. The figure of the patelluld is not liable to much variation, except that the diR is fometimes concave, fometimes flat, but more frequently convex, and in an ad. vanced 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. Cypbella. Pits. Open cup-like little naked, white or yellow, fpots, on the under, generally downy, fide of the leaf, in the Acharian genus Stiza; fee Engl. Bot. t. 2298. 2359. They are at firft minute dots, globofe, and immerfed in the fubftance of the leaf; at length they burft, with an irregular margin, and difcharge a powder, which Acharius, who hás firit defined and named them, fuppofed to be of "a fpermatic nature;" by which we prefume he means of the nature of pollen.
4. Lirelle. Clefts. Open, elongated, feffile, black receptacles, with a fomewhat fpongy, very narrow, or quite linear difk, and a proper border, parallel to it on each fide. Sometimes there is an acceffory border from the cruft befides. This is the peculiar fructification of the genus Opegrapba of Perfoon ; fee Engl. Bot. vo 25 and 26 efpecially. The lirelle are either fimple and folitary, or aggregate, confluent, and branched. Thefe differences often occur in the fame fpecies. L. fcriptus of Linnæus is a fpecimen of the genus.
5. Pilidia. (miadobov, a little cap or hat.) Puffs.-Little round bordered knobs, whofe dilk, at firt covered with a membrane, and often clothed with fine grey hoarinefs, finally turns to powder. They are elongated below into a ftalk, fixed to the cruft, but totally different from it. Calicium of Perfoon has this fort of fructification.
6. Orbilla. Orbs. Flat, orbicular and dilated, of the fubftance of the frond, terminal, peltate, without a border, but often furrounded with radiating fhoots. The membrane, or dink, under which the feeds are lodged, is fmooth, moftly of the colour of the frond. Thefe are feen in the filamentous Lichens, or Ufnec. Spurious orbilla, bordered like fhields or fpangles when young, are found in fome Cornicularie of Acharius.

If orbilla produce real feeds, the filamentous Lichens have two kinds of fruit, for they bear alfo proper tubercles, or rather

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rather cephalodia; fee n. 12. But we cannot eafily affent to this; fee Ufrea hereafter.
7. Pelte. Targets. Flat, clofely preffed, and attached by their whole under-fide, as if glued, to the frond, fometimes at its back. They are broad, kidney-hhaped or oblong, rarely irregular, covered with a thin coloured difk, with no border, except occafionally a very minute acceffory one, which feems to circumferibe them. In an carly flage they are concave, and concealed by a thin gelatinous fugacious membrane, or veil. (See Liches, fect. 5.) - The genus Cetraria is thought by Acharius to have fpurious pelta, with a more evident border, entire, crenate or lobed, which is unconnected with the frond beneath, though the greater part of the receptacle is clofely attached thereto, and fometimes funk into its fubftance.
8. Tricce. Buttons; (Dill.)-Roundifh, feffile, unexpanding receptacles, of a peculiar, compact, black, folid fubftance, continued along their whole furface. Their upper fide is diltinguifhed by concentric or plaited and twitted folds, covered by one common membrane through all their convolutions, and lodging in their infide naked feeds, deftitute of cafes, or cells. See Gyrophora, to which thefe buttons are peculiar.-Sometimes the prefence of but one marginal fold gives this kind of receptacle the appedrance of a patellula, fee n. 2 ; but others will ufually be found with more, on the fame plant, even in Gyrophora pufulata, Engl. Bot, t. 1283.
9. Thalamia. Hollows. - Spherical, nearly clofed receptacles, lodged in the fubftance of the frond, lined with a proper coat, under which, in their fpongy texture, are cells, each containing from two to four feeds. Each hollow finally opens by an orifice in the furface of the frond above, which fometimes fupplies it with a fpurious border. Thefe are the proper receptacles of Endocarpon; fee that article.
10. Tubercula. Tubercles.-Spherical, or flightly conical, nearly clofed, cruftaceous, black, more or lefs immerfed in the furface of the cruftaceous frond, or thallus, which they elevate; or fometimes they are expofed, being merely feffile. Each contains a ball or mafs of connected feeds, detitute of cells, but enveloped in one common membrane, and the whole are finally difcharged 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 diftinct in fructification as in habit from Endocarpon. The nature of thefe minute parts is very hard to determine, efpecially as the tubercles of Verrucaria often come under our infpection after they are emptied of their contents.

It muft be remembered that Acharius here ufes the term tubercle in a reftricted fenfe, and not with that latitude habitual to Linnæus and his followers, amongft whom it commonly, when applied to Lichens, means almoft any thing that is not a field.
ir.Cifula. Cellutes.-Globofe terminal receptacles, formed out of the fubtance of the frond, filled with uncoated feeds intermixed with fibres, and at length burtting irregularly ; as in Spharopboron. 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 Bxomyces, or the Cup-bearing Lichens. (See Lichen, fect. 7.) In fome of the filamentous tribe, Ujnea, they are at firft like patellulc, and feffile, becoming afterwards convex and irregular. See orbille, n. 6.-Cephalodia are fometimes fimple, fometimes compound or conglomerated.
13. Globuli. Globules.-Globofe, folid and cruftaceous, formed of the fubftance of the frond, and terminating its points or branches, from whence they fall off entire, leaving a pit or cavity. They are fuppofed to be covered all over with a coloured feed-bearing memrobrane, and are taken for one of the modes of fructification in the I/fidium of Acharius; fee hereafter.

Acharius explains as follows certain terms ufed in his defcriptions of Lichens.

Thece arc the cafes or cells containing the feeds, in the difk of moft receptacles, at leaft in foutella.
Spore are the feeds, of whofe nature very little is known: This author declines calling them femina, becaule they ars prefumed to have no cotyledons ; but that is no fufficient reafon. The queftion is, whether they are produced by fexual impregnation; if not, they are gemma (buds or offfets). We need not here repeat what is faid under the article Gemma.

Propagula are thofe little roundifh deciduous bodies, commonly termed pozwder in fpeaking of thefe plants, but which may be called the efflorefcence. Thefe bodies are either difperfed or cluftered on the furface of the frond, and each of them is afferted by Schreber to be a hollow veficle, and by Hoffmann to difcharge, through an orifice, a, quantity of fine duft. They are alfo not unfrequently powdery at theiroutfide; fometimes interweven with very fhort and flender threads, and finally pafs into what is fuppofed by Acharius to be an affemblage of minute buds, gemma.

Acharius obferves, that "fome have taken thefe bodies for pollen, or male flowers; but that this conjecture is utterly contrary to the obfervations 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 fhields and their contents, which he has delineated in his t . 52, for male bloffoms, and this opinion was adopted by Linnæus. Hedwig neverthelefs, in his Theoria, p. 120, ftrongly combats this doctrine, afferting that Micheli might eafily be mittaken, as the real feeds, vifible only with a very high magnifier, would efcape obfervation, when fallen among the powder, and vegetating there, would caufe 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 Adanfon, who takes the contents of the fhields for feeds. Acharius adopts both thefe opinions, and offers an ingenious conjecture of his own, which is, that the powdery buds may be deftined to produce individual plants that propagate themfelves fubfequently by the fame mode; while the feeds of the fhields or tubercles may produce complete fructifying plants, which go on to increafe by feed. Hence, his genus of Lepraria, as he prefumes, propagates itfelf by the former means, without any other. We confefs this genus is very puzzling; but when fo conipicuous a plant as Lemna has fo long flowered and fruited without obfervation, and fuppofed Lepraria are from time to time detected with fhields, we are difpofed to attribute much to our igmorance. We certainly cannot agree with Dr. Acharius when he goes fo far as to fuggeft that the feeds, which originate from the fhields, may fometimes produce fhields 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 perfon fhould fee the germination of the feeds of Lichens, taken from the fhields; though there feems little reafon to doubt
their being fuch, whatever the powdery maffes or warts may be. We are chiefly led by the obfervation of Hoffmann, above-mentioned, to perfift in the opinion of Hedwig. If the powdery granules in queltion be really vafcular, and emit a duft, it is fo analogous to the anthers of all other known plants, and fo unlike the nature of gemma, that, if the contents of the fhields can be proved to be feeds, of which indeed we have no doubt, there would be little reafon to hefitate refpecting the others. We do not mean that every granular appearance about the fronds of Lichens mult be anthers. Much of it, doubtlefs, is gemmaceous, but anthers may accompany it; and the latter may in Lepraria impregnate minute or folitary feeds, that alfo accompany the granules, and that have hitherto efcaped 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 fpcaking of that genus. Some foredia originate from cracks in the frond.

Pulvinulia are excrefcences found occafionally on the furface of the frond, often cluftered or branched, whofe ufe and nature are unknown. They occur in Gyrophora pufulata; but are moft remarkable in Licben glomuliferus of Lightfoot. See Engl. Bot. t. 293.

Verruce are varioufly-fhaped protuberances, folid, and ufually fmooth, originating from the cruft, and fometimes, though rarely, bearing or lodging the fructification, as int Lichen pertufus of Linnæus. See Engl. Bot. t. 677; alfo t. 2317.2336.

Podetia are ftalks elevating the fruit, as in the Cup Lichens, and are either folid or hollow.
Lorula are the long thread-like branches of the UJnea 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. Thefe genera are 23, difpofed in three fections.

Sect. 1. Stereothalami ; (from ${ }_{\text {sepesis }}$, to deprive, and $\left.Q_{a} \lambda x \mu 0 ;, a b e d.\right)$

Receptacle none. Organs of propagation naked, fcattered or aggregate.
I. Pulveraria. Efflorefcence powdery, collected into tufts by fine, flender, interwoven threads. (Frond none.)

This genus is now reduced by its author to the following. See Lepraria chlorina, Engl. Bot. t. 2038, a moit beautiful production, which covers rocks with a coat many inches, or fome feet, broad, refembling bright lemon-coloured cloth or velvet.
2. Lepraria. Efflorefcence fomewhat globular, fcattered loofe over a cruftaceous bafe, which it often entirely covers fuperficially. (Frond cruftaceous, indeterminate.)
This, like Pulveraria, comes under the Byfus of Linnxus, who has defcribed fome fecies of it. The molt common is L. botryoides, Ach. n. 7. Engl. Bot. t. 2148, feen every where on the trunks of trees, and on pofts, to which it gives a green colour in winter. Another very common fipecies, incana, n. 2, has been found with patellula, 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 Hematomma; Engl. Bot. t. 486. Lepraria rubens, n. 6, is Conferva licheo nicola; Engl. Bot. t. 1609; and probably Michell's Lichen cruftaceus, arboribus adnafcens, tenuifimus, 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 previoully diftinguifhed it), in his order of A/perma, defined as "deflitute of fructification." But many of the plants, which he refers to that order, are now known to have fecds, and his genera are liable otherwife to much exception.
3. Spiloma. Efflorefcence? in thapelefs, fuperficial maffes, woolly and powdery, rigid. (Frond crultaceous, indeterminate, thin, uniform. $) \rightarrow$ Of this genus feveral fpecies may be feen in Engl. Bot. v. 29 and $30^{\circ}$. Nutwithftanding the above character, the cruft may be feen to be determinate, or limited, in Engl. Bot. t. 2150 , where it has a very diftinet and curious border.
4. Variolaria. Efflorefcence globofe, collected in diftinct allemblages (foredia). (Frond cruftaceohs, moftly deter-minate.)-Great light has been thrown upon this genus fince the publication of the Methodus of Acharius. Sce 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 himfelf to the fecond fection of his Lichenes, as having true receptacles. It feems indece, in our opinion, to give no fmall fupport to the theory of the powdery efflorefcence (propagula), above-defcribed, being the male part of the fructification. Variolaria has true receptacles, feated on a thick tartareous cruft, which fupplies them with an acceffory border, of more or lefs thicknefs or regularity. Their difk, or fpace within the border, is occupied with an affemblage of the powdery fubftance in queftion, of which fo much has already been faid, and under which has been ooferved, in feveral feccies, a coloured flefhy or waxy difk, lodging feeds (as we all prefume them to be) in vertical cells; like a true fhield. Here then the two fexes feem united in one receptacle. In fome cafes the male is moft abundant and predominant, and the waxy dik is fcarcely difcernible; at leaft at that period of growth when fuch fpecimens have happened to come under examination, which is when the powdery fubflance renders them moft obvious; but it is moft likely, from analogy of other plants, that the difk may fubfequently increafe. In other inftances, as in Lichen multipuncrus, Engl. Bot. to 2061, the powder is in lefs proportion, fooner almolt difappears, and the diff is very evident beneath it. Some traces of a dilk may be found, in what we would term the flowering flate of the original Variolaria faginea. See Engl. Bot: t. 1713.-The Hedwigian theory of the impregnation of Lichenes appears to us greatly confirmed by thefe obfervations, and we cannot but think that the opinion of the germination of their powdery efflorefcence has been too hattily admitted by recent naturalifts.

Sect. 2. Idiothalami ; (from iboos, proper, and ia $\lambda x \mu$ oc.) Receptacle compofed of a peculiar compact hardifh fubftance, not in any manner formed out of the frond, from which it differs in colour (being moftly black).

The feeds are naked, not enclofed in proper cells, except in Endocarpon; upon which we fhall offer fame remarks hereafter.

* Receptacles open.

5. Opegrapha. Clefts black, feffile, oblong or linear, fimple, confluent, or branched, fraight or zigzag, bordered; their difk flat or flightly concave, naked or powdery, narrow, linear, rarely dilated ; their border (of therr own fubitance) 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 cruflaceous, uniform, thin, generally indeterminate; occafionally leprous.)

Lichen foriptus of Limnæus, with about thirty known fpe-
cies befides, compofe this genus. See Engl. Bot. v. 25,26. 32. \&c.

5*. Arthonia. Achar. in Schrad. N. Journ. v. 1. fafc. 3. 13.3: Receptacles flattifh, (hapelefs, fmooth, without a border, feffile.

We introduce this, as defcribed by the author fince the publication of his Mishodus. A genuine example of it is A. Swarlziana, fee as above, P. 13. 1. 4. f. 1. Engl. Bot. t. 2079. We conceive feveral plants are improperly referred to this genus by Acharius, as Spilama verfico or, Engl. Bot. t. 2076, and Opegrapha aflroidea, Ach. Meth. 25. Engl. Bot. t. 1847 ; to lay nothing of Lichon croceus, t. 498, and fuccatus, t. 288 ; whofe Shields or targets have no irregularity of thape, and whofe fronds are of fo totally different nature from the cruft of $A$. Swartziana. In fhort, we can fearcely find another certain fpecies to affociate with this; except poffibly A. gyrofa, Ach. as above, p. I4. 1. 4. f. 3 .
6. Lecidea. Spangles feffile, with a flattifh or convex difk. (Frond various; cruftaceous, whether uniform and limited, or fcattered and indeterminate; or even leafy, fomewhat membranous, or ftellated. Acharius adds "rarely umbilicated;" from an idea now proved erroneous, that Gyrophora puflulata was a Lecidea). See Gyrophora.

This is an extenfive genus, excellent as far as only cruftaceous fpecies are admitted, fuch being the genuine Lichenes leprof tuberculati of Linnæus. See Lichen, fection the 1ft; and the term patellule in the prefent article... Thefe conftitute the firlt fection named catillaria, comprifing 80 fpecies, 45 of which have black or blueih receptacles, the reft red, yellow, or brownifh. - The fecond fection, lepi. doma, has a figured or lobed cruit, often imbricated, and embraces 14 fpecies, among which are Lichen niger, Engl. Bot. t. Ir6I, and decipiers, t. 870.-The third is a fmall fection, with a leafy cruft, fapberiaria, into which thould be admitted Licben dedaleus, Engl. Bot. t. 2129.-The fourth, omphalaria, contains only Gyropbora puffulata, with its near relation penfylvanica, and ought to be abolifned.
7. Calicium. Puffs (pilidia) turbinate, lenticular, or nearly globofe. They are generally elevated on a rigid fimple falk, of a totaliy different fubitance from the crult. (Frond cruftaceous, either leprous, or tartareous, uniform or fcattered, powdery and granulated, or folid and checquered, or fomewhat leafy and imbricated; fee Lichen phrocephalus, Turn. Tr. of Linn. Soc. v. 8. 260. t. 6.) Acharius defrribes is fpecies, to which feveral have tince been added by difcoveries in Lapland and England. 'They are minute productions, long confounded with fungi, from which they were firtt ditinguifhed by Perfoon on account of their cruft. It mult be acknowledged that they bear the fame analogy to feveral genera of fungi, that other Lichens, with proper ihields, do to others, the Ocafoorce of Hedwig. Examples of Calicium are feen in Engl. Bot. t. 1465, 1539, 1540. 1832. \&c.

- Recepracles clofed, at length opening.

8. Gyrophora. Buttons (trice) fuperficial, fattilh. (Frond leafy, peltate, between membranous and leathery.) See Girophora, in its proper place.
9. Bathelium. Receptacles feffile, fomewhat globofe, opening by a deciduous lid, hollow, of one to three cells, lined with feeds. (Frond cruftaceous, indeterminate, uniform.) This genus conlits of only B. maftoideum, Ach. Meth. IIr. i. S. f. 3 , found on the bark of trees at Sierra Leone by Dr. Afzelius.
10. Verrucaris. Tubercles elevated, difcharging their :oncatenated feeds by a terminal pore, or elfe falling out untire. (Frond thin cruftaceous, iniform.)

A minute tribe, of which about 40 fpecies are known. Sce Lichen Schraderi, Engl. Bot. t. 17 II; and analeptus, t. 1848 .
11. Endocarpon. Hollows (thalamia) hidden in the fubflance of the frond, each oyening by a little mouth. Seeds enclofed in cells. (Frond membranous, fomewhat cruftaceous, of a determinate figure.) See Endocampon in its proper place.

As the feeds are certainly enclofed 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 difk lining the cavity of the receptacle; whereas, in that, the concatenated naked feeds, cluftered into a ball, fill the cavity. Their habits indeed are alfo totally unlike.

The receptacles of Endocarpon are, moreover, fo united to the fubltance 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. Ceenothalami; (from xowos, common or geteral, and $i \alpha \lambda \alpha \mu 0:$.)

Receptacle formed of the frond itfelf, with which it agrees in fubitance and colour. Seeds inclofed in proper cells, except in Spharophoron.

## * Receptacles compound, either picrced or gaping.

12. Thelotrema. Receptacle compound; the outer one wart-like, elevated, of the fubftance of the cruft; inner fomewhat globular, with a concave difk. (Frond a firm, continued, indeterminate cruft.)-Examples are Lichen per. tufus, Linn. Mant. 131. Engl. Bot. t. 677; and L. inclufus, t. 6,8 . 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 diftinct; and in others they are ufually as diltinet and feparate as the fhields of any other Lichen.

*     * Receptacles nearly globular, clofed, at length burfing

13. Spherophoron. Cellules nearly globofe, each enclofing a roundifh ball of naked compact feeds, which turns to black powder, and is difcharged by the torn orifice, leaving the cellule hollow and empty. (Frond firubby, 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 fragi/is of Linnæus, make up the lift of known fpecies; fee Lichen, fect. 8 fruticulofi.
14. Ifidium. Receptacle of the feeds terminal, fomewhat difcoid, folid, various in thicknefs, covered with, and fhining through, the crust of the papille of thes frond, which at length burts, and each receptacle appears coloured, and partly expoled. Globules alfo either terminate each of the papilld, or are nearly feffile on the cruft itfelf. Thefe 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 cruftaceous, 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 Iffidium, a genus founded by Acharius. He allows in a note that this genus is doubtful and ambiguous, nearett to Spbarophoron, but differing in having a properly cruftaceous frond, or bafis, and efpecially in the nature of its ftratum proligerum, (dik, or receptacle of the feeds,) which does not turn to duft; as well as in the prefence of terminal globules (fee the explanation of this term, n. 13, among the kinds of receptacles, ) even when the other receptacles are wanting.
wanting. He adds that ehis double fort of fruit in Ifidirm demands further enquiry, for he is firmly perfuaded that thefe globules belong to the organs of fructitication.-We prefume that Lichen oculatus, Engl. But. t. 1833, (fee Stereoonulon hereafter) exhibits the former kind of rectptacle, and L. Weffringii, t. 2204, the latter; but of this we have no certain knowledge.- I/didium gonalcdes of Acharius appears by his Supplementum to be a mere variety of the cruft of L. sartareus of Linnæus.
*** Receptacles orbicular, open; their border of the colour of the frond, furrounding a varioufly-colourced difk.
15. Urceolaria. . Shields or fpangles cup-fhaped, varioufly coloured, funk into the fubflance of the crult, or of its fragments or warts. Difk concave, rarely becoming flattifh by age, but never elevated above the cruft. Proper border often fcarcely manifelt, of the colour of the dill ; the acceffory one fometimes formed of the cruft, which is elevated like a ring, furrounding the difk of each fhield; but it is generally Spurious, not united to the Shield throughout. (Frond cruftaceous, tartareous, uniform, determinate, chec. quered or cracked, rarely figured or lobate.) -Esamples of this genus are the common Lichen forupofus; Engl. Bot. t. 266 ; the rare exanthematicurs, t. 118 q. Tr. of Linn. Soc. V. I. ti. 4. f. I; and Urceolaria calcarea, Ach. Meth. 142, very common on grey marble tombftones, in expofed ccuntry churchyards, where it forms infeparable hard white patches, two or three feet broad. This latt is atellaria multipunta, Hofm. Pl. Lich. t. 63.' f. 1 - 3 ; Lichen cinereus, Engl. Bot. t. 820, but not that of Linnxus. It is erroneoufly made a Parmelia in Ach. Meth. 158.
16. Parmelia. Shields fuperficial, or elevated, thick or fomewhat membranous, flattifh, convex, or concave, csowned with a free acceffory border. (Frond various, cruftaceous, leafy, branched or laciniated, cartilaginous, membranous or gelatinous.) This valt and various genus fwallows up the greater part of the natural order; Liecidea, n. 6, being far inferior to it in number of fpecies, though greatly fuperior as a natural and confiftent genus. 204 Parmelic are defined in the Methodus, befides feveral in the Supplementum of Acharius. This author is often in doubt to which genus fome \{pecies belong, for want of knowing them in every flate of growth. The tiue Parmelic have an acceffory border of the colour and fubftance of their cruft, but no proper border formed of the fubftance of the dink. The fections of this genus are eleven, diftinguifhed by the nature of their frond, the firlt three being cruftaceous, as in Lichen tartareus (fee Lichen, feet. 2.) ; the two next are leafy, more or lefs depreffed. The fixth fection confilts of Hoffmann's Collema, (fee the early part of the prefent article,) and has been lately reftored to the rank of a genus in Engl. Bot. t. 2284, with this character. "Shields orbicular, horizontal, nearly feffile, fuperficial, with a gelatinous acceffory border." The five remaining fections are the moft mifcellaneous poffible, nearly as much fo as the original genus Lieben in Linnæus.
*** Receptacles fiattened, nearly defitute of a border; their upper fide entirely covered with a thin feed-bearing difh, of confiderable folidity at the furface.
17. Stiza. Shields on the upper fide of the frond, feffile, clofe-preffed, orbicular, membranaceous; their difk flat, rarely fomewhat convex; their border acceffory, thin, entire, free, flightly tumid, rarely fringed, of the colour of the frond. Pits amongtt the down of the under fide, fcattered, feffile, minute, coloured; their dik roundifh, powdery; border elevated, a little inflexed, entire or jagged, fometimes obliterated. (Frond leafy, membranous or in
fome meafure coriaceous, lubed or jasged, downy or fhaggy beneath.)

A beautiful and natural genus, of which the pits (cyfhelle) at the back of the freod form the moft effantial character. Acharius feems to have admitted them as a part of the fructification. If fo, they fould feom to be the male blofoms. The fpecies of thiz grenus, however, nften abound with powdery efforefcence. See Lichen limblatus, Englo Bot. T. 1104; alfo fylvaticus, t. 2205; crocatus, t. 2110 ; and curatus, 2. 2359 . Acharivs has fourteen fpecies in all, feveral of them extra-european.
18. Pelidea. Targets clofely attached to the frond. about the margin, on the upper or under fide, rarcly lateral, or towards the midcle, each entirely confifting of a fattifh, very rarely concave, coloured difk; border acceffory, vely thin and fcarcely difcernible, united with the frond, and of the fame colour. (Frond leafy, rather leathery; with downy veirs and fibres beneath, rarely naked; the circumference lobed, its barren lobes deprefied, fertile oncs elongated, afcending, naked at the back.)

One of the moft natural genera, the Pelligara of Hoffmann; moft allied to Stiaa in habit, but wanting the cypheclle, inftead of which the prominent veins or ribs underneath are remarkable.-See Lichen caninus, Engl. Bot. t. 2299; rufferens, t. 2300; and the more rare sinofus, t. 887; apbthofus, t. 1119; and colifnes, t. 1834; which laft Dr. Acharius now admits as diltinct from ruffecers, ard the fame plant with his Pollidea foutasa. He allo informs us that his $P$. chlorophylla, n. 7 , is no other than his $C e-$ traria fopincoia E. For mention of other fpecies, fee Lichen, fect. 5.- Lichen croceus, Engl. Bot. t. 498 ; and Jaccatus, t. 288, feem to us much better placed in this genus, as in Ach. Meth. 290, than in Arthonia above-mentioned.
19. Cetraria. Targets fhield-like, thickifh, fat, clofepreffed, feffile, near the margin ; their circumference loofe, rounded, deformed or wavy; difk coloured, fightly convex; border acceffory, very narrow, entire or crenate, of the colour of the frond. (Frond leafy, nembranous or fomewhat cartilaginous, rigid, fmooth and naked on both fides; fometimes cellular or pitted; lobed and jagged, oftea crifped at the edges.)

The receptacles of this genus are, as it were, of an intermediate kind between hields and targets, rather moft akin to the latter. The nature of the frond however, its fmoothnefs, polifh, and membranous, fomewhat rigid, texture, render Cetraria very dillinct, on the fcore of habit, from the laft. But eight or nire fpecies are defcribed; among which are Lichen ifandicus, Limn. n. 50. Englo Bot. t. 1330; cucullatus, Sm. Tr. of Linn. Soc. v. 1. 84 . t. 4. f. 7; gluacus, Linn. n. 67. Engl. Bot.t. 1606. See Lichex, fect. 4.

2c. Corricu!aria. Orbs faipld-like, terminal, peltate, thickifh, cartilaginous, orbicular, flat; at length rather convex, uneven, and irregular; dik generally of the colour of the frond; border fcarcely any, except in a young flate, a flight acceflory one, entite, naked, or radiated, at length reflexed. (Frond cartilaginous, rigid, fmooth, rather folid, fpongy within, of a flurubby, tufted, branched habit, the branches acute.)-This genus is about as numetous in fpecies as the laft. It is conceived by Acharius to be intermediate betwixt Parmelia and $U$ J/nea, approaching the former moft in the frond, the latter in the fruit, except that the occafionally deeper colour of the dik, and the prefence of an early border, betray more affinity to the latter.-Examples of Cornicularia are, Lithen trijfis of
$+5$
Wcber,

## LICHENES.

Weber, Linn. n. it2, defcribed in Engl. Bot. t. 720 ;and ropisilus, t .452 ; which latt is $C$. Spadicen of Acharius: allo L. bicolur, Engl. Bot. t. 1853, which has lately been thewn by the Rev. "H. Davies to be the Ufnea lane nigre itghar faxis adberens; Dill. Mufc. 66. t. 13. f.8, a longdifputed and uncertain plant; t. 13. f. 9. being L. lanatus, Engh. Bot. t, $84{ }^{6}$.
21. U/finea. Orbs fomewhat coriaccous, flattened, pel. fate, naked and finouth on both fides, mollly very much dilated; difk firlt concave, then flat, even; fubfequently rather convex and cracked, or watty, fcarcely coloured; border either none at all, or an acceffory one, which is entire or toothed in the circumference, very often radiated. Kinobs (ccephalodia) on the fame, or a different plant, Feffile, lateral, fcattered ; at firlt fhield-like, and fometimes, in a manner, bordered; finally convex and warty, coloured.
This apparently double mode of fructification in the Ufnee, or proper filamentous Lichens, fee Liches, fect. the lait, involves as great a myftery as the propagula and Feeds. Experiments a requifite to determine whether the orbilla produce feeds, as weil as the ceppalodia. Till this is proved, we cannot but feel perfuaded that the former are more probably the male blofloms; or poffibly they may be abortive or imperfect female ones. Being much the moft frequent and confpicuous of the two, and greatly refembling fhields, they have been of courfe taken for the fruit, the cephalodia having nearly efcaped obfervation, till lately ; fee Sm. Tour on the Continent, ed. 2. v. 1. 335, and Engl. Bot. t. 872-(The frond of $U$ fnea is branched, with elongated, cylindrical, thready fhonts, either nearly erect, proftrate or pendulous, befet with imall fibres, and tapering towards the extremities; their coat crultaceous, more or lefs diftinctly jointed like a necklace, and roughifh, having a central or medullary thread, which is femipellucid and elaitic.)
There can be little doubt of the natural diftinctnefs of the prefent genus, though fome Parmclie, (as L. divaricatus of Linmeus,) greatly refemble it in general afpect. The jointed frond is very curious, and'we believe effential. See examples of Ufiea in I.ichenforidus, Engl. Bot. t. 872; birtus, t. 1354; plicatus, t. 257; and articulatus, t. 258. Many fpecies referred by Holfmann and others to the fame geius, 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, Ufinea rather belongs to the following fection.
$* * * * *$ Receptacles convex, more" or lefs gllbofe, clothed with a Secd-baring layer, or difl, Seftle cither on the branches, papillary procefes, or peculiar falks, of the frond, terminal and permanemt.
22. Steriocaulon. Knobs fomewhat turbinate; at firft furnifhed with a proper border ; then globofe, without falks, fimple or cluftered, coloured, permanent; dilk at firft flat and fmall, but gradually occupying the whole; border of the fame unisiterrupted fublitance and colour, entire, at length obliterated. (Frond folid, almoft woody, caulefcent, erect, branched, molly clothed with fcales, rough and fibrous.)

This genus is more reftricted than the Sterectaulon of Hoffmann, yet not much more certain or definite. Its proper type is Lichen pa/chalis, Engl. Bot. t. 282. Many others are doubtful. We can fcarcely diltinguifh S.tabularc, Ach. Meth. 316. 2. 7 .f. 3 , from Lichen oculatus of Dickfon, Engl. Bot. t. 1833, Ificium? oculatum of Acharius.
23. Bacinyces. Knobs capitate, nearly globofe, with refexed, farcely bordered, edges, terminating their own pro-fer'fruit-ltalts, thimple or clultered, coloured, permanent;
difk properly none; the whole globofe furfice being covered with the thin, folid, feed-bearing coat; border none. (Frond either fomewhat crultaceous; foftifh, granulated, in determinate, rarcly figured; or confiting of a cartilaginous, leafy and lobed crutt : fruic-ftalks elongated out of the very fubftance of the frond, fimple or branched, tubular or nearly folid, eithcr dilated or tapering upwards, fometimes jarren.

A great genus, very difficult for the determination of its fpecies, of which about 50 are defcribed. Acharius divides it into fix fections; in the firlt are Lichen byfoides, Engl. Bot.t. 373, and the beautiful $L$. Bromices, t. 374 : in the fecond L. Papillaria, t. 907 : in the third L. rubiformis, t. 2112, and cafpititius, t. 1796: and in the fourth L. delicatus, $\mathrm{t}, 2052$, and microb byllus, t . 1782 . Thefe four fections comprife in all but 14 or 15 fpecies. - The fifth is by fat more confiderable, confitting of the true cup-bearing Lichers; Scyphiferi or Pyxidati of authors, which terms exprefs the cup-like dilatation of their fruit-ltalks upwards. Whe have already fpoken of this tribe; fee Licuex, fect. 7. Acharius defines 24 fpecies, with numerous varieties. They feem to have engaged much of his attention. Beautiful ipecimens of them are his Bcomyces bacillaris, (Lichen filiformis', Engl. Bot. t. 2028 ; L. cocciferas, $t .205$; bellidiflorus, t. 1894 ; and alcicornis; t . I 392.-The fixth fection, confilting of 11 fpecies, embraces the fhrubby and awl-fhaped kinds of Hoffmann's Cladonia. Such are L. uncialis, Linn. n. 1c7. Engl. Bot.t. 174; rangiferinus, n. 106. t. 173; and vermicularis, n. 10S, 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 ftudied, the more honour will it be found to confer on its author. Whatever occafional laxity, or want of precifion, may be obfervable in his ufe and adaptation of terms, will be found inévitable in fo intricate a ftudy, in which he was himfelf learning, as well as teaching, at every ftep. We have unfortunately not yet been able to procure a fight of his more recent publication, entitled Lichenographia Univerfalis; but from a manufcript fcheme of the whole, and fome information giv $n$ by an intelligent friend, we learn that the great object of this work is the eftablifhment of a new diftribution of Licbseses, in which the genera are vaftly multiplied. Moft of the new ones feem formed out of the fections, or fubdivifions, of thofe of his Metbodus; fo 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 reafons, decide. The few plates of the book in quettion are, as we underftand, entirely fubfervient to this object, and the fynonyms, as well as every thing relating to fpecific illuftration, are but compendioufy touched. Such fubjects will teceive a full and fufficiently diffufe expofition, in a new work, the firf fheets of which we have lately been alldwed to perufe, the Lichenograpbia Britannica of Mr. Dawfon Turner, and Mr. William Borrer'. This, when completed, will exhibit a finifhed hiftory of the Britifh fpecies, the knowledge of which is nearly equivalent to an acquaintance with the characters of the whole order. Analmoft complete feries of their figures is already before the public in the Englifh Botany, to which we have fo often reFerred. No other work, in any country, contains fo many. The difcrimination of the fpecies, in this and the other tribes of Britifh plants, has all along been'a primary object of that publication: the new genera of Lithenes having been very cautiouly adopted; indeed fcarcely at all iill latelly, they having been confidered by the author as in too fluc-
fluctnating a ftate, an idea which the above account will abundantly juftify. The fame reafon, in addition to fome ineritable impediments, has hitherto kept back the fourth volume of the Flora Britannica, where the Lichens will make a principal figure.

A very interefting work, on the dyeing properties of Swedifh Lichens, is publifhed at Stockholm, in 8vo. numbers, from the pen of Dr. Weftring. Seven numbers have reached us, in which 25 . Pecies of this natural order are ilIuftrated by admirable coloured plates, with diffections, drawn by the hand of Profe ar Acharius himfelf, and accompanied by fpecimens of all the colours yielded by each fpecies, the manner of procuring which is the chief fubject of the Swedif:letter-prefs. We regret that it is not given to the public in a language more generally undertood. The variety of beautiful colours afforded by Pulveraria (or Lepraria) chlorina, t. x, are very Itriking, and amount to I4, in which blue, green, and yellow are confpicuous. Ifidium $W_{\text {Vefliringii, }}$ t. 4 , yields beautiful fhades of red, which colour, with different browns, is derived from moft of the tartarcouscrufted tribe. The leafy membranous ones feem to excel in browns, as L. faxatilis, t. 2; omplaalocles, t. 7 ; and $t n-$ caulhus, t. 19, Sm. Tr. of Linn. Soc. vo I. S3. t. 4. f. 6. The cup-bearing kind appears alfo by the common $L$. $p y \times \mathrm{s}$ :datus, t. 17, ta promife much in dyeing. When the high price of Orchall, Lichen Roccella, is conlidered, the inveltigation of different fpecies under the guidance of improved chemiftry, can hardly be thought an idle fpeculation, even by thofe who have no other motive for the fludy of nature.

We cannot conclude this article, without adverting to a fubject, the confideration of which we have been difpofed to put off as long as we could, becaufe it is painful to differ decidedly from thofe who have made any fubject their frequent and patient Itudy, and to whom, moreover, natural fcience is fo much indebted in other refpects. We allude to the fuppofed transformation, for we can call it nothing lefs, of one fpecies of this family into another. We can readily explain why Lichen niter, Engl. Bot. to M161, may feem to be turned into plumberus, t. 353 , from the feeds of the latter falling into the decayed crult of the former, and finding there a molt excellent fituation for their germiuation ; as an acorn might vegetate in a bed of rotten mofs. But the transformation of a tuft of mofs into a forelt of oaks would fcarcely be a lefs miracle than that fuggetted above, or than the change of Lichen tricolor, or corneus, into a Spharia. It is but juftice, indeed, to the excellent botanit who has afferted thefe changes, to declare, that we have no lefs extraordinary reports of the fame kind from another quarter, refpecting the progrefs from one fpecies to another ; in all which cafes, doubtlefs, the intricacies of nature have deceived a molt acute obferver. We fhould fcarcely venture to fpeak on this fubject, however clear to our reafon, from the botany of the clofet only. A flight degree of practical obfervation will ferve to convince any one, that the diffemination of many far more obvious plants than thefe, is hardly to be explained, and that the fifting fcenes of nature, in the animal as well as vegetable theatre, are almott a metamorphofis. But we affert, with the confidence of experience, that the fpecics of Lichens themfelves, although undoubtedly liable to varieties like other plants, of which we have traced fome curious inftances amongt the alpine Gyrophore in particular, are as conttant as thofe of any other plants, and even better defined than many of the molt fplendid. They differ indeed much in duration, fonewhat in feafon, and above all perhaps in luxuriance, ascording to favourable or -unfavourable circumitances; for, they are
among the mot hardy children of Flora, deftined to thrive where other3 would perifh, and to prepare the way for fuch as are lefs able to provide for themfelves. To underfland them well requires laborious refearch, and perpetual olfiervation; but the curiofity and beauty of their llructure wilt repay our toil, whilit, if we miltake not, the certamey of their characters and diftinctions will afford fatisfaction, as well as intruction to the fcientilic mind. S.

LICHENOIDES, Dill. Mufc. 124. Sce Lrchen.
LICHFIELD, or Litchemln, in Gegrapes, an ancient city fituated in the humdred of O/flow, and county of Stafford, England. According to the parliamentary returns of 1800 , it then contained $5 ; 3$ houfes, and 4712 inhblitanits, of whom 1666 were found to be engaged in variens trades and manufactures. The more ancimit name of this city was Lichentield, which, according to fonse antiquaries, figninies the "lield of dead bodies," from a mafiacte of the Chriftians, faid to have takea place here during their contefts with the Pagans in the reign of the emperor Dioclefian. Mr. Shaw, however, in his "Hitory of Staffordfiire," exprefice his decided opinion agzinif the truth of this tradition, and anth greater probability corfiders it as dersing its same from its marfhy or watery fituation; the word Leccian, fro:n which lich comes, fignifying, in Saxon, land covered with water. Lichfield is fuppofed to have arifen on the ruins of a Ruman itation called Efocetum, which lies about a mile from the prefent city. Whether this idea be correet it is not eafy to determine ; but it feems to be clear that Lichfield was totally unknown, or, more properiy fpeaking, had no exittence either in the time of the Britons, or Romans. The origit of it, according to the belt authorities, is attributed to the Saxons; and Mr. Shaw fays, it was the frit eftablifhed feat of that people in England. In the year 6rog, when St. Chad was bifhop of Lichfield, it was little more than a trifling village. Even after the Norman conqueft, it was confidered by the fynod, then held at London, 'as too mean' a place for the refidence of a bifhop, for till this time the bifhops lived in an obfcure manner; and feem 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 refidences, of fome Saxon princes: for, though no traces of building remain, the fituation is too fine and commanding to have efcaped the notice of that warlike peoplc. In the reign of Henry I. Lichfield was encompaffed with a ditch, and the cafle was fortified by bilhop Clinton. No part of the fo!tifications of the latter are now vifible ; but the field in which it thood is Itill denominated Calllefield, and the ditch around the city may be eafily traced by an attentive obferver. The right of coinage was granted to the billiops of this diocefe by king Stephen; but they did not enjoy this privilege for any confideratle period. Bifhop Langion, who flourified 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 feparates the town from the clofe. In the twenty-third year of the reign of the laft-mentioned prince, (1305,) Lichfield firft fent members to parliament, which it ever after continued to do. Edward VI. conltituted it a city by charter in the year 1549. This charter gave the corporation power to appoint bailiff and other chief officers, who fhould be entitled to hold all pleas within the precincts of the city. Queen Mary, with the authority of parliament, canfirncd thefe privileges in the year 1553 , and added feveral others of importance. The city, which before that time formed a member or 452
parced

## LICHFIELD.

parcel of Stafordhhire, was then declared to be a county of itfelf for ever, from and after the enfuing fealt of St. Thomas. All actions of whatever denomination arifing within the city, were ordained to be held by the bailiffs and citizens, if they could determine them, and if not by the julticcs next coming into the city, and not on any account by any authority out of the city. Thefe great privileges were conferred in con. fequence of the faithful fervices of the citizens in the time of rebellion. Both thefe charters were ratified by queen Elizabeth, and afterwards confirmed by her fucceffor James I. who granted Itill further immunities to this eity. Charles II. confirmed all the privileges of this city, by a charter dated the 5 th of November $166+$. The govirn. ment at prefent is velted in two bailiffs, clected from the common council, one of whom is named by the bifhop, and the other by the council themfelves, a recorder, a fheriff, a fteward, and other inferior officers. The burgeffes are twenty-four in number. Lichfield fends two merabers to parliament, the right of election being in the bailiffs, magiltrates, freeholders of 4 Cs . a-year, the holdcrs of burgage tenements, and fuch freemen as are enrolled ard pay fcot and lot. The number of voters is ellimated at 620 .

This city has been the feat of a bihop's fee from a very early period. The famous Se . Ceadda was confecrated in the year 669. The great Offa, king of Mercia, of which Staffordfhire formed a part, infifted upon his kingdom being governed by an archiepifcopal power, and that the bifhop of Lichfieid fenuld be appointed to that dignity. Accordingly Adulphus, the fuceellor of Sigebert, was created archbilhop of Lichfield by fope Adrian, and the pall fent to him from Rume, about the year ${ }^{7} 86$. Lichfield, however, did not long enjoy the pre-eminence it had thus acquired, for upon the death of Oifa it was again reduced to a bifhopric, at the earneft requelt of the archbithop of Canterbury, who prefented pope Leo, the then poffelfor of the papal chair, with a large fum of money, in order to give weight to his entreaties. For a confiderable period the bilhoprics of Coventry and Lichfield were united, but at the reformation they were agai: disjoined. In the tower, built by bihop Clinton, king Richard II. is faid to have kept his fumptuous Chriltmas feltival, in the year I 397, when he con. fromed two hundred tuns of wine and two thoufand oxen. This fortrefs was likewife the place of his confinement when on his way to the Tower of Loudon as a prifoner, about two years afterwarts. Here he attempted to effect his efcape, by flipping from the window of the high tower into the garden, but being difcosered was carried back to his conlinement. Lichfield has ever been celebrated for the artach nent of its citizens to the crufe of royalty. When the civil war commerced between kjog Charts and the parianme. \& his majety having fent an order to the inhabitants of his loyal city to brint ia their arme, his order was not only willingly compled with, b:t many of the ishabitants volurtarily flubferbed condeleable fums of meney for his ufe, and eneolled themfetve: as foldiers under the command of captain Richard Dyott, fir the protection of their own city againlt the parlamentary for es. This officer being joined by many ncblemen and gentlemen of the country under the earl of Chellerficte, the cathedral and clofe were fixad upon as a proper place of d dence from the heirht of its lituation, and the trength of the fortifications around it. In a flort time after the garrifon was a:tacked by the republican troops. During this fioge they maintained their polt with great refolution, but the town as well as the cathedral fffered very material damage. In one affiult, lord Brock, a moft furious fanatic, who commanded the parliamentary army, lolt his life in a manner fomewhat
fingular. Ifaving drawn up his army about half a mile froin Lichfield, and prayed molt devoutly for the deftruction of the cathedral, he ordered an immediate attack, and placed himfelf in a fmall houfe near the fouth gate, with the view of directing the operations of the gunners, whom he had flationed againf this gate, in order, if poffible, to open a breach. Upon fome fudden accident which occafioned the foldiers to give a fhout, lord Brook came to the door, and being perceired by a gentleman of the name of Dyott, who flood on the top of the tower, he levelled his piece at him, when the bio penetrated directly into the focket of the cye and lodged in the brain, cauting inftant death. As this happened on the feftival of St . Chad, the patron of the church, the ball was fuppofed to have been guided by the influence of that faint. The lofs of their commander, however, did not difmay the belieging army, who continued to carry on the fiege with great vigour, and at laft fucceeded in compelling the garrion to fubmit. The troops of the parliament left to fecure this fortrefs were in their turn attacked by prince Rupert, about the year 1643Colonel Rowfivell then commanded the garrifon, -who evinced the utmoll bravery in the defence of his poft. Thic: commanding fituations chofen by prince Rupert, however, for erecting his batteries, and the explofion of a mine, foon effected an extenfive breach, and the gayrifon was compelled to furrender. The prince conferred the governmett on colonel Hervey Bazot, who maintained it for the king till the utter dellruction of his majelty's affairs, when he very properly furrendered upon honourable terms.
Lichfield fands in a very pleafant and healthful valley, almolk in the centre of England, at the difance of 120 miles from the metropolis. It is furrounded by hills of a moderate fize, eafy of afcent, 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 lave generally affumed the air and tafte of modern times, and the firit of improvement, fo confipicuous in the prefent age, is plainly manifetted in many alterations which have taken place within thefe few years. . This city was formerly divided into two portions, by three lakes cr pools of water, one of which is now dried up. It contains three : arifhes, but part of the lands of St. Chad's and St. Michael's lie without the boundaries of the ciry. Licbfield is adorned with a number of buildings well worthy of notice, both on account of their antiquaty and the fplendid Atyle of their architecture. Of thefe the molt confpicuous in every refpect is the cathedral, which ftands in the clufe, and is faid to have been fortificd by billop Clinton; though Dr. Shaw thinks he only repaired the forritications which had exited there from the time of the Saxons. Some are of opini:n, that the cathedral was frett founded by king Oliwy, in the year $65 \%$; but others attribute it to Peada, his for-in-law. Who was the firt hifhop is fomewhat uncertain, but St. Chad is generally allowed that hunour. The buildings of this cathedral, which was then called the Mercian church, were probably at firit only contiructed of wood. The whole of them were pulled down, in the year 1148 , by bifhop Clinton, and another of enlarged dimenfions, and more elegant defign, commenced in the place of the Saxon fructure. To this prelate the cathedral is indebted for that noble tone vault, which is at this day the admiration of archirects, and is undoubtedly one of the fineft works of its kind extant in England. The next benefactor to this cathedral was Walter de Langtons, who Jaid the foundation of the choir. He expended the fum of two thoufand pounds on a firine for the reliques of St . Chad, and obtained many privileges for the vicarg and canons, one
of which was the right of hanging upon the next gallows, without trial, divers perfons who withheld their lands from the church. This beautiful flrine continued in its full glory till the difolution, when the cathedral was defpoiled of this and many other valuable relics to fatiate the avarice of the tyrannical Henry.

During the fieges which it fufained, as already mentioned, in the time of the civil wars, this noble building fuffered much, being the firlt eathedral that fell into the hands of the parlizment. The roof was ftripped of its lead; and many of the curious flatues, monuments, and other carved works, were demolifhed with axes and hammers. The coflly and beautiful painted windows were battered to pieces. In fhort, little of this fplendid ftructure efcaped ruin, except the noble vaulted roof already mentioned. What did remain was ultimately deftroyed in 165 I , when colonel Danvers, by authority of the Rump Parliament, employed workmen in order to effect this purpofe. At this time, the remarkable bell, called "Jefus bell", was knocked to pieces by a pewterer named Nicklin. During this perfecution of the eftablifhed church, Dr. John Hacket rendered himfelf remarkable by his courage and refolution. When a ferjeant with a trooper were fent to flop the performance of the daily fervice, and, putting a pifol to his head, threatened to Shoot him inftantly if he did not defift, this noble prelate calmly, but refolutely, replied, "Soldier, I am doing my duty; do you your's:" a fentence which may juftly be reckoned among the remarkable inftances of the fublime, and which fo imprefled the minds of the foldiers, that they left him to the free exercife of the duty he thus evinced himfelf fo worthy to perform. No fooner was he nominated to the bihopric of Lichfield, than he vigorounly fet himfelf to reftore the ancient fplendour of the cathedral. By his large contributions, the benefactions of the dean and chapter, and the money arifing from his affiduity in foliciting aid from the gentlemen of his diocefe, he fucceeded in refloring this building to the admiration of the country. The whole underwent a thorough repair in the bilhopric of Dr. James Cornwallis, when it received its lat finifh by the addition of a painted window at the eaft end of the choir, the execution of which reflects the higheft honour on the artilt Mr. Eginton. This cathedral is 411 feet in length, and 153 in breadth. From the centre rifes a fpire 256 feet high, of moft elegant proportions, At the weft front are two towers, terminated by fpires, 66 feet in height. The portico can hardiy be equalled by any thing of the kind in England. The chancel is paved with alabafter and channel fone, in imitation of black aud white marble. The north door is particularly rich in fculpture. On the weftern front are a number of images, beautifully executed and arranged; the fuhjects of which are taken froin the facred writings. The ftatue of king Charles 1I. ftands between the two weftern fpires, where a figure of Adam, or of Chrilt, was alfo formerly placed, beneath which the other ttatues are sanged. Thefe figures were originally all richly gilt and painted; but the embellifhments have fuffered much injury from the action of the elements. With regard to the interior ornaments of this church, they are hy far too numerous to admir of pariicular notice in a work of this kind. Every part of it is filled with flatues and tonbs, bo:h ancient and modern. The nave, 60 fect in height, is fupported by pillars formed from a number of flender columns, with neat foliated capitals. Along the walls of the ailles 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 weftern door is a very beautiful one, raifed by the duke of York ia the
reign of Charles 11., and afterwards beautifully painted by a gift of the benevolent dean Akenbrooke. Behind the choir was the chapel of St. Mary, which contained a ftone fcreen of the moit elegant and Splendid workmanfhip that can be imapined, embattled at the top, and adorned with feveral rows of niches moft exquifitely finihhed. Each of thefe formerly coutained a fmall flatue. The flone fcreen was taken down during the late alteration, and the materials employed 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 falls, which are richly carved, and appropriated for the ufe of the members of the church. The altar is of free ftone very neatly fculptured. The government of the cathedral is velted in a dean and four refidentiary canons. The diocefe of Lichtie!d, joined to Coventry, contains all the county of Stafford, (with the exception of Brome and Clent, ) all Derbythire, and nearly one-half of Shropfhire. The archdeaconries are thofe of Coventry, Stafford, Derby, and Salop. The bifhop's palace is fituated at the north-eat fide of the clofe. The original building is faid to bave been founded by bifhop Clinton, but it was probably of earlier date. This palace was quite deitroyed in the civil wars, when bihop Hacket, having expended $1000 \%$ on the prebenclal houfe, fixed upon it as his refidence. Whether the prefent palace is the fame, or another wholly erected by his fucceffor bihop Wood, is uncertain. It is now inkabited by different families; the bilhop's refidence having been for many years at Ecclefhall caftle.

The next building worthy of notice is the church of St. Chad, now called Stowe church, and is generally confidered as the oldelt foundation in or near the city. By fome writers it is even fuppofed 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 flands in the market-place, near the Guild-hall. Leland fays, "St. Maries is a right beautiful piece of work, in the very mar-ket-place." The body of the prefent building is very neat, and is adorned with a handfome altar-piece, and a few ancient monuments to the memory of the family of the Dyotts. St. Michael's church is ftationed at the fouth-eaft 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 lefs than fix or feven acres of excellent pafture land. This hill is remarkable for a court held here annually on Whitmonday, in a temporary ftand of wood erected for the purpofe. This court was anciently called the Court of Array, or view of men and arms. The high conftables having affembled all the inhabitants, they perambulate the whole city; and the whole concludes with a proceffion through the principal ftreets to the market-place, where the town-clerk, in the name of the bailiffs and citizens, delivers an oration or charge to the high conitables, thanking them for their attendance, and urging them to the duc execution of their office. The origin of this remarkable cultom is uncertain. On the top of the fame hill, a fmall edifice has been erected by fubfrription, with feats; from this fpot there is a very beautiful and extenfive view of the circumjacent country, and of the many interefting objects it affords. South of Greenhill is Folly-hall, which alfo commands a very fine profpect. Not far from hence is the hofpital and chapel of St. John, which was originally a monaftery. When it was firlt founded is unknown. The front of the prefent

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Building is remarkable for the number and antique form of its chiminies. According to an infcription over the door it was erected by bihop Smith, who was alfo the founder of Brazen-nofe College, Oxford. The free grammar fchool, built at the fame time with the hofpital, itands neariy oppofite to it.

This city can boaft of having been the place at which fome of the brightelt ornaments of the two lalt centuries were educated. Among others were the unrivalled Garrick and his friend Dr. Samuel Johnfon, whom Mrs. Barbauld defignates as the Hercules of literature. The latter was born in a ftuccoed houfe fituated at the corner of Marketftreet, where his father kept a bookfeller's fop. The Guilchall, the theatre, and the free Englifh fchool, are fituated in Broad-Itrect. 'The latter is an ancient brilding, erecteid 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 welt of Bird-ftreet is a very pleafant feat called the Friary, having been formerly a monattery of Francifcan or Grey friars, founded about the year 1329. On the eaft fide there fill remains an antique monument in honour of a merchant named Richard. It is infcribed 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 ffreet called Beacon-Atreet, which was nearly burnt to the groudd during the civil wars. Oppofite to the fhrabbery which furrounds Dr. Darwin's houfe is an hofpital, bult by Dr. Willey in the year 1504, for the fupport of fifteen poor women. Contiguous to this fpot there formerly ltowd a very Atately edifice, once the refidentiary houfe of the archdeacon ot Cheifter. Lichfield contains, befides thefe, many objeCts which 'deferve the attention of the inquifitive and curious. The mufeum and the botanic garden of Dr. Dar-, win are particularly interefting to all who have the flighteft tafte for the fubjeats of natural hiftory. Lichfield was long the refidence of Mifs Seivard.

The markets are held here on Tuefday and Friday; the fairs on the three firft Thurfdays after Twelfth day, Afh Wednefday, May itt, and the Friday before. St. Simon and St. Jude. By'means' of canals this city communicates with a variety of rivers, fome of which difcharge themfelves into the German ocean, and others into the Irifh fea and St. George's channel. Harwood's Hiftory and Antiquities of Eichfield, 4to. 1806. Jackfon's Hiftory of the City and Cathedral of Lichfield, Sro. ISO5. Shaw's' Hittory, \&c. of Staffordhire, vol. i. folio.

LICH'TEMBERG, a town of France, in the departmeht of the Loirer Rhine; 22 miles N.N.W. of Strabburg.

LICHTENAU, a town of Aufria; is miles W. of Crems.-Alfo, a town of Aultria; 6 miles S.E. of Aigen. -Alfo, a town of Weftphalia, in the bihhopric of Paderborn; 9 miles S.E. of Paderborn. N. lat. I $^{\prime} 32^{\prime}$. E. long. ' $8^{\prime} 58^{\prime}$ '- Alfo, a town of Heffe-Caffel ; I3 miles S.E. of Caffel. N. lat. $5^{1 \prime} 12^{\prime}$. E. long. $9^{\circ} 2^{\prime}$,-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 fortrefs on the Retzat, infulated in the margraviate of Anfpach; 22 miles S.W. of Nuremberg. "N. lat. $49^{\circ} 17^{\prime \prime}$. E. long. $10^{\circ} 12 z^{\prime}$. -Alfo, a tom of Pruffia, in the province of Ermeland; $x$ miles N.W. of Heillberg.-Alfo, an ifland near the W'. coaft of Eaft Greenland. N. lat. $60^{\circ} 30^{\prime}$. W. Iong. $45^{\circ}$ is "-Alfo, a Moravian fettlement in America, on the E. fide of Munkingum river, 3 miles below Gofchachguenk; fiferiwards removed to Salem, 3 miles below Guadenhuetten.

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LICHTENBERG, a town of Praffian Pomerelia; 59 miles S.W. of Dantzic.-Alfo, a town of Germany, in the county of Henneberg; 8 miles S.E. of Meinungen, Alfo, a town of France, in, the department of Mont Tonnerre; 9 miles W.S.W. of Lautereck.-Alfo, a town of Silefia, in the principality of Neiffe; 3 miles N.N.W. of Grotkau-Alfo, a town of Germany, in the principality of Culmbach, on the Selnitz; having in its vicinity quarries of marble, and mines of copper and iron; 22 miles N . of Bayreuth. N. lat. $50^{\circ} 22^{\prime}$. E. long. $11^{\circ} 48^{\prime}$. Alfo, a town of Saxony, in the circle of Erzgebirg.; 5 miles S.S.E. of Freyberg.

LICHTENECK, a tom of Carniola; 10 niles E.S.E. of Stein.

LICHTENFELS, a town of Auftria, on the river Kamp; 7 miles 'E. of Zwetl.-Allo, a town of Bavarid. fituated on the Maine; 20 miles N N.E. of Bamberg. N. lat. $50^{\circ} 10^{\prime}$. E. long. I : $8^{\prime}$.

LICHTENFELT, a town of Pruffia, 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 Konigtberg.

LICH'TENSTEIG, 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 worlhip for Roman Catholics and Protettants; 27 miles IE Zurich. N. lat. $4^{1} 1^{1} 7^{\prime}$ E. Long. $9^{\circ} 6^{\prime}$.

LICHTENSTEIN, a principality of Germany, on the E. fide of the lake of Conftance, fituated on the Rhine, betwixt the lordhhips of Phudenz and Feldkirch_-Alfo, a town of Saxony, and chief place of a lordhip, belonging to the counts of Schonburg; 5 miles N.E. of Zwickau. N. lat. $5044^{\prime}$. E. long. $12^{\circ} 31^{\prime}$.

LICHTENTANEN, a town of Germany, in the principality of Culmbach; 5 miles N.W. of Bayreuth.
LICHTENWALID, 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 Heillberg.
LICHVIN, a town of Ruffia, in the government of Kaluga, on the Oka; 28 miles S . of Kaluga. N. lat. $54^{\circ}$. E. long. $35^{\circ} 44^{\prime}$.

LICHWE, a town of Bohemia, in the circle of Konis gingratz; 6 miles W. of Geyerfberg.
LiCinio, Glovanni Axtonio, in Biograpby. See Porderone.

LICINIUM, a word ufed by many chirurgical writers to exprefs a tent.

LICINIUS, in Biography, a Roman emperor, a native of Dacia, of an obicure origin, and accultomed from his infancy to the tols and hardhips of rural life, became'a Roman foldier, and rofe through all the gradations of the forvice. He was raifed to the rank of Augultus in the year $30 \%$. When the civil war broke out between Conftantine and Maxentius, the former fecured the friendithip of Licinius by promifing him in marriage his filter Conilantia, which alliance took place in 31.3 , when the two emperors had an interview at Milan, and joined in an edict in favour of the Chriftians. In the fame year Maximin invaded the tersitories of Licinius, and took Byzantium and Heraclea : his fuccels was very thort lived, for Licimus advanced to meẹt him, and by his military fkill obtained a complete victory. Maximin died foon after, and Licimins fucceeded to his authority over the provinces of the Eaft. The conqueror, who was harih, ignordat, and brutal, knew, not how to ufe his fuccefs with generofity or even with humanity: he put to death a great number of perions, and aroong dthers $V_{2}$ -

Yeria, the widorv of Galerius, who had been a great benefactor to Licinius. This lady had taken refuge at his court, but terrificd with his favage conduct, the thok flight, and with her aged mother wandered long in difguife through the provinces; but being at length difcovered, they were both beheaded, and their bodies thrown into the fea. After the difplay of thefe barbarities the two emperors did not live long in peace. A civil war broke out between them, in which the firlt battle was fought in 315 : Licinins was vanquifhed, and after another attempt or two to maintain his ground againft his rival, he was obliged to fue for peace, which he obtaimed on the condition of putting to death Valens, whom he had lately created Cæfar, and of refigning all his European provinces. In 317 he created his own fon Cefar, and peace was maintained during the eight following years.. About this period, Licinius, growing fufpicious of his Chriltian fubjects, who feemed to be attached to his rival, began to banifh them from about his perfon and palace, and to prohibit bifhops from vifiting each other, and from holding councils and aftemblics. 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 fome time Spent in fkirmilhes, a gencral engagement was brought on, in which the fuperior fkill of Conitantine, and valour of his European foldiers, gained a very decifive victory over the much more numerous but lofs warlike holt of Licinius. The vanquifhed emperor fhut himfelf up within the walls of Byzantium, while his fleet was deftroyed in the Hellefpont by Crifpus, the fon of Conitantine. Licinius efcaped to Chalcedon, and collecting a new army made one more effort to oppofe his foe, but being again defeated, he feems to have abandoned all ideas of farther refiftance. He retired to Nicomedia, rather with a view of gaining fome time for negociation than with the hope of effectual oppofition. His wife Conftantia, the fifter of Conftantine, interceded with her brother in favour of her hufband, and obtained from his policy, rather than from his compaffion, a folemn promife, confirmed by an oath, that after the refignation of the purple, Licinius hoould be permitted to pals the remainder of his days in peace and afluence. Licinius folicited and accepted the pardon of his offences, laid himfelf and the infignia of his office at the feet of the conqucror; he was raifed from the earth with infulting pity, was admitted the fame day to the imperial banquet, and foon afterwards was fent to Theflalonica, which had been chofen as the place of his conifnement. His imprifonment was foon terminated by death, but whether this was occafioned by a tumult of the foldiers, or by a decree of the fenate, is uncertain. He was accufed of forming a confpiracy, and of holding a treafonable correfpondence with the barbarians; but as he was never convitted, either by his own conduct or by legal evidence, his innocence, in this refpect, has been prefumed by many writers. The memory of Licinius was branded with infamy, his ftatues were thrown down, and by a rafh edict, all his laws, and the judicial proceedings of his reign, were at once abolifhed. By this victory of Conitantine, the Roman world was again united under the authority of one emperor. See Constantine. Gibbon.
Licinius Caius, a Roman tribune, of a plebeian family, rofe to that rank by his own afpiring temper: he was the firlt plebeian who was raifed to the dignity of mafter of horfe to the dictator. He was furnamed Stolo, or ufelefs forout, on account of the law which he caufed to be enacted during his tribunefhip. By this law no perfon was permitted to hold more than 500 acres of land, it being alleged, that when more was keld by one proprietor, he would not have
leifure to pull up the ufclers fhoots (Stolones) which grew from the roots of trees. He afterwards carried a law which permitted the plebcians to fhare the confular dignity with the patricians, and was himfelf one of the firft plebeian confuls, in the year 364 B.C.

Licintus, Trecula, a comic Latin poet, flourifhed about 200 years before the Chrilian era. His fragments have been publifhed by H. Stephens, and in the Corpus Poctarum, Maittaire. There was an orator and poet of this name, who lived at the fame time with Cicero, and who has been compared with Catullius. His orations are highly commended by Quintilian: he is fuppofed to have writen annzls quoted by Dionyfius Halicarnaflus. He died in the zoth ycar of his age.

LICIO, in Geografby, one of the fmaller Lipari iflands. N. lat. $38^{\circ} 54^{\prime}$. E. long. $15^{\circ} 20^{\prime}$.

LICK, a town of Prufia, with a callle; 8o miles S.E. of Konig berg. N. lat. $53^{\circ} 39^{\prime}$. E. long. $22^{\circ} 38^{\prime}$.

Lick, a name given to the fait-fprings in the weftern parts of the United States.

LICKING, a navigable river of America, in Kentucky, which rifes on the wellern confines of Virginia, interlocks with the head-waters of Kentucky river, runs in a northwett direction upwards of 180 miles, and by a mouth 150 yards wide through the fouth bank of Ohio river, oppofite to Fort Wa/hington. On this river are iron-works and numerous falt-fprings. Its chief branch is navigable nearly 70 miles. From Limeftone to this river the country is very rich, and covered with corn, rye-grass, and natural clover. Morfe.

Licking Greek, a river of Maryland, which runs into the Potownack, N. lat. $39^{\circ} 38^{\prime}$. W. long. $78^{\circ} 5^{\prime}$.
Licking Hole Creek, a river of Virginia, which runs into James river, N. lat. $37^{\circ} 42^{\circ}$. W. long. $78^{-} 5^{\prime}$.
LICKNENA, a town of Spain, in Arragon; I8 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, Axxo\%, in the Dionyfian folemnities, the myftical van of Bacchus; a thing fo effential to all the folemnities of this god, that they could not be duly celebrated without it. See Dioxisia.
LICNOPHORI, Axiopopos, in the Dionyfian folemnity, thofe who carried the licnon.

LICODIA, in Geegraphy, a town of Sicily, is the valley of Noto; 18 miles S.W. of Lentini.

LICONDA, a town of Africa, in the country of Tri-poli, fituated on the fea-coaft. N. lat. $30^{\circ} 36^{\prime \prime}$ : E. long. $18{ }^{1} 10$.

LICOSTAMO, a town of European Turkey, in Theffaly, the fee of a bihop, fuffragan of Lariffa; 16 miles E.S.E of Larifla.

LICQUES, a town of France, in the department of the ftraits of Calais; 10 miles S. of Calais.

LICTORS, among the Romans, were officers eftablifhed by Romulus, who always attended the chief magittrates when they appeared in public.

The duty of their office confifted in the three follawing particulars: I. Submotio, or clearing the way for the magititrate they attended: this they did by word of mouth; or, if there was occafion, by ufing the rods they alway's carried along with them. 2. Avinadverfio, or caufing the people to pay the ufual refpect to the magitirate, as to alight, if on horfeback, or in a chariot; to rife up, uncover, make way, and the like. 3. Praitio, or walking before the magiltrates : this they did not confufedly, or all together, nor

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by two or three abreaft, but fingly following one another in a flraight line. They alfo preceded the triumphal car in public triumphs: and it was allo part of their office to arreft criminals, and to be public executioners in beheading, \&c. The enfigns were the fafces and fecuris.

As to the number of lictors allowed to each magiftrate, a dickator had twent y-four, a malter of the horfe fix, a conful twelve, a pretor fix ; and each Veital virgin, when the appeared abroad, had one.

LICUALA, in Botany, is the vernacular appellation of this palm among the natives of the Molucea illands. The name was adopted by Rumphius, and has been retained by all fucceeding botanits. Linnzus and Willdenow properly refer it to the fixth clafs, ranking it there amongft others of the natural order of Palme, Schreber having claffed it in his Appendix Palma. Schreb. 774. Limn-Sylt. Veg. ed. 14. 313. Willd. Sp. Pl. v. 2. 201. Mart. Mill. Diet. v. 3. Thunb. Nov. Gen. 70. Juff. 39. Gxertn. t. 139.Clafs and order, Hexandria Monogynis. Nat. Ord. Palme, Juff.

Gen. Ch. Cal. Perianth inferior, threc-cleft, permanent, outwardly hairy. Cor. of one petal, cloven almoft to the bafe into three equal, ovate, acute, concave fegments; Nectary annular, truncated, twice as fhort as the corolla. Stam. Filaments fix, inferted into the nectary, erect, very fhort; anthers oblong, in pairs. Pift. Germen fuperior, convex, three-cleft, furrowed, fmooth; ftyle fimple; ftigmas two. Peric. Drupa globofe, the fize of a large pea. Seed a hard nut.

Eff: Ch. Calyx three-cleft. Corolla three-cleft. Nec. tary annular, truncated. Drupa fingle-feeded.

1. L. Jpinofa, Linn. and Willd., is the only fpecies 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 thicknefs of a man's arm, jointed, dividing in the upper part into five or fix footfalks, fcarcely fo thick as a finger, triangular, their lower part ferrated at the angles with thick rows of teeth or fines. Each of the ftalks bears a leaf which is fan-fhaped, and divided down to the bafe into about fourteen lateral, ribbed rays. Flower-ftalk rifing from the trunk, in the midft of the leaves, of the fame length with them, and involved from the bottom in fheaths, 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 blackifh. Nut oblong, very hard, longitudinally friated.

The natives of Macaflar make ufe of the finaller leaves for tobacco pipes, after they are dried, rollcd, and properly prepared. The larger leaves are ufed for packages, but the wood is not fufficiently durable to be confidered ufeful.

LICZ, in Geography, a town of Auftrian Poland, in GaLicia; 30 miles W. of Przemyl.

LID, or Lxid, a river of England, which runs into the Tamar, 4 miles N.N.W. of Taviftock.

LIDA, a river of Sweden, which runs into the Wenner lake, at Lidkioping.

Lids, a town and caftle of Lithuania, in the palatinate of Wilna, in which is held a provincial diet; 48 miles S. of Wilna. N. lat. $53^{\circ} 5^{\prime \prime}$. E. long. $25^{\circ} 35^{\prime}$.

LIDBECKIA, in Botany, named by Bergius, in honour of Profeffor Eric Guitaf Lidbeck, of Lund, Knight of the order of Wafa, author of feveral botanical and economical treatifes in the Stockholm Tranfactions. Berg. Cap. 306. willd. Sp. Pl. Y. 3. 2163 . Juff. 183. (Lancilia; La*
marck. Illuftr. t. 7ox. Gxrtn. v. 2. 422.)-Clafs and order, Syngenfia Polygania-fuperflua. Nat. Ord. Compofite Difcoidea, Linn. Corymbifers, Juff. See Lancisia, and Cotula, fection 2.

Liddel, Duncan, in Biography, a phyfician of the fixteenth century, was a native of Aberdeen; but he was elected profefior of aftronomy in the univerfity of Helmiladt in 1587 . He afterwards taught geometry, and ultimately medicine, of which he was appointed profeflor in 1596. He was likewife made firft phyfician to the duke of Brunfwick. But he quitted thefe advantages, and returned to his native country in 1607. He left the following works: "De Facultate vegetante ejufque Functionibus," Helmftadt, 1592; "Univerfe Medicinx Compendium," ibid. 1605; 1620; "Ars medica fuccinctè et perfícuè explicata," Hamburgh, 1607, feveral times reprinted; "c De Febribus Libri tres," ibid. 1610; "Operum Iatro-Calenicorum, ex intimis Artis medicx adytis et penetralibus erutorum," a poothumous work, Leyden, 1624 . Eloy Dict. Hift.
Liddel, in Geography, a river of Scotland, which rifes in Roxburghhire, and joins the Efle, three miles fouth of Longholm, in the county of Dumfries; giving to the valley in which it flows the name of Liddeldale, or Lithdale.

LIDEN, a town of Sweden, in Angermanland; 60 miles N.N.W. of Hernofand.

LIDENS, a fown of Sweden, in the province of Medelpadia; 24 miles N.N.W. of Sundfwal.

LIDFORD, a village of England, in the county of Devon, near the forelt of Dartmoor, fituated in a parifh faid to be the larget in England, including almof 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 fuppofed to have been deftroyed by the Danes in the year 997. In this village is an ancient cafte, in which courts are held for the duchy of Cornwall; and offenders againft the ftannary laws were here confined in a dreary and difmal dungeon, which gave rife to a proverb, "Lydford laws punifh a criminal firft, and try him afterwards." This village contairs only about 15 houfes, and its fituation is bleak and dreary; 28 miles. W. of Exeter. Cruttwell.

LIDHULT, a town of Sweden, in the province of Smaland; 60 miles S. of Jonkoping. N. lat. $5^{\prime}{ }^{\prime} 5^{\prime}$. Ep long. $15^{7}$ I $4^{\prime}$.
LIDKIOPING, a fmal!, neat, trading town of Sweden, fituated in the midtt of a plain near lake Wetter or Wenner, at the influx of the Lide, and contaning the epifcopal palace, the cathedral, and the palace in which refides the governor of Ealt Gothland; $4^{2}$ miles E.N.E. of Uddevalla. N. lat. $58^{\circ} 33^{\prime}$. E. long. $12^{\circ} 54^{\prime}$.

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 expreffion on this ungrateful initrument were exquifite; though he had embarrafed himfelf with the additional dif: ficulties of bafe ftrings at the back of the neck of his inftrument, with which he accompanicd himfelf, thrumming them in pizzicato with his left thumb; an admirable expedient in a defert, or evea in a houfe, where there is bat 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 yoni more at liberty to execute, exprefs, and embellifh the principal melody, feemed at beft a work of fupererogation. The tone of the intrument will do nothing for itfelf, and it feems with mufic as with agriculture, the more barren and ungrateful the foil, the mare art is neceffary in its cultiva-

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tion. And the tones of the viol da gamba are radically fo crude and nafal, that nothing but the greatelt acill and refinement can make them bearable. A human voice of the fame quality would be intolerable.

This excellent mufician died of a confunption in London, at about 30 years of age, in 1788 ; as was the cafe, about the fame time, with two other admirable German profefors, and worthy men, Pfifer and Eichner. Sec their articles, and that of Lamotte, who had likewife been in England, and died young of a confumption.

LIDMEE, or Indian Antclope, Antilops Ccrvizapra, in Zoology, a fpecies of antelope, having long, round, prominently annulated, tapering, and fpirally twifted horns, which are fmooth and fharp 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 Charloton, Ray, and Grew; the carra cervicapra of the Sylt. Nat.; the capra bezoartica of Aldrov., Olear.; the tragus ftrepficeros of Fidein; 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 reddifh and dufly; the belly, brealt, 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 almolt entirely covered wh prominent rings, the points only being frnall, and are about twelve inches diftant. The female has no horns, and after going nine months with young, brings generally twins. Pennant dittinguifhes 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 fraller than a roe. He likewife men. tions horns frequently fent from India, which have been ufed as daggers, that feem to belong to this Species, but with all their rings polifhed off.

LIDO di Malamocco, in Geography, a fmall ifland in the Adriatic, defended by a fort; 12 miles from Venice.

Liso di Padefrina, a long illand in the Adriatic, with a fort to defend the city of Venice.

Lido di Sottomarino, a town in the ifland of Chioggia, forming as it were the fuburbs of that city.

LIDS, a fmall inand in the Baltic, near the fouth coaft of Laaland. N. lato $54^{\circ} 41^{\prime}$. E. long. $11^{\circ} 20^{\prime}$.

LIE, a town of Arabia, in Yemen; 20 miles S. of AbuArifch.

Lie, or Lye under the Sea. See Lying, \&c.
LIEBAU, in Geography, a town of Silefia, in the principality of Schweidnitz, on the river Schwartbach; 22 miles S. of Schweidnitz.

Liebsu, Liebe, or Libona, a town of Moravia, in the circle of Prerau; 13 miles N. of Prerau. N. lat. $49^{\circ} 3^{\prime \prime}$. E. long. $17^{\circ} 28^{\prime}$.

LIEBENAU, a town of Silefia, in the principality of Glogau; 8 miles W.N.W. of Glogau. N. lat. $52^{\circ} 25^{\prime}$. E long. $15^{\circ}, 6^{\circ}$--Alfo, a town of the principality of Heffe, on the Dimel; 20 miles N.W. of Caffel. N. lat. $51^{\circ} 30^{\prime \prime}$. E. long. $9^{2} 22^{\prime}$.

LIEBENGRUND, a town of Saxony, in the circle of Neuftadt; 14 miles S. of Neuftadt. N. lat. $50^{\circ} 30^{\circ}$. E. long. $1 \mathrm{I}^{\circ} \cdot \mathrm{H}^{\prime}$ 。

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 Silefia, in the principality of Jauer; 30 miles W. of Jauer. N. lat. $50^{\circ} 57^{\circ}$. E. long. $15^{\circ} 37^{\prime}$-Alfo, a town Von, XX.

## LIE

of Saxony, in the margravate of Meifien; 7 miles S.W. of Stolpen.

LIEBENIVALD, a town of Branderburg, in the Midde Mark, on the Havel ; 24 milcs N. of Derrin. N. lat. $52^{\circ} 53^{\prime}$. E. long. $13^{\circ} 30^{\prime}$.

LIEBENWARDA, a town of Saxony; 22 miles N. of Meiffen. N. lat. $51^{\mathrm{P}}{ }^{2} 8^{\prime}$. E. long. $13^{\circ} 26^{\prime \prime}$.
I.IEBENZELL, or ZELL, a town of Wirtemberg, on the Nagold; having two warm baths in its vicinity; 36 miles E.N.E. of Straffurg. If. lat. $43^{\circ} 51^{\prime}$ ' E. long. 8 43'.

LIEDEROSE, a town of Lufatia; 17 miles W. of Cuben. N. lat. $5^{9}$. E. lorty. $14^{\prime} 16^{\prime}$.

LIEBETEN, a town of Hungary; 65 miles N.N.E. of Grar:.

LIEBMUHE, a town of Prufia, in the province of Oberlund, with a caltle; 66 miles S.S.W. of Fonigherg. N. lat. $53^{\circ} 42^{\prime}$. E. long. 19 ' $45^{\prime}$.

LIEBO SEE, a lake of Brandenturg, in the Ucker Mark; fituated to the S. of Dolgen See.

LIEBSTADT, a town of Saxony, in Meifen; 14 miles S.S.W. of Drefden-A.Fo, a town of Prufia, in Oberland, with a caftle; 48 miles S.S.W. of Kotikgerg. N. lat. $53^{\circ} 57^{\prime}$, E. long. $20^{\circ} 2^{\prime}$.

LIECHEN, a town of Brandenburg, in the Ucker Mark; 40 mites N. of Berlin. N. lat. $53^{3} 52^{\prime}$. E. long. 13 ² 2 .
LIECHSTAL, or Liestal, a tolerably fruitful diftriet of Switzcrland, containing a fmall, regularly built, populouc town of the fame name, confifting of three parallel ftreets, in the canton of Balle; $2 \frac{1}{\frac{1}{2}}$ leagues S.E. of the capital, on the river Ergetz, which forms a cafcade below it. In thi diftrict are the remains of a large Roman aquedu?t.

LIE'ES, $\operatorname{Fr}$, a muffical term, equivalent to tied, bound, fuftained. It likevile implies flurred, in mufic, for bowed inftruments, when two or more notes are played with one Atroke of the bow, or with one touch of the tongue on the flute or hautbois. What muficians call a Jur is a Semicircle, - T. The fame charakler is ufed over or under two or any number of notes, in vocal mufic, that are furg to one fylliable.
LIEFDE Bay, in Geography, a bay on the north coaft of Spitzhergen. N. lat. $79^{\circ} 3^{2}$. E. long. $12^{\circ} 30^{\prime}$.

LIEGE, a bifhopric and electorate of Germany, before the French revolution; bounded on the north by Brabant ; on the eaf by Limburg, Juliers, and Luxemburg; on the fouth by Luxemburg and the French department of the Ardennes; and on the weft by Brabant, Namur, and Hainaut; about 80 miles in length from north to fouth, and of an irregular breadth. The foil is fertile, yielding corn and paftures, and alfo wine that refembles the miduling wines of Burgundy and Champagne. In this diftrict are alfo confiderable forelts, and mine-works of copper, lead, iron, and coal, ftone quarries, and fome of marble. Its chief mineral waters are thofe of Spa and Chaude-fontaine. Its principal rivers are the Meuié and Sambre. This bifhopric is now united to France, and forms the departmer: of the Ourte; which fee. Its chief exports are beer, arms, nails, ferge, leather, and coal. It formerly" contained 26 towns, divided into Walloon and Flemifh.
Liege, a city of France, and capital of the department of the Ourte, and a bihop's fee. It is large, prpulous, and rich, divided into four parts, each confifling of 12.500 inhabitants, and four cantons; the It containing $16,96+\mathrm{ir}$ habitants, on a territory of $12 \frac{1}{2}$ kiliometres, in fuur communes; the 2 d canton, including $13,9 \mathrm{C} 6$ inhabitants, on a territory of 20 kiliometres, in two communes the 3 d compreherding

17,408 inhabitants, on a territory of 15 kiliometres, in two communes; and the $4^{\text {th }}$ containing $\mathbf{1 7 , 2 3 7}$ 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 difcharge themfelves into the Meufe, as it enters this cityo 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 freets, and alfo two quays planted with rows of trees. Before the revolution, it had within the city and fauxbourgs, befides the cathedral, feven collegiate and $\mathfrak{j} \circ$ parifh churches, and 46 religious houfes. 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, bifhop of Maettricht, had fuffered martyrdom. On the 22 d of No. vember 1792, Dumourier, at the head of the French troops, took poffeflion 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. $50^{\circ} 40^{\prime}$. E. long. $5^{\circ} 37^{\prime}$. Accounts are kept in this city in forins or guldens current; each florin being divided into 20 fous or ftivers, and each ftiver into 16 pfenings. The fitiver is fometimes divided into four oertjes or liards. The patacon of account is four florins, eight efcalins or fchillings, or 80 ftivers. The gold coins of Liege are the ducat of $8 \frac{1}{2}$ current florins or 17 efcalins, the florin d'or or gold gulden of 5 current florins or 10 efcalins. The filver coins are the patacon of $4 \frac{\pi}{8}$ current florins or $8 \frac{1}{4}$ efcalins, the efcalin of 10 ftivers, and the blamafe of five ftivers. The ftiver 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. lefs than that of Amfterdam; 21 lbs . of Liege being $=22 \mathrm{lbs}$. avoirdupois nearly. A laft of corn contains 96 fetiers, the fetier being 1827 Englifh cubic inches, fo that 20 fetiers are $=17$ Englifh bufhels. The foot is $11 \frac{t}{3}$ Englifh inches, the ell is $21 \frac{5}{7}$ Englifh inches; fo that 18 feet of Liege $=17$ Englifh feet, and 63 ells of Liege $=38$ Englifh yards. Since its union with France, Liege has adopted the new French denominations of money in the bufinefs of exchanges.' Kelly's Univ. Cambit. vol. i.

Citizen Gretry, the eminent compofer of French comic operas, a native of that city, in his Memoirs, vol. i. p. I25, gives an account of the college eftablifhed at Rome for the reception of ftudents in all the arts from the eity of Liege. There was a time, before Rome was bereaved of its models of perfection, that we fhould have devoutly wifhed for an Englifh college of arts, fimilar to that of France and Liege, where our young artifts of promifing talents, pining to vifit Italy, but unable to bear the expence, might have an afylum in which they could be received and fupported during a certain number of years, while they were purfuing their itudies. Shuch an eftablihment would reflect honour on an opulent and learned nation, always difpofed to patronize, and collect fpecimens in all the fine arts, particularly in painting, mufic, Iculpture, and architecture.

Liege, Ligius, properly fignifies a vaffal, who holds a kind of fee that binds him in a clofer obligation to his lord than other people.

The term feems to be derived from the French lier, to bind; on account of a ceremony ufed in rendering faith or homage; which was by locking the vaffal's thumb, or his hand, in ibat of the lord, to flew that he was faft bound by his oath
of fidelity. Cujas, Vigenere, and Bignon, choofe rather to derive the word from the fame fource with leudis, or leodi, loyal, faithful. But Du-Cange falls in with the opinion of thofe who derive it from litit, 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 fervice, as if they were his domettics. Fie adds, this was formerly called litgium fervitium, and the perfon litge. In this fenfe, the word is ufed, Leg. Edw. cap. 29. "Judrei fub tutela regis ligea debent effe;" that is, wholly under his protection.

By liege homage, the vaffal was obliged to ferve his lord towards all, and againft all, excepting his father. In which fenfe, the word was ufed in oppofition to fimple homage ; which latt only obliged the vaffal to pay the rights and accuftomed dues to his lord; and not to bear armis againft the emperor, prince, or other fuperior lord: fo that a liege man was a perfon wholly devoted to his lord, and entirely under his command.
"Omnibus, \&cc. ' Reginaldus, rex Infularum, falutem.' Sciatis quod deveni homo ligeus domini regis Anglix Joz hannis, contra omnes mortales, quamdiu vixero; et inde ei fidelitatem et facramentum prexliti, \&c." MS. penes W. Dugdale.

But it mult be obferved, there were formerly two kinds of liege homage: the one, by which the valfal was obliged to ferve his lord againft all, without exception even of his fovereign; the other, by which he was to ferve him againft all, except fuch other lords as he had formerly owed liege homageto. See Homage.

In our old ftatutes, lieges, and liege people, are terms pe* culiarly appropriated to the king's fubjects; 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 too.
"Reinaldus, Dei gratia, abbas Ramefix, prexpofito et hominibus de Branceftre, et omnibus vicinis Francis et Anglis, falutem. Sciatis me dediffe terram Ulfe, in depedene (hodie depedale) huic Bofelino, et uxori ejus Alfnix-ea conditione quod effecti fint homines." Lib. Ramef. See Allegiance and Fealty.

Liege vaffalage. See Vassalage.
LIEGNITZ, or Lignitz, in Geograpby, a town of Silefia, one of the beft as well as moft ancient in the country, and capital of a priacipality of the fame name; fituated on the Katzbach. The palace, within the town, is furrounded with a moat and high wall. Here, in a very ftately ftoneedifice, the ftates of the provinces affemble. The Lutherans have two churches in this town; and the Roman Catholics are in poffefion of the collegiate church, a magnificent college, and other religious foundations. The emperor Jofeph founded here a fpacious academy for the infruction of young gentlemen of both religions in military exercifes. The trade of Lignitz in cloth and madder is confiderable; 32 miles W. of Brellaw. N. lat. $51^{\circ} 11^{\prime}$. E. long. $16^{\circ} 10^{\prime}$.

LIEN, Fr., a word ufed in the law, of two fignifications: perfonal lien, fuch as bond, covenant, or contract: and real lien, a judgment, ttatute, recognizance, which. oblige and affect the land. Term de Ley.

Lien figuifies 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 cofts 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 Geogriphy, a town of Chinefe Tartary; 12-miles N.N.E. of Ning:yaen.

## LiENIS Inpatctos. See Spleen.

LIEN-TCHEOU, in Geography, a city of China, of the firt rank, in the province of Quang-tong, feated on the river Lien-kiang, which forms a very convenient harbour for Chinefe barks. The territory of this city borders on the kingdom of Tong-king, from which it is feparated by inacceffible mountains. It has under its jurifdiction one city of the fecond elafs, and two of the third. N. lat. $21^{\circ} 40^{\prime}$. E. long. $108^{\circ} 39^{\prime}$.

LIENTERY, in Medicine, fignifies that variety of diarrhœa, in which the alimentary matters pafs off by ftool, in an undigefted or almolt unchanged ftate. The term is derived from $\lambda$ eoos, fmooth, or polifhed, and zyrecov, intefine, the ancients having been of opinion, that this affection was owing to the too great fmoothnefs and lubricity of the in. ternal membrane of the inteftines, which allowed the food to flip off in an undigefted flate.

Some writers have treated of the lientery as a difeafe altogether diftinct from diarrhoca; but Dr. Cullen properly confidered it as only a variety of that complaint. The principal caufe of the lienteric diarrhœa appears to confift in a morbid flate of irritability of the fomach and bowels; whence the former organ is excited to an exceffive motion of its mufcular coat, by the ftimulus of whatever aliment is in. troduced into it, and confequently expels it into the bowels in an undigefted ftate; and the latter, being likewifemorbidly fenfible to the fame ftimulus, hurries on the undigefted matter fpeedily through the whole canal. The motions are at the fame time loofe or liquid, becaufe, on the one hand, the undigefted matter is not taken up by the lacteals, and, on the other, the irritation of this matter, thus rapidly paffing, excites the exhalent veffels, 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 weaknefs of the digeltive power, as well as a morbid irritability of the flomach.

From this view of the fubject, two indications prefent themfelves with a view to the method of cure in lientery; namely, firft, to leften the irritability of the whole alimentary canal; and fecondly, to ftrengthen the digeftive power of the ftomach. For it muft be obferved, that, although food, when converted into a proper bland chyle by the procefs of digeftion, paffes through the bowels without producing any irritating effect : yet the fame food, when it is tranfmitted into them from the ftomach 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 peritaltic action.

The firft indication, of allaying the irritability of the fomach and inteftines, is to be fulfilled by the adminiftration of opiates, or ocher narcotic medicines, and of aftringents. Opium itfelf is the moft effectual foother of morbid irritahility that we poffefs; and in cafes, like that under confideration, its operation is improved by the union of fome aromatic fubftance; hence the form of the opiate confection, according to the formula of the London pharmacopeia, is a grateful and efficacious medicine for this purpofe. But the irritability is ftill more effectually allayed, when aftringents and abforbents are employed at the fame time with the opiates; the belt of thefe are the catechu, kino, and the reftaceous powders, or chalk. The confectio catechu of the Edinburgh pharmacopeia, which combines the opiate, aftringent, and aromatic in one fubftance, is a valuable medicine for the fulfilment of this indication. Thefe fubftances may be adminiftered in a little diftilled water of fome aromatic vegetable, as of mint, cinnamon, pimento, \&c.

Or, with a view to the fecond indication, of frengthening the digeftive power of the flomach, the fame medicines may be combined or alternated with the tonic bitter medicines; fuch as the infufion of cafcarilla, gentian, or orange-peel, or the decoction or infufion of the cinchona. At the fame time muderate exercife, efpecially on horfeback, will aid in re-eftablifhing the functions of the ftomach; and all cold and debilitating articles of diet, or fubflances of difficult folubility, fhould be ftudioufly avoided. Of the former are ice, fallads, water-creffes, cucumbers, or other raw vegetables, vegetable acids; \&c. We once witneffed a fevere inftance of lientery, which was brought on by eating a littic ice-cream, at a time when a confiderable degree of indigeltion already prevailed; it appeared at once to fink the feeble digeftive powers of the ftomach, and the food was difcharged almolt unchanged. Of the latter, or food of difficult folubility, we may mention cheefe, hard or falted meats, fatty fubltances, \&c. which require all the energy of the healthy ftomach to fubdue them into chyle. When the alimentary canal is in the irritable condition above-mentioned, it is advifable for the invalid to avoid active exercife immediately after his meals, which is liable to hurry on the food into the inteltines before the digeltion is completed, and thus to occafion a lienteric attack. We have known perfons, fubject to habitual indigeftion, or at leaft great feeblenefs of itomach, who at thofe times certainly brought on a diarrhcea of the lienteric kind, unlefs they remained quiet for fome time after every meal. See Diarrifea.

LIEOU-KIEOU, in Gcography, iflands fituated between Corea, Formofa, and Japan, which are 36 in number. The principal and largeft is called Lieouskiou, and the reft have each a particular name. The large ifland extends from N. to S. almoft 440 lys ( 200 lys naking 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 ifland, where the king refides, is called "Cheouli," and it is in this part (actording to Grolier, 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 extenfive empire, the inhabitants of which are civilized, and ought not to be confounded with other favage nations difperfed throughout the iflands of Afia. If we believe the iflanders themfelves, the origin of their empire is loft in the remoteft antiquity. They reckon 25 fucceffive dynafties, the duration of which forms a period of more than 18,000 years; but it is needlefs to expofe the abfurdity of thefe pretenfions. It is certain, however, that the exiftence of the country called Lieou-kieou was not known in China before the year 605 of the Chrittian era. In the courfe of this year one of the emperors of the dynafly of Soui deputed fome meffengers to enquire into their fituation. Some information having been obrained concerning them, the emperor Yang-ti fent fkilful perfons, 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 anfwer to the demand, that he acknowledged no prince to be his fuperior. 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 Napakiang, and, in fpite of the natires, the army landed on the inand. The king fell in battle, upon which the Chinefe pillaged, facked, and burnt the royal city, made more than 5000 flaves, and returned to China. In $129^{1}$ Chi-tfon, emperor of the dynalty of Yven, thought of reviving the pretenfions of his predeceffors; and fitted out a fleet to fubduc

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thepe inands; but this flect proceeded no further than the iffes of Pong-hou, and the weltern coaft of Formofa, from whence, under various pretentions, they returned to Fokien. It was not till the year 1373, under the reign of Hong-vou, founder of the dywally of Ming, that thefe iflands voluntarily fubmitted to the Chinefe government. Thay-tou, the prince, was folemnly declared a vaffal of the empire; and when Hong-vou had received his firft tribute, confilting of valuable horfes, aromatic wood, fulphur, tin, \&c. he fent to this prince a golden feal, and confirmed the choice he had made of one of his fons for a fuccelior. The emperor afterwards fent 36 fanilies, almolt all from the province of Fo-kien, to Lieou-kieou. Thefe families were hoipitably received, and had lands affigned them near the port of Napa-kiang, and certain revennes were appointed for their ufe. Thele families firft introduced into Lieou-kieou the learned language of the Chinefe, the ufe of their charaders, 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 Thaj-tou were fent to Nan-king to tudy Chinefe in the imperial college, where they were treated with dittinction and maintained at the emperor's expence. As thefe ifles had neither iron nor porcelain, they were fupplied by Hong-vou. Comnerce, navigation, and the arts foon began to flourifh. Thefe iflanders learned to caft bells for their temples, to manufacture paper and the fine?t ftuffs, and to make porcelain, with which they had before been fupplied 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-hii (about A.D. 1720) paid a more marked attention to thefe ines than any of his predeceffors. He cauled a fuperb palace to be eretted in honour of Confucius, and a college, where he maintained mafters to teach the fciences and the Chinefe characters. He alfo inftituted examinations for the different degrees of the literati. He ordained that the king of Lieoukieou fhould never fend in tribute rofe-wood, cloves, or any other production which was not of the growth of the country; but that he fhould find a fixed quantity of fulphur, copper, tin, heills, and mother-of-pearl, which is very beautiful in thefe illands. He permitted, that, befides the ufual tribute, he might prefent him with horfe furniture, pittol-cafes, and other things of the fame kind, which thefe illanders are faid to manufacture with great tafte and neatnefs.

It is more than 900 years, fays Grofier, lince the bonzes of China introduced at Lieou-kicou the worhip of Fo, and the principal books belonging to their fect. This worfhip is at prefent the eftablifhed religion both of the grandees and of the people. In the royal city there is itill to be feen a magnificent temple, erected in honour of another idol borrowed from the Chinefe, named Tien-fey, which fignifies "celeftial queen, or lady." Thefe inlanders do not fwear or make promifes before their idels. For this purpofe they burn perfumes, prefent fruits, and tand refpeefully before fome flone, which they call to vitrefs the folemnity of their engagements. Of thefe flones many are to be feen in the courts of their temples, in molt public places; and upon the mountains; and they are appropriated to this ufe. They have aifo among them women confecrated fur the worthip of fpirits, who are fuppofed to have great influence over thefe beings. They vifit the fick, diltribute medicines, and write prayers for their recovery. They refpect the dead as much as the Chinefe, but their funcrals are lefs pompous. They burn the flefh of the deceafed, and preferve only the bones. They place round thero lamps, and burn perfumes, and dufferert families are ditinguihed by furnames, as in Cbina;
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 fanulics, among which the highelt offices are diftributed. A plurality of wives is allowed in thefe ines. The women are very referved; they neither ufe 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 tilver. Bcfides the valt domains which the king poffeffes, he receives the produce of all the fulphur, copper, and tin-mines, and of the falt-pits, together with what arifes from the taxes; and from thefe revenues he pays the falaries of the mandarins and officers of his court. Of the mandarins there are, as in China, nine orders, diffinguifhed by the colour of their caps, or by their girdles and cuffions. In the royal city tribunals are ettablithed for managing the revenue and affairs of the principal ifland, and of all the others dependent upon it. There are alfo particular tribunals for civil and criminal matters, for the affaits of religion, for manufactures, commerce, navigation, \&cc. The veftels built in this country are highly valued by the people of China and Japan. In thefe the natives fail not only from one ifland to another, but alfo to China, Tonquin, Cochinchina, Corea, \&c. Befides thofe articles of conmerce, which their manufactories of filk, cotton, paper, arms, copper utenfils, \&ce. furnifh them, they alfo export mother-of-pearl, tortoife and other fhells, coral and whetftones, which are held in high eftimation both in China and Japan. Three languages are fpoken in the ifles of Lieoukieou, different from thofe of China and Japan. The language of the large ifland is the fame as that of the veighbouring ifles; but it differs from thofe of the ines which lie to the S.W. and N.E. Letters, accounts, and all the king's orders are written in Japanefe characters, not in the language of the country; book 8 of morality, hiftory, medicine, altronomy, and altrology, are written in Chinefe characters. The dittribution of time, and the divifion of the year, are the fame in Lieou-kieou as in China. The edifices, temples, and palace of their kings are built after the Japanefe manner ; but the houfes of the Chinefe, the hotel of the embaffador, the imperial college, and the temple of the goddefs "Tien-fey," are built after the faffion of China. The natives of Lieot-kieou are, in general, mild, affable, and temperate ; they are active and laborious, enemies to flavery, and deteff falhood and difhonelty. Excepting the grandees, bonzes, and Chinefe eftablithed in Lieou-kieou, few of the inhabitants of thefe iflands can either write or read. The people are fond of games and diverfions. They celebrate with great pomp and fplendour, thofe feltivals that are inftituted in honour of their idols, and thofe 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 thefe inanders; and they are free from thofe crimes that are common in the inles fituated to the N.E. of them, which being nearer to Japan, have adopted the vices of its inhabitants, as well as their manners and cuftoms. Grofier's China, vol, i. The capital is in N. lat. $26^{\circ} 2^{\prime}$. E. long. $128^{\circ} 40^{\prime}$.
LIEOU-TCHEOU, a town of Corea; 37 miles S.E. of King Ki-tao.-Allo, a city of China, of the firt rank, in the province of $Q$ uang-fi, fituated on the river Leng. N. lat. $24^{\circ} 12^{\prime}$. E. long. $108^{\circ} 47^{\prime}$.

LIEPE, a town of Pruffia, in the palatinate of Culm; 14 miles E.S.E. of Culm.

Llie PPE, a town of Pruffia, in Oberland; eight miles from $C$ fterrod.

LIER.

## LIE

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 Cote-d'Or, and chief place of a canton, in the diftrict of Beaune; romiles N.W. of Arnay-le-Duc. The place contains 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 TTwo Nethes and chicf place of a canton, in the diftrict of Malines, feated on the Nethe; 10 miles S.E. of Antwerp. The place contains 958 , and the canton 13,159 inhabitants, on a territory of 105 kiliometres, in four communes.

LIETZAN, a town of the Middle Mark of Brandenburg; 15 miles S. W. of Cuttrin. N. lat. $52^{\circ} 28^{\prime}$. E. long. 14 $30^{\prime}$.

LIEURE, a town of France, in the department of the Strait of Calais; II 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 fluurihed in the former part of the eighteenth century, was the fon of a gun-fmith at Arles, and died at Paris in the year 1733 . He particularly attached himfelf to the ftudy of aftronomy, and from the great proficiency which be made in this branch of knowledge, he obtained a feat in the French Academy of Sciences. He publihed twenty-feven valumes of the "Connoifance des Temps," from the year 1703 to 1739 .

Lieutiad, Josepii, a celebrated phyfician and anatomift, was born at Aix, in Provence, on the 2 Ift of June, I\%O3. His family had been eftablifhed from time immemorial at Aix, and had produced a great number of diftinguifhed officers, eccleliadtics, lawyers, and ufeful citizens. He was at firit intended by his parents for the church ; but the reputation of his maternal uncle, Garidel, the profeffor of medicine in his native place, gaye him a bias to the thudy of medicine. Botany was the firlt object of his purfuits. He travelled into the countries which Tournefort had furveyed before him, and brought back many plants which had efcaped the obfervation of that diftinguifhed bota nilt. This fuccefs gained him great applaufe in the univerfit ies of Aix and Montpellier, and he foon obtained in the former the reverlion of the chairs of botany and anatomy, which his uncle had long filled. Being apponted phyfician to the hofpital at Aix, the neceffity of purfuing his anatomical ftudies prefinted itfelf to his mind, together with the greater facilities which this appointment afforded, and he thenceforth nearly abandoned the fubject of bo tany. His audience foon became numerous, comprifing many perfons not engaged in the ftudy of redicine, and among others the narquis d'Argens, the intimate friend of the king. M. I ieutaud publifned, in $174^{2}$, a $f_{5}$ llabus of anatomy for the ufe of his pupils, eatitled "Eflais anatomiques, contenant 1 Hittoire exacte de toutes les Parties qui compofent le Corps humaine;" it was feveral times reprinted, with improvements, and in 1777 was edited by M. Portal, in two yolumes. He communicated alfo feveral papers on morbid anatomy, to ufe a common phrafe, and on phyfiology, to the Academy of Sciences, of which he was elected a correfponding member. In 1749, however, he quitted his poit at Aix, and went to Verfalles, at the inftance of the celebrated Senac, who then held the higheft appointment at court, and who obtained for Lieutaud the appointment of phyfician to ahe Royal Infirmary. This act of friendfinip is
faid to have originated from the private communication of fome errors, which Lieutaud had detected in a work of M Semac, and which he did not deem it proper to publifh. At Verfailles he continued his anatomical inveftigations with unabated zeal, and was foon after his arrival elected affiltan:anatomilt to the Royal Academy, to which be continued to prefent many valuable memoirs. He alfo printed a volume, entitled "Elementa Phyfiologix, \&c." Paris, 1749, which had been compofed for the ufe of his clafs at Aix. In 1755, he was nominated phylician to the royal family, and, twenty years afterwards, he obtained the place of firft phyfician to the king, Louis XVI. In 1759, he publifhed a fyitem of the practice of medicine, under the titie of "Precis de la Medicine pratique," which underwent feveral editions, with great angmentations, the beft of which is that of Paris, 1770, in two volumes, 4 to. In 1766, he publifhed a "Precis de la Matière međicale," in 8vo. afterwards reprinted in two volumes. But his molt important work, which ftill ranks high in the eltimation of phylicians. is that which treats of the feats and caufes of difeafes, afcertained by his innumerable diffections. It was entitled "Hiltoria Anatomico-medica, fittens numeroliffima cadaverum humanorum extifpicia," Paris, 1767 , in two volumes, 4to. M. Lieutaud died on the 6 th of September, 1780 , after an illnefs of five days. Eloy Dict. Hilt. Hitt. de l'Acad. Roy. des Sciences, for $1^{780}$, p. $4^{8}$.

LIEUTENANT, Locumtenens, a deputy, or officer, who holds the place of a fuperior, and difcharges in his abfence the duties of the office which he ought to exercife in perfon. The term is originally derived from legatus (which fee), and more immediately from the French lieutenant, fupplying or holding the place of another.

Of thefe, fome are civil ; as lurds lieutenants of kingdoms; who are the king's viceroys, and govern in his Itead fuch as the lord lieutenant of Ireland; and lords lieutenants of counties. See Lords Licutenants.

But the term is moft frequent among mihtary men, among whom there is a variety of lieutenants.

Lieutenant is the fecond commiffioned officer in every company of both foot and horfe, and next to the captain, who takes the command upon the death or abfence of the captain. Fuzileer corps, grenadiers, and light infantry have fecond lieutenants and no enfigns. See Captain.

Lieutenant of Artillery, is an officer of the artillery in each company, of which there are one firft and three fecond lieutenants. The firt lieutenant has the fame detail of duty with the captain, becaufe, in his abfence, be commands the company. The fecend licutenant is the fame as the enfign in an infantry regiment, being the youngelt commiffioned officer in the company, and it is his duty to affila the firlt lieutenant.

Lieutenant-General of Artillery. See Lieulenant-Ges neral of Artillery.

Lieutenant-Capain. See Captain.
Lieutenant of Engineers. See Evgneer.
Lieutenant-General. See General, Lieulenant.
In France they have alfo lieutenant-generals of their navai forces, who command immediately under the admurals.
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 abfence. This officer was firft eftablifhed in 1597. See Ordiance.
Lieutenait-Colonel of Foofo Sce Licutenant-Cozonzl.

## L. I E

## LIE

The dragoons have alfo a lieutenant-colonel ; but the horfe have not, properly, any; the firlt captain of the regiment fupplies the office.

Lieutenant-Colonel of Horfe, is only the firft captain of the regiment, who commands in the abfence of the colonel, taking place of all other captains.

Lievtenant of a Ship of War, is the officer next in rank and power to the captain, in whofe abfence he is charged with the command of the fhip, and alfo 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 ail the officers ard men belonging to it, in order to mufter it, and report to the captain the names of thofe who are abfent from their duty. During the night-watch he ocrafionally vifits 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 preferving order; but he is never to change the fhip's çurfe without the captain's direction, unlefs it be to avoid an immediate danger. In time of battle he is to fee that all the men are prefent at their quarters, to order and exhort them to perform their duty, and to inform the captain of any mifbehaviour. The youngeft lieutenant of the thip, who is alfo called lieutenant at arms, is, befides his common duty, to train the feamen to the ufe of fmall arms, and in time of battle to attend aad direct them for this purpofe.

Lievtenant de Roy, the deputy governor of all ftrong towns in France before the revolution, who is a check upon the governor, and commands in his ablence.

Lieutenant Reformed, is he whofe company or troop is broke or difbanded, but continued in whole or half-pay, and ftill preferves his right of feniority and rank in the army.

LIFE, in Pby Fology, is the peculiar condition or mode of exiftence of living beings. Surrounding matter we obferve to be divided into two great claffes, living and dead: the latter is fubject to phylical laws, which the former alfo obeys in a great degree: it exhibits alfo phyfical properties, which we find equally in the latter. But living bodies are endowed moreover with a fet of properties altogether different from thefe, and contrafting with them in a very remarkable way; thefe are the vital properties, powers, faculties, or forces. They animate living matter fo long as it continues alive, and are the fource of the various phenomena which conflitute the functions of the living animal body, and which diftingnifh its hiftory from that of dead matter. The ftudy of life, then, which is the object of the fcience of phyfology, as organization is of anatomy, includes an inquiry into the properties that characterize living matter, and an inveftication of the functions which the - various organs, by virtue of thefe properties, are enabled to execute.

As the animals, which belong to the different claffes of natural hiftory, differ greatly in the number of functions, which they can exe ute, as we have every gradation from that of the greatel fimplicity, to as great a complication in fructure and functions; hife includes very different notions in the different initances. Our view would be very imperfect if we obferved it only in one example; we fhall, therefore, extend our furvey in a very general manner, through all the orders of animals. For this purpofe we fhall avall ourfelves of the very excellent introductory lecture to the Leçons d'Anatomie comparée of Cuvier, which exhibits a luminous and philofoplical view of life in general, and of its principal modifications in the different slafles of animals. We flall fubjoin a general account of

Bichat's divifion 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 thofe general and obfcure ideas produced in us by oblerving a certain feries of phenomena poffeffing mutual relations, and fucceeding 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 muft exift; and this conviction is fufficient 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 occafioned its formation.

Thus, as the human body, and the bodies of feveral other animals refembling it, appear to refilt, during a certain time, the laws which govern inanimate bodies, and even to act on all around them in a manner entirely contrary to thofe laws, we employ the terms life and vital force to detignate what are at leaft apparent exceptions to general laws. It is therefore by determining exactly in what the exceptions confift, that we fhall fix the meaning of thofe terms. For this purpofe, let us confider living bodies in their aetive and paffive relations with the rell 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, thofe cheeks crimfoned with the rofes of delight, thofe 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 paffion, feem all united to form a molt fafcinating being. A moment is fufficient to deftroy this illufion. Motion and fenfe often ceafe without any apparent caufe. The body lofes its heat ; the mufcles become flat, and the angular prominences of the bones appear; the luitre of the eye is gone; the cheeks and lips are livid. Thefe, however, are but preludes of changes ftill more horrible. The flefh becomes fucceffively blue, green, and black: it attracts humidity, and while one portion evaporates in infectious emanations, another diffolves into a putrid fanies, which is alfo fpeedily diffipated. In a word, after a few fhort days there remains only a fmall number of earthy and faline principles. The other elements are difperfed in air, and in water, to enter again into new combinations.

It is evident that this feparation is the natural effect of the action of the air, humidity, and heat,-in a word, of external matter upon the dead body; and that it has its caufe in the elective attraction of thofe different agents for the elements of which the body is compofed. That body, however, was equally furrounded by thofe agents while living, their affinities with its molecules were the fame, and the latter would have yielded in the fame manner during life, had not their cohefion been preferved by a power fuperior to that of thofe affinities, and which never ceafed 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 firf fight appears to conllitute its effence, fince we can form no conception of life withour it, and fince it evidently exifts without interruption until the inflant of diffolution.

But a further itudy of any living body convinces us, that the power which preferves the union of the molecula, notwithitanding the external forces which tend to feparate them, does not confine its activity to this tranquil operation, and that the fphere of its action extends beyond the bounds of the living body itfelf. At leaft it does not appear that this power differs from that which attracts new

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moloculx to depofit them between thofe that already exif: and this action of the living body, in attracting the furrounding moleculx, is not lefs conflant than that which it exercifes in retaining its own; for, befides that the abforption of the alimentary matter, its converfion into nutritive fluid, and its fubfequent tranfmifion to all the parts of the body, experience no interruption, and continue from one repaft to another; another abforption conftantly takes place at the external furface, and a third by the effect of refpiration. The two latter are thofe only which exitt in all living bodies which do not digeft, that is to fay, in all plants.

Living bodies, however, do not increafe indefinitely. Nature has affigned to each limits which it cannot exceed. It follows, therefore, that they mult lofe, in one way, a great part of what they gain in another; and indeed an attentive obfervation has convinced us, that tranfipiration, and a number of other caufes, tend continually to diminih their fubltance.

This confideration muft modify the notion which we at firf formed from the principal phenomenon of life. Inftead of a conflant union in the moleculx, we cannot avoid obferving, 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 notwithfanding fixed within certain limits. Thus living bodies may be confidered as a kind of receptacles, into which inert fubitances are fucceffively thrown, in order to combine among themfelves 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 efcape in order to become again fubject to the laws of inanimate nature.

It muft be obfersed, 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 thofe which abandon it; and that the velocity of the motion ufually varies according to the different conditions of each living budy.

It appears, at the fame time, that life is terminated by caufes fimilar to thofe which interrupt all other known motions, and that the hardening of the fibres, and the obftruction of the veffels, render death the neceffary confequence of hife, as repofe is of motion, even though the crifis were not accelerated by innumerable caufes which are foreign to the living body.

This general and common motion of all the parts forms to peculiarly the eflence of life, that the parts which are feparated from a living body foon die, becaufe they poffefs no motion of their own, and only participate in the general motion produced by their union: Thus, according to the expreffion of Kant, the reafon of the mode of exiltence of each part of inarimate bodies belongs to itfelf, but in living Bodies it refides in the whole.

The nature of hife, as above defcribed, being once well arcertained by the obfervation of the molt conitant of its effects, a wifh would naturally arife to inveltigate 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 poffible to the moment: of their formation. But they have never been obferved otherwife than completely formed, and already enjoying that vital force, 'and producing that circulatory motion, the firft caufe 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 firft capable of perceiving them, they
then enjoy a real life, and poffers the germ of all the phenomena which that life may afterwards develope. Thefe obfervations, extended to all the claffes of living bodics, la lad to this general fact, that there are none of thofe bodics which have not beretofore formed parts of bodies finilar to themfelvec, from which they have beea detached. All have participated in the exiftence of other living bodies, before they exercifed the functions of life by themfelves; 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 fo completely as to become capable of enjoying Separate vitality ; for though the particular action of copulation is neceflary for the production of a number of fpecies, many aro produced without it ; copulation, therefore, is only a circumftance belonging to certain cafes, and does not change the effential natuee of gencration. It appears then that the motion proper to living bodies has really its origia in that of their parents. It is from them they have received the vital impulfe; and hence it is evident, that, in the actual flate of things, life proceeds only from life, and that there exilts no other except that which has been tranfmitted from one living body to another by an uninterruptec fucceffion.

Unable to afcend to the origin of living bodies, thereremains then within our reach no fource of information refpecting the real nature of the powers which animate them, except the examination of the compofition of thofe 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 fome manner the refult of the action of the vital impulfe which has given them being, andwhich maintains them; it is alfo evident, that in them ouly this impulfe can have its fource and foundation: and if thefirlt union of the chemical and mechanical elements of any living body has teen effeeted by the vital force of the body from which it defcended, we ought to find in it a fimilar power, and alfo the caufes of that power, fince it has to exercife a like action in favour of the bodies which are to defcend from it.

But this compofition of living bodies is too imperfeetly known to enable us to deduce clearly from it the effects they exhibit. We obferve, in general, that they are compofed of fibres or laminx, forming altogether a feries of. reticulated fubflances more or lefs compact, which form the bafes of all their folids, as well of thofe that are mafly, as of thofe that prefent the appearance of lamine and filaments. We are acquainted with the form, the confittence . and the pofition of the larger of: thofe folids; the ramifications of the molt confiderable of their velfels, and the courfe of the fluids they contain: but their more minute branches, and their more fecret texture, cannot be traced by our inftruments. We likewife know the chemical characters of the moft apparent of the different fluids and concrete fubftances: we can even decompofe them to a certain point. This inveltigation, however, is not only imperfect, fince we cannot recompofe them, but the phenomena indicate, that there muft exilt feveral other fluids which we have not yet been able to difcover.

The efforts hitherto made by naturali.ts to prove a connection between the phenomena of living bodies and the general laws of nature, have doubtléf been unfucceffful. It would, however, be wrong, on that account, to conclude that thofe phenomena are abfolutely of a different kind; but, on the other hand, there would be much temerity in refuming this tafk, while our knowledge of the bodies in which the phenemena appear is fo limited. We thould be able to give only an empirical expofition, inftead of a rational.

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rational fyftem. All our labours on organic economy muft therefore be confined to its hiftory.

If, however, our knowledge of the compofition of living bodies be not fufficient for the explanation of the phenomena they exhibit, we may at leaft employ it in recognizing thofe bodies when out of a ftate of action, and in diftinguiking 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 thofe that are alive, or in thofe that have lived.

We know that inert folids are compofed only of polye. drous moleculix, which attract each other by their fides, and never move except to feparate-that they are refolvable into a very fmall number of elementary fubftances-that they are formed of the combination of thofe fubftances, and the accumulation of thofe molecules-that they grow only by the juxtapolition of new molecules, the ftrata of which envelope the preceding mafs-and that they are deftroyed 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 interftices filled with fluids, refolve almoft entirely into volatile fubftances, are produced by bodies fimilar to themfelves, from which they do not feparate until they are fufficiently developed to act by thei: own force; conftantly affimilate foreign fubftances; and depofit them between their particles; grow by an internal power, and finally perifh by that in. ternal principle, or by the effect of life itfeif.

Origin by generation, growth by nutrition, termination by ceath, are the general and common characteriftics of all organized bodies: if, however, there are bodies which perform only thefe functions, and thofe which are fubfidiary to them, and poffefs only the organs neceflary for fuch operations, there is a great number of others which perform particular functions, that not only require appropriate organs, but neceffarily modify the manner in which the general functions are performed, and the organs proper to thofe functions.

Among the lefs general faculties which indicate organization, but which are not the neceflary confequences of it, the faculty of fenfation, and that of voluntary motion, in whole or in part, are the molt remarkable, and thofe which have the greatelt influence on the other functions.

We are confcious that thefe faculties exif in ourfelves, and we attribute them, by analogy, and from their apparent cxiftence, to a number of other beings, whom we therefore name animated beings, or, ufing a fingle word, animals.

It appears that thefe two faculties are neceffarily connected, the idea of fenfation is even included in that of voluntarv motion ; for we cannot conccive volition without defrre, and unaccompanied by the fentiment of pleafure or pain. There may indeed exit inanimate bodies, that manifeft external motion produced by an internal principle; but their movements are not of the fame nature as thofe which conflitute the functions effential to life, and do not merit the name of voluntary.

On the other hand, the bounty which nature difplays in all her productions, does not permit us to believe that the has deprived beings fufceptible of fenfation, 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 affict our fpecies, one of the moft painful is the fituation of a man of courage withheld by a fuperior power from refilting oppreffion; and the poetic fictions beit calculated to excite compaffion, are thofe which reprefent Eentient beings inclofed within immoveable bodies. The
fighs of Clorinda iffuing, with her blood, from the trunk of a cyprefs, would arref the fury of the moft favage of mortals. La Gierufalemme Liberata, canto xiii.

But, independently of the chain which connects the two faculties, and the double fyltem of organs they require, they are accompanied by feveral modifications in thofe faculties which are common to all organized bodies: thefe modifications, joired to the two firlt mentioned faculties, are what more particularly conflitute the nature of animals.

With refpect 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. Thefe roots are fubdivided to extreme minutenefs; they penetrate into the fmalleft intertices, and proceed, if it may be fo faid, to feek at a dittance 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 tranfport with themfelves a portion of the fubitances neceftary for their nutrition: they have therefore received an internal cavity, into which they depofit the matters deftined for their aliment; and the inward furfaces of this cavity are furnifhed with innumerable abforbing pores or veffels, which, according to the energetic expreflion of Boerhaave, are real internal rocts: the magnitude of this cavity, in a number of animals, permits them to introduce folid fubftances into it. It was neceflary, then, that they fhould have inftruments for dividing thofe fubitances, and liquors for diffolving them. In. a word, with fuch animals nutrition does not immediately commence upon the abforption of the fubftances which the foil or the atmofphere furnifh them. It is neceffarily preceded by a valt number of preparatory operations, the whole of which conftitute digefion. See Digestion.

Thus, it appears, that digeftion is a function of a fecondary order, proper to animals, the exiftence of which, as well as of the alimentary canal in which it is performed, is rendered neceffary by the faculty they poffefs of voluntary mo* tion; but this is not the only confequence of that faculty.

The faculties of vegetables being very few, their organization is very fimple; almolt all their parts are compofed of fibres, which are either parallel, or diverge very little. Farther, their fixed pofition 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 fpongy 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 alfo that the motion of this fluid may even become retrograde, when it ceafes to flow in its ufual courfe, or changes into abforption by the coolners and humidity of the air.

It is not only neceffary that animals deftined continually to change their place of exiftence, and to live in all kinds of fituations and temperatures, thould poffefs within themfelves 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 diftance from each other, and even capable of changing their refpective pofitions and directions, means more powerful, and otherwife difpofed than in vegetables, are neceffary for tranfmitting this fluid through fuch a multiplicity of intricate windings.

In the greater part of animals, therefore, this fluid is contaned in innumerable canals, which are the ramifications of two trunks communicating with each other, in fuch a man-
ner, that the one receives in its roots the fluid which the other has pulhed 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 ramificentions of the arterial trunk. It has two orifices, the valves of which are fo difpofed that the fluid contained in the whole valcular fyftem 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 thofe parts back to the heart by the veins. Sce 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 neceifarily connected with the faculties of fenfation and motion as the function of digeltion is; for two numerous claffes of animals are completely deprived of circulation, and are nourifhed like vegetables, by fimply imbibing a fluid which is prepared in the inteftinal 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 fubilances, which are intimately incorporated with it, and continually furnifhing fubflances 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 acceffion of the different \{ubftances, which have juff been pointed out, that the venous blood is rendered proper for nutrition, or, in one word, becomes arterial blood.

It is by particular vefels, called lymphatics, that the venous blood receives the fubitances with which the fkin and the alimentary canal fupply it. By them, alfo, it receives even the refiduum of nutrition, and the particles which are detached from different parts, to be carríed out of the body by various excretions. See Absorbents and Absorption.

With refpect to the lungs, the air that penetrates into them produces, with the venous blood, a kind of combuftion, which appears to be neceflary to the exittence of all organized bodies: for it takes place in thom all, though in .very different ways. See Respiration.

Vegetables, and animals which have no circulation, reJpire throughout the whole of their furface, or by veffels which introduce the air at different points into the interior of their bodies. No animals refpire by a particular organ, except thofe that have a real circulation, becaufe, in them, the blood coming from one common fource, the heart, to which it conltantly returns, the veffels that contain it are fo difpofed, that it cannot arrive at the other parts until it has pafled through the l:ngs. This, however, cannot take place in vegetables, or in thofe animals in which this fluid is every where diffufed in an uniform manner, without being contained in veffels.

Hence it appears that pulmonary or branchial refpiration is a function of a third order, the exiltence of which depends on that of circulation, and that it is a remote confequence of thofe faculties that characterite animals.

Even the mode of gencration in animals, at leall as far as the fecundation of the ova is concerned, depends on their particular faculties; for the facultics they poffefs of moving and advancing towards each other, of deliring and enjoying,

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has fitted them for taRing all the delighes of love: whith with refpect to the purely mechanical part, their fpermatir fluid has no occafion for any envelope, and is capable of being tranfnitted direttly to the ova; but in veqetables, which do not poffefs within tlizmfelves the power of dirceting this fluid, it was neceffary that it hoonfd be enclofed in little capfules, which are fufceptible of being tranfynted by the winds, and which form what is called the pollw of the famina. Thus, while animals, for the performarce of molt of their other functions, have, in confequance of facultics peculiar to themfelves, receised more complicated organs, they are enabled, by thofe characteriftic faculties, to exercife the function of gencration in a mamere more fimple than vegetables.

Thefe examples fhew how much influcnce the faculties of fenfation and motion, which animals pofiefs in addition to thofe of vegetables, have over the organs of all the other faculties which are common to both thefe kinds of beings. The comparifon which we thall hereafter make of the different orders of animals, will, in thie fame manner, demorItrate that the modifications of their principal functions exercife a fimilar iuflucnce or all the others:- fech is the union and harmonyo which prevails in all the parts of living bodies.

We hare thus defcribed the principal functims which compofe the animal economy. It is obrious that they may be divided into three diftinct orders. There are fome which, in conflituting animals what they are, fit them for fuifiling the part that nature has affigned to them in the general arrangement of the univerfe, - in a word, which would be fuflicient for their exiftence, if that exifence were only momentary. Thefe are the faculties of fenfation 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 univerfe : the organs of motion are the wheels and levers, in fhort, all the paffive parts; but the active principle, the fpring which gives the impulfe to every part, refides only in the fenfitive faculty, without which the animal, plunged in a continual flumber, would be reduced to a flate purely vegetative;-plants themfelves, as Buffon has obferved, may be called animals which necp. Thefe two functions form the firlt order, and are termed animal fundions. But animal machines, unlike thofe we coriftruct, poffefs an internal principle of prefervation and reparation. This principle confilts in the union of the different functions which ferse to nourifh the body, that is to fay, digefion, abforption, circulation, refpiration, tran/piration, and the excretions. Thefe form the fecond 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 perifh are replaced by others, and the exiftence of exch fpecies maintained. Sce Fuxction.

Having confidered thefe functions with refpect to theprfelves, and to their reciprocal relations, we Shall next examine the organs by which they are performed.

General idea of the organs of rubich the animal lody is compofed. - No part of the animal body is compofed entirely of folid particles; they all yield fluids by expreffion, or loie them by exficcation; and they all exhibit the appearance of an areolated or reticular texture.

The mechanical divifion of the folids conducts us, in the laft refult, to lamelle, or filaments, which feem to be the eleracatary moleculz. When the lamellix are 「eparate, and 4 U interrupted

## LIFE.

ipterrupted by fenfible vacancies, they form what is called cellululity. This cellubofity not only envelopes and pervades the molt denfe parts, but it appears to form almolt always their balis; for membrancs confirt ouly of a more compact cellulufity, the lampllx of which are more clofely approximated, and placed more exactly above each other. and are refolved inte an ordiuary cellulofity by maccration. (See Cellulab fulfarefe, and Meminane, cellulur.) The veffels are merely 'membranes romided into cylinders. All the foft parts of the body, the fibres excepted, feem to be an affemblayc of veffels, dififring from each other only according to the nature of the fluids they contain, by their number, their direction, and the ftrueture of their coats.
The chemical analy fis of thefe fublances, folids as well as fluids, exhibis only a few principles, allmolt all of which are to be found in each of them, though in very different proportions. Some earths, fome fails, phef fphorus, curbon, azoote, hydrogen, oxygen, a little fulphur, and a little iron, combined in a great variety of ways, produce different compofitions, vic. gedatine, albumen, and fibrous matter, \&ec. which, uniting in their turn, form animal folids and fluide, fuch as we know them. Dut, dillant as we are from a complete anily fis, we fee enough to convince us, not only that we alter thefe compolitions hy our experiments, but alfo that feceral of their principles entirely cicape our influtments. For a more particular account of the clementary tiffices, into which the body can be refolved, fee the artifle Fibie.
The general organ, by which we exercife the faculty of fenfation, is the mecullary fubllance, In all the animals in which we can diftinguifh it, that fubflance is divided into filaments, which arifing from certain centres, dillribute themfelves over molt parts of the body, where they appear to ferve other purpofes befides that of procuring fenfations. The centres from which thofe nervous cords proced, communicate with each other in a manner more or lefs intimate, and feveral of the filanments feem of no other ufe than to eftablifh thofe conmunications.
A nerve, when tewched by a forcign baej, caufes the fenfation of pain, thengh its contact with the parts of the body which are naturally contiguous to it, produces no fenfibie effect in a litate of health. The nerves, by which we difcern exterual objects, are proviled, at thicir extremities, with organs, each of which is difyofed in a particular: manner, and always poffertes an admirable relation to the nature of the objęts, a knowledge of which each of thefe fenfes is delined to convey to us. See Nemye and Brais.

The $\alpha$ aneral organ of motion is the flehy or mufcular fibre. This finte contriacts itfelf by volition; but the will only exercifes this power through the medium of the reeres. Every fethy fibre receives a nervons filament; and the obedience of the tibre ceafes, when the communication of that filament with the refl of the fy'tem is interrupted. Certain external agents, applied immediately to the fibre, likewife caufe contraction: and they preferse their action upon it, even after the fection of its nerve, or its total feparation from the body, durias a period which is longer or fhorter in different fpecies of animals. Thi faculty of the libre is called its irritability. Does it in the latter cafe depend upon the portion of the nerve gemuining in the Giore after i:s fection, which always forms an cflential part of it? Or is the influence of the will itfelf only a particular circumitance, and the offect 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 oppolite theory. See Muscle.

Be this as it may, all the internal parts of the body deftined to produce a compreffion on the fubitances they contain, have their parietes furnifhed with flefhy fibres, and receive nervous filaments; fuch is the cafe with the bladder, the intellines, the heart, \&cc. But the principal ufe of thefe fibres is the formation of mufcles. This is the name given to the bundles of flefly fibres, the extremities of which are attached to the moveable parts of the animal body. When the fibres which compofe the mufcle fhorten, the iwo pounts 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 thofe which are neceflary 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 $\mathbb{K} \mathrm{kin}$, on which they alternately produce dilatations and contractions, which are the only motions of which they are fufceptible: but thofe which are capable of moving themfelves by fteps or otherwife, either wholly or partially, have their mufcles attached to hard parts placed externally or internally. Thofe parts perfonn the office of levers, and have points of fupport on each other, which are called their arliculations.

All the hard parts taken together form the fikcleton. When they are covered by the mufcles, they receive the name of bone; when they cover mufcies, they are denominated fhell, cruft, or fcale, according to their degree of confiftency. In both cafes they always enclofe vifcera, and determine the exterior form of the body, and the proportions of its different parts.
The articulations are provided with as many mufcles as ane neceflary for the difierent movemients of which they are fufceptible; each mufcie 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 circumliances depend the force of leaping, the extent of flight, the rapidity of running, and the prehentile power poifleffed by different feccies of amimals; but, as we have already obferved, all this organization would remain immoveable, were it not animated by the nerrous fyllem.
The foft white fubftance which forms the effence of this fyltem, is divided into filamens that approach each other, aud unite in bundles, which contain more flawents in proportion as they are traced nearer to the common fafciculus of all the nerves, called the fpinal marrow, the anterior extremity of which is juined to the brain, that is to fay, to a medullary mafs of more or lefs 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 fafeceulus, and that it communicates with the brain. A ligature or a rupture intercepts the phyfical. communication, and deftroys fenfation.
The only fenfe which befonge generally to onll animals, and which perkades almolt the whole furface of the budies of each of them, is that of feeling. It refides in the extremities of the nerves which are diftributed to the 1 kin , and makes us fenfible of the refiltance of bodies, and their temperature.

The other fenfes. feem to be only modifications of this Qne,

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-ne, but more exalted, and capable of receiving more delicate impreffions. Every one knows that the other fenfes are feeing, which refides in the eye; hearing, which belongs to the ear: fmelling, which is attached to the membranes rithin the nofe; and talting, the feat of which is in the furface of the tongue. Thefe fenfes are almolt always fituated in the fame 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 atmofphere, and faline particles foluble in water, or faliva, are the fubltances which act on thefe four fenfes; and the organs, which tranimit the action to the nerves, are appropriate to the nature of each. The eye prefents traniparent lenfes to the light, which refract its rays. The ear offers membranes and Huids to the air, which receive its concuffions. The nofe inhales the air which is to go to the lungs, and feizes, in their pafare, the odoriferous vapours it contains. Finally, the tongue is covered with fpongy papillx, which imbibe the favory liquids that are taken into the mouth.

By thefe means we obtain a knowledge of what paffes around us: but the nervons fyftem likewife makes us acquainted with a great deal of what pafles within us. Irdependently of thofe internal pains which indicate fome diforder in our organization, and the difagreeable itate in which we are placed by hunger, thirit, and fatigue, it is in confequence of the operation of this fyftem that we experience the agonies of fear, the emotions of pity, the defires of love. Seniations of this laft kind feem, however, to be rather the effects of the re-action of the nervous fyltem, than immediate impreffions; though, at the fight of any imminent danger, we halten to aroid it before it appears that the mind has had time to act; and the fame oblervation applies to the tranfports we fiel on the prefence of a beloved object, or to the tears we fhed over the fpectacle of fuffering virtuc. 'Thefe effects of the nervous fyltem are produced by numerous communications which particular nerves, called /ympathstics, eltablifh between different branches of the general trunk, by means of which the impreffions are tranfinitted more rapidly than by the brain. The knots called ganglia, when they are confiderable, are each a kind of fecondary brain ; and it is obfervable, that they are larger and more numerous in proportion as the principal brain is lefs.

The faculty of feafation, and that of contraction, the firlt of which, in molt animals, is exclufsely appropriated to the nervous fubltance, and the fecond to the flelhy fibre, appear to be equally diffufed in all the parts of certain gelatinous animals, in which we cannst perceive either fibres or nerves.

It is by the means of thefe two faculties that animals feel, defire, and are enabled to provide for their wants. The molt irrefiltible feeling of all is that of hunger, which conftantly reminds the animal of the neceflity of procuring new materials fur its nutrition. This third function-commences in the mouth, into which the aliments are taken, and, when they are folid, malticated and moiltened with diffulving liquors; thence they traverfe the alimentary canal, which is longer or thorter, and more or lels convoluted and dilated in different animals, and the parietes of which are compofed of feveral continuel tunics, analogous to thofe which form the external tersments of the body.

Thefe coats act in a mechanical manner, on the fublances which they contain, by flight contra@tions of their fibres; and in a clemical manner, by the liquors which are poured out within them.

The firit dilatation of the alimentary canal is called the nowach. There are fometimes feveral ftomachs, or feveral
divifions of that organ; its parictes yield a liquid which reduces the aliments to a homogeneous pulp, during the time they remain in it. 'The remainder of the cawal is more particularly called bowels or inteltines. Independently of the juices, which the different coats of the bowels produce, there are fome which are foparated from the mals of the blood by glands, and which penetrate the intellinal canal by particular conduits. The molt remarkable and the molt general of thefe glands are the liver and the pancreas. 'The tirt, which recretes the bile, is always of a con derable fize; and befides the effect of its liquid on the inteflines. produces another very remarkable effect on the biood itfelf, from which it removes feveral priticiples. See Stomacir, Intestines, Liver, and Pancueas.

It is in the intellines that the aliments undergo that change which fits them fur nutrition. The nutritive part is abforbed, during the act of digellion, tither by the porcs of the canal itfelf, in animals that have no circulation, or, in thofe that have, by very fmall vefficls which conduct it into the general fyftem of nutritive veffels. Thofe fmat veffels are called lymphatics. They are very diftinet from the yeins, in animals whofe ftructure moft refenbles that of man: in the more inferior animals they become gradually more like the veins, and cannot be dilinguifted from them in thofe which have whice bloud. The membranes which compofe the lymphatic veffels and veins are thin, and without apparent fibres. Internally they are furnithed 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, ase ftrong and mufcular, bur have no valves; the vigorous impulfe of the heart is fufficient to imprefs a conltant direction on the blood they contain.*

But the chyle, or the liquor produced by digeltion, is not fufficient for renewing the venous blood, and rendering it fit for the nutrition of the different parts of the body. It is neceffary that it fhould experience the contact of the air before it enters into the arterial fyftem. This is effected by refpiration. The organs of refpiration, in animals which have blood-veffels, conlift in a ramification of thofe veffels, which increafes their furface to fuch a degree, that almoft all parts of the fluid are feparated from the furrounding element only by a very thin pellicle, which cannot obtlruet its action. Whis ramilication takes place on the furface of certain folds or lamello in aquatic animals, and on that of certain cells in aerial animals. In the firit cafe the organ is denominated branchis, in the fecond lunrs. In animals which have no veffels, the air reaches all parts of the body, and acts on the nutritive fuid at the fame moment in which that fuid combines with the parts of the body which it is deftined to nourifh. This is the cafe with infects that have trachece. It will be eatily conceived that there mult be mufcular organs, appropriated to each of thofe fpecies of refpiration, deltined 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 llaps of the gills, and feveral oiher parts, according to the nature of the animal. Sec Luxg.

The air cannot be employed in the formation of the voice, except in the animals that refpire by cellular lungs, becaufe it is in them only that it enters by a lingle and lengthened tube. At one or two parts of this tube there are membranes fiifceptible of tenfion, which vibrate when the air acts upon them, and thereby produce the various founds which we call the voice. The animals which have no voice, properly fo called, are not, however, deprived of the power of producing certain founds, but they are produced in them by other ineans. See Lamynx.

The blood, on its paffige into the organ of relpiration, experriences a kind of combuttion, which removes a part of its carbon, carrsing it off under the form of carbonic acid, and which thereby augmente the proportion of its other clements. The eflect of this procefs on the refpired air, is to deprive it of its oxygen, which is the only aeriform fluid that can be ferviceable to refpiration. Its effect on the blood is lefs known: we know that it heightens the colour of the blood in red-blooded animals, and gives it the power of exciting the hear to contraction. There is even reafon to believe that it is this action of the air on the blood which gives, indirectly, to the flefhy fibres their contractile power. It is thill necelfary that the blood fhould lofe feveral ether principles: fome arc carried off by the kidnies, which fecrete the urine, and which are found in all amimals that have red blood. The matter which tranfpires through the poras of the fing, and the fubftances whicl pafs through the intettinal 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 cominon object. See Integuments, Fidney, and Respirition.

Thefe are all the organs which conftitute 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 fhall fee that, in proportion as we defcend in the fcale of being, they fucceffively difappear, and that at laft we fhall find, in the loweft claffes, only what is neceffarily comnected with the idea of an animal ; that is, a fac, fenfible, moveable, and capable of digefting.

Upon a clofe obfervation of the action of all thefe 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 prom cefs, by which one fluid is feparated from another, or is formed from a part of the elements of one, mixed with a part of thofe of another, we give the name of fecretion: this term, hovever, is ufually confined to the changes which take place in different kinds of glands, that is to fay, in bodies more or lefs thick, in which the blood-veffels, being infinitely fubdivided, permit the liquid which the gland feparates from the blood to tranfude from their extremities. (Sce Gland.) But the animal economy exhibits a number of other transformations, or feparations of humours, which equally merit this name. It cannot be fuppofed that the nerves act on the nufcular fibres wittout producing a chemical change on the fluid that may be contained in the one, by the acceffion of that which the others may tranfmit, nor that external objects act upon the nerves otherwife than by producing a change of the fame kind. The fluid contained in the nervous fyftem mult have been feparated from the blood in the brain, and, in general, in all the medullary organs. The blood itfelf does not attain its thate of perfection until a mul. titude of fublances 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 mafs by the lacteal veffels: on the other hand, this mafs 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 nourintes the parts to which it is dittributed, by the particles that are detached from its mafs, while other particles are feparated s.om thefe parts to return into the mafs of the blood shrough the medium of the lymphatic veffels.
in 2 word, all the amimal fusctions appear to reduce them.
felves to the 'transformation of Quids. In the manner in which thefe transformations are produced, the real fecret of the admirable economy of animals confilts, as health depends upon their perfection and regularity.

If we do not perceive this procefs in a manner fufficiently clear when the embryos of new individuals begin to develope themfelves within or without the bodies of their mothers, we can at leaft difcover it in the preparation of the male liquor, which, by its prefence, excites or occafions that developement in all the fpecies in which copulation is neceffary. This developement 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 thofe which prepare the prolific liquor, and convey it to the ova, and thofe which are deftined to contain and protect the embryo during its developement. The firt conttitute the male, the fecond the female fex.

The telticles are the glands which fecrete the feminal fluid; feveral other glands prepare liquors which mingle with it. The peris contains the feminal canal ; it fwells 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 ovidutius, and of conveying thither the fluid deftined 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 itf flf, and draws its nourifhment, either from the body of ite mother, by the abforption of a large tiflue of veffels connected with thofe of its own body, or from an organized mafs attached to it in the fame 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 fhell of the egg in which it is contained, and efcapes from its prifon. See Genfration.

Viezv of the principal diferences which animals exbilit in their feveral organs.-It appears from the preceding account, that what is common to each kind of organs, confidered in all animals, refolves itfelf into a very fmall compafs, and that frequently they only refemble one another in the effects they produce. This is particularly obvious with refpect to refpiration, which is performed in the different claffes of animals by organs fo various, that their ftructure prefents no common point of comparifon. Thofe differences in the organs of the fame kind are precifely the object of comparative anatomy; and the fhort expofition we are about to make, of the principal of thefe differences, may be regarded as a general view of this fubject. We fhall, therefore, return to each of the-functions of which we have treated, and examine the different degrees of energy it poffefes, and the particular means by which it is carried on in different animals.

The organs of motion prefent us at firit fight with two important diftinctions with refpect to their fituation. Sometimes the bones form an internal fkeleton, articulated and covered by the mufeles; fometimes there are no internal bones, but merely fcales or fhells which cover the fling, within which are the mufcles: in other cafes there is no hard part that can ferse as a lever or point of fupport for the motions of the animal's body.
A nimals of the firit kind have the whole body fupported by a itrong pillar, formed of feveral bony pieces, placed one above the other, and called the fpine of the back, or the vertebral column. They are, therefore, denominated sertebral animals. Thefe are the mammalia, birds, reptiles, and fiflles.

The animals without vertebre are either entirely foft, or bave

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have their bodies and members enveloped in fcales articulated on one another, or, finally, are enclofed in fhells. Thefe are the foft worms, infects, and the teltacea.

It is by the greater or lefs perfection of certain parts that the animals of there different claffes become fufceptible of various kinds of motion.
The organs of fenfation prefent confiderable varieties; fome have a relation to the internal part of the nervous fyftem, others to the external fenfes. The firit give rife to three clafes:-that of animals which have no apparent nervous fyltem, and in which we difcover neither veffels nor nerves; fuch are the zoophytes or the polypes:-that of animals in which 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:-laltly, that of animals in which the common fafciculus of the nerves is fituated entirely in the back above the alimentary tube, and enclofed in a canal which paffes through the vertebral column; thefe are all the vertebral animals. Their ganglia are placed on the fides of their medullary cord, or difperled in the large cavities. Among the invertebral animals there are fome that have ganglia only in the large cavities, as the molluica, and others, which have them all on the medullary cord itfelf, of which they appear to be fwellings; thofe are the infects, and fome articulated worms.

The differences in the external fenfes confift in their number, and in the degree of energy that belongs to each.

All vertebral animals poffefs the fame fenfes as man.
Sight is wanting in the zoophytes, in fereral kinds of articulated worms, in feverai larve of inicets, and in the acephalous mollufca. Hearing does not exit, at leaft we have not yet difcovered its organ, in forme mollufca and infects. The other three fenfes, but particularly thofe of tafte and touch, appear never to be wanting.

But each of thefe fenfes may vary confucrably in the degree of its fufceptibility, and the complication of its structure. The perfection of the fenfe of tonch, 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 apphied 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 fmallnefs of the claws or nails, that the anatomift difcovers important charafters.
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 expofed outwardly; or they may be provided with an external trumpet, which collects: the rays of found. The membranes in which the fenfe of fmelling relides, may be more or lefs extenfive : thofe which are the feat of taite, may be more or lefs delicate and humid; -but it is only by particularly confidering each of thofe fenfes, that we can take a comprehenfive view of the differences that exift in the various clalles of animals.

The organs of digeftion exhibit two important differences in their general difpofitions. In certain animals, (in the greater part of zoophytes, ) the inteftines form a fac with only one aperture, which ferves at once for the entrance of the aliments, and the iffue of the excrements: all other animals have two diftinct apertures, for thofe purpofes, at the two extremities of the fame canal; but the convolutions of this canal may be fuch as to remove thefe openings
to a greater or lefs diflance from each other. Another difference which has much influence on the nature of the aliments appropriated to each fuecies, is, that in certain animals the mouth is armed with weth, or hard farts proper for grinding folid fubftances, while in others they do not exitt. In the latter cafe, the animal can only fwallow whole bodies if its mouth be large, or merely fuck in fuids if its mouth be in the form of a tube. The flructure of thofe tecth has icfelf much influence on the fubftances the animal can fubmit to mattication. The remainder of the alimentary canal varies alfo confiderably in its ftructure, according to the different fubftances which the month convers to it. On this likewife depend the length of the canal, and the number of fomachs, cæca, \&c.

The chyle produced by the action of the digeffive organs on the alimentary fubflances is tranfmitted to the various parts of the body in two different ways. It either finply tranfudes through the parietes of the inteftinal canal, to bathe all the interior of the body, or it is abferbed by particular veitcls which convey it into the mafs of the blood. The firtt is the mode in which this operation is performed in zoophytes, and, probably, alfo in common infects, which appear to have no kind of veffels proper for circulation. As to the other animals, viz. the mollufca, and the verte. bral animals, that have abforbent veffels, they exhibit two new differences. The latter have red blood, and the ly mph and chyle white. Almoft all the others have thefe two fluids of the fame colour.

Vertebral animals differ among themfelves, with regard to the colour of the chyle, which is white and opaque in the mammalia, and tranfparent, like the other lymph, in birds, reptiles, and fifhes. The three laft claffes, therefore, have no conglobate glands in their chyliferous veffels, while they are very numerous in the firft.

The circulation of the blood is accompanied with very important differences in its organs. In the firlt place, there are animals which have no circulation whatever, viz. in. fects and zoopbytes: others have a doubie, and others a fingle sirculation. We call that a double circulation in which no part of the venous blood can enter the arterial truuk, until it has paffed through the organ of refpiration, which is generally formed of the ramifications of two veffels; the one arterial, the other venous; each nearly as large, but not fo long, as the tivo principal veffels of the body. Such is the circulation of man, of all mammalia, of birds, fifhes, and a number of mollufca.

In the fingle circulation a great part of the venous blood re-enters the arteries without paffing through the lung; becaufe only one branch of the arterial trunk is expanded upon that organ; fuch is the circulation of the amphibia.

There are, befides, other differences in the hearts, or muf. cular organs, deltined to give impulfe to the blood. In the fingle circulation there is only one beart; but when the circulation is double, there is fometimes an organ at the bafe of the aorta, and alfo at that of the pulmonary artery. At other times it is at one of the two only.
In the one cafe, the two hearts, or rather the two ventricles, may be united, as in man, mammalia, and birds; or they may be feparate, as in the cuttle fifh.

Where there is only one ventricle, it may be placed at the bafe of the artery of the body, as in fnails, and other mollufca; or at the bafe of the pulmonary artery, as in fifles.
The organs of refpiration are likewife diftinguifhed by a number of remarkable differences. When the element that atts on the blood is the atmofpheric air, it penetrates even

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into the interior of the refpiratory organ ; bat when that element is water, it fimply glides over a furface more or lefs multiplied.
The lamelle which compofe the organ, in the latter cafe, are called brancbic. They are found in fifhes, and in a number of molluica: inftead of lamellix, we fometimes find fringes or tufts.

The air either enters the body by a fingle aperture, or by feveral. In the firft cafe, which is that of all animals that have what is properly called lungs, the canal, which receives the air divides into a number of branches, terminating in as many frall cells, that are ufually united into two maffes, which the animal has the power of comprefling or dilating at pleafure.

When there are feveral apertures, which is the cafe only with infects, the veffels that receive the air are ramified $a d$ infuitum, and convey it to all parts of the body without exception. This we call refpiration by trachere.

Lally, the zoophytes, if we except the echinodermata, have no apparent organ of refpiration.

The organs of the voice prefent only two differences, which may be regarded as general. They depend on the pofition of the glottis, in which the found is formed. In birds, it is at the luwer part of the trackica or tube, which condacts the air, whare it divides into its two branches to pafs into the lungs. In quadrupeds and reptiles it is fituated in the beginuing of the trachea, at the root of the tongue.

Only thefe three claffes 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 bodies.

Gencration gives rife to varieties of two kinds. The one relates to the actions which occafion it, the other to the refult.

In a finall number of animals, belonging almont entircly to the clafs of zoophyta, generation is performed without copulation, and the young animal grows on the body of the parent, like a flyot on a tree : others only produce in confequence of copulation, and are thercfore provided with two fexes; but thefe two fexes may be feparate in different individuals, or united in the fame. It is only in the mollufca and zoophyta that this laft cafe occurs: all animals with vertebrx, and infects, have the fexes feparate.

Hermaphrodite animals, fuch as the bivalve fhell-fifh, generate fingly ; in others, a reciprocal copulation takes place, each of the two indivinuals performing the functions of mate and female: this is the cafe with the fnails and other mollufca that crawl on the belly.

The produce of generation is either a bud which developes itfelf iato an animal, remaining fome time on the body from which it proceeds, and of which it forms as it were a branch; or it is a foctus, which unfolds itfelf 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 feetus inclofed in a thell, with a fubftance adhering to it by velfels which it muit abforb before it is difcharged. Thefe are the gemmiparous, viviparous, and oviparous modes of generation.
The firft occurs in fome zoophytes, and in fome articulated worms? the fecond in man and other mammalia oniy; the third is common to all ofler animals; and when their young come forth alive from the bouly of the mother, as is
the cafe with the viper, it is becaule the eggs are hatched ix the oviduct.
Laftly, if we confider the ftates through which the young animal is obliged to pafs before it becomes, in its turn, capable of perpetuating its fpecies, we again difcover 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 difclofe themfelves, and to change their proportions: the others, on the contrary, have a form altogether different from their perfect ftate, and not only have to produce and unfold new parts, but muat lofe their old ones: thefe are the animals which undergo a metamorphofis. Hitherto this change has only been obferved to take place among infects, and among the reptiles without fcales, that is fay, frogs and falamanders.

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 thefe functions; it relates to the organs of fecretion. In the four claffes of vertebral animals, and in fome mollufca, thefe organs are glands, or at leaft expanfions of blood-veffels; the name of gland being particularly applied to them when they form maffes of fome thicknefs.

It is not fo in infects, which, inftead of fecretory organs, have only tubes more or lefs long, which attract into the fpongy texture of their parietes, that portion they have to feparate from the mafs of the nutritive fluid.
We are as yet little acquainted with the organs of fecretion in zooplyytes, if indeed they can be faid to have any paritcular organ for that purpofe.
Divifon of life into the animal and organic. -The preceding feetch has cxlibited 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 thefe kingdoms: one exilts only within itfelf, has no other relations to furrounding objects than thofe of nutrition, is bern, grows, and perilles, atiached to the fuil, which received its germ. the other joins to this internal life, which it poffeffes in a ftill higher degree, an external life, which eftablihes numerous relations between it and the neighbouring objects, unites its exitence 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 flkeleton of the animal, and that, in order to form the latter, it was only neceffary to ciothe the fleleton with an apparatus of external organs, culculated to eltablifh the neceflary relations. Hence it follows that the functions of the animal form two very dittinet clafies. One of thefe confits of an habitual fucceffion of affimilation and excretion; by which it is conttantly transforming into its own fubtance the particles of other hodies, and then rejecting them, when they have become ufelefs. liy the ottrer he perceives furrounding objects, reffects on his fenfations, performs voluntary motions under their influence, and generally can communicate, by the voice, his plesfures or pains, his defres or fears. By the one he lives only within himfelf; by the other he carries his exiltence out of the fphere of his own body.

I cull, fays Bichat, the functions of the former claft, taken altogether, the organic life, becaufe all organifed beinge, whether vegetable or animal, enjoy it in a mure or lefs marked degree, and becaufe organic jtructure is the only

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condition neceffary for its exercife. The affembled functions of the fecond clafs form the animal life, fo mamed becaufe it is the exclufive attribute of the anmal kingdom.

Generation does not enter into the feries of phenomena of thefe two lives, which relate entirely to the individual ; while that function regards the fpecies, and is confequently connected only in an indiret, manher to molt of the other functions. Its exercife does not begin until the others have been for a long time in action; and it is extinguifhed long before they ceafe. In molt animals its periods of activity are feparated by long intervals of entire inaction: and in man, where the remifiions are lefs durable, its relations to the other functions are not more numerous.

Each of the lives is compofed of two orders of functions, fucceeding each other, and mutually connected. In the animal life, the firlt order takes place from the exterior of the body to the brain; and the fecond, from the latter organ to thofe of locomotion and the voice. Objects affect fucceffively the fenfes, the nerves, and the brain. The firft receive, the fecond tranfmit, and the lalt perceives that impreffion which contitutes a 「enfation. The aninal is nearly palive in this firft order of functions; he becomes active in the fecond, which refults from the fucceffive operations of the brair, where volition arifes in confequence of fenfation, of the nerves, which tranfmit this volition, and of the locomotive and vocal organs, which are the agents of its execution. A double movement of compofition and decompolition exifts alfo in the organic life. Hence the amimal is not the fame at one time as at another : his organifation is unchanged, but the component elements are conitantly varying. The order of functions, which affimilate to the animal nutritive fubftances, confitts of digeftion, circulation, refpiration, and nutrition. All forcign matters undergo the influence of thefe four functions, before they belong to the elements of the body. After a certain time abforption 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 oppofed to aflimilation. The circulating fy fem is the common centre in the organic, as the brain is in the animal life. The blood confifts of two parts; one, furnihhed principally by the food, affords the materials of nutrition; while the other, contlituting the wreck or refidue of all the organs, fupplies with materials the fecretions and external exhalations. Yet the latter functions fometimes convey out of the body the products of digettion where they have never been employed in nourifhing the organs. This is exemplified in the urinary and cutaneous difcharges confequent on copious drinking

The moft effential difference that appears to exift between the organs of the animal and thofe of the organic life, is the fymmetry of the one and the irregularity of the other. This obfervation, indeed, does not apply to all animals; nor is it invariably true in man; but it holds good generally in the latter, and forms a triking general feature. Two globes exactly alike receive the imprefion of light. Sounds and odours have each their double organ. The median line is clearly marked on the tongue, and its two halves exatily refemble each other. This line is not very manifelt in the Ikin. The nerves, which tranfmit inpreflions from the fenfitive organs, are arranged in fymmetrical pairs. And the brain, in which the inpreflion is received, has a regular form; its double parts refemble each other on the oppofite lides; and its fingle organs are all fyonmetrically divided by the median line into two exactly correfpondiag halves. The
nerves, which tranfmit our volitions from the brain to the agents of locomotion and the voice; and the locomotive forgans, compofed of a great part of the mufcular fyltem, of the bony fyltem and its dependencies; and the larynx and its acceffory organs; the double agente for the execution of volitions, have a fymmetrical itructure throughout.
The mufcles and merves, when they do not belong to the animal life, no longer exhibit this regularity of form. The heart, and the mulcular coverings of the digettive vifcera, prove this with refpect to the mulcles ; and the great fympathetic nerve, every where employed in the internal life, clearly fhew the irregularity in the nerves.

On furveying the parts concerned in the organic life, we fhall find that an exactly oppolite charater is applicable to them. The itomach, the inte!tines, the fpleen, liver, \&c. are all irregularly forned in the digeftive fyttem. In the circulating apparatus, the heart, and the large veffels, fuch as the venx cave, the axygos, the vena portarum, \&c. exhibit no trace of fymmetry. Continual varieties are obferved in the blood-veflels of the extremities, and the difpofition of one fide is often by no means the fame with that of the other.

The refpiratory apparatus, at the firft glance, appears regular ; but we find the two branches of the trachea difimilar in fize, length, and direction ; the two lungs differing in fize and in the number of their lobes, \&cc. 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 fymmetry : the kidnies differ in pofition, fize, \&c.

It is apparent, from thefe confiderations, that the organs of the animal life in man are effentia!ly characterifed by lymmetry; while thofe of the internal life have the conitant character of irregularity in their external furms.

It follows from this view, that the animal life is in a manner double; that its phenomena, exccuted at the fame time on the tho fides, form an independent fyltem on each fide, of which one may go on while the cther ceafes. This happens in thofe cafes of paralyfis called hemiplegia, where the animal life is annihitated on one fide of the body, fo that the individual has no relation to furrounding objects; while the prefervation of fenfation and motion on the other fide give him all the ufual powers. The median line in thefe cafes accurately dilting uifhes 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 thofe of the other being affected. The liver on the left influences the flate of the fomachon the right; if the colon ceale to act on one lide, that of the other cannot go on ; the fame caufe that hould arrelt the circulation in the large venous trumks and the right fide of the heart, would flop it alfo in the left fide, and in the arteries, \&c. Hence, if all the organs of the internal life on one fide fhould have their functions topped ${ }_{2}$ thofe of the oppofite fide would neceffarily remain inactive, and death mult follow. This affiction, however, is general, and applies to the organic functions collectively; fome of the organs are in fact double, and may fupply each other's places, asthe kidney and lung.

Bichat proceeds to point out the differences by which the animal and organ:c lives are diftinguifhed when in a fate of action. He obferves that harmony is to the functions of the organs, what fymmetry is to their conformation; it
fuppofes

Suppofes a perfece equality of force and action, as fymmetry indicates an exact analogy between the external form and the internal fructure. It is a confequence of the law of fymmetry; for two parts, effentially alike in their ftructure, camnot att differently. This reafoning would lead to the general pofition, that harmony is the character of the external functions, and difcordance the attribute of the internal ones. He then euters at confiderable length into a detailed conlideration of this fubject; but docs not fucceed in proving the point to the extent afferted.

A more important diftinetive character of the two lives is drawn from the periodical intermiffions of the exterual functions, and the uninterrupted continuity of the internal ones. Whatever fufpends refpiration and circulation, fufpends and even annihilates life if it be continued. All the fecretions go on uninterruptedly; if fome periods of remiffion are ubferved, as in the bilc and faliva, when digeftion and maftication are not going on, thefe affect only the degree of activity and not the entire exercife of the function. Exhalation and abforption fucceed each other without ceaf. ing; nutrition is never inactive; the double motion, of compofition and decompofition, from which it refults, ends only with life.

In this concatemation of the organic phenomena, each function depends immediately on thofe which precede it. The circulation is the centre of the whole, and immediately connected with their exercife; if that is difturbed, the others linguifh; they ceale if the blood no longer moves. Thus, the numerous wheels of a clock ftop as foon as the pendulum, which fets them all in motion, is at rett. Not only is the general action of the organic life cornected to the particular action of the heart, but each function is allo feparately connected to all the others. Without fecretion there would be no digeftion; without exhalation, no abforption ; without digettion, no nutrition. We may, therefore, lay down as a general character of the organic fuictions, their continuity of action and mutual dependence on each other.

On the contrary, confider each organ of the animal life in the excercife of its functions; you will fee conftantly alternations of ativity and repofe, complete intermiffions, and not remifions like what may be feen in fome of the organic phenomena. Each fenfe, fatigued by a long cons:nuance of fenfations, becomes momentarily unfit for the reception of new ones. The ear is not excited by founds, ard the eye is clofed againit the light, merely becaufe the refpective functions have been exerted for fome time. Fa. tigued by a long exercife of the perception, the imagination, memory, \&c., the braitr requires a fufpention 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 contrafed 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 !ocomutive and vocal Fowers.

This internifion 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 inative; this organ then relaxes; it fleeps while the others are awake. Each animal function, therefure, is not in an immediate dependence on the others, as is the cafe with the organic functions. When the ienfes are clofed againlt external objects, the action of the brain may till continue; menory, imagination, and reflection, are then often excrcilcd. Lucomotion and the voice may hill remaun; when the lattes are interrupted, the func-
tions of the fenfes fill go or. The animal can fatigue any part feparately. Each, thercfore, fhould have the power of refting in order to recruit its forces feparately; this is the partial fleep of the organs. General fleep is the affemblage of thefe particular acts, and arifes from the law which we lave juft illuftrated.

Differences of the organic and animal lives in refpea to the vilal propertics.-Phyficians and phyfiologitts, in their writings on the vital powers, have generally begun by fearching for the principle on which they depend: they have wifhed to defcend from the fudy of its nature to that of the phenomena, inflead of afcending from the refult of obfervation to the conclufions which theory may fuggef. The foul of Stahl, the archreus of Van Helmont, the vital principle of Barthez, the nateria vitr of Hunter, with a long train of et ceteras, have been regarded in their turns as the fingle centres of all thofe actions which bear the character of vitality, and have fucceffively afforded the bafes on which ath phytiological explanations reft in the laft refult. Each of thefe has been fricceffively deftroyed, and nothing has keen preferved from their wrecks, except the facts afforded by experiment on the powers of fenfation and motion. So narrow are the limits of the human underftanding, that the knowledge of firft caufes feem placed for ever beyond our reach. The thick weil which covers them, envelops in its innumerable folds whoever attempts to break through it. In the fludy of nature, principles are certain general refults of firft caufes, from which innumerable fecondary refults proceed; the art of difcovering the connection between thefe primary and fecondary refults is the object of every judicious mind. To feek the connection between firt caules and their general effects, is like walking blindfold through a road from which we may ftray by a thoufand paths.

Moreover, how are we interefted in knowing thefe caufes ? is it neceffary that we fhould underftand the nature of light, oxygen, caloric, \&c., in order to ftudy the phenomena? Let us imitate, in the fcience of phyfiology, the examples of modern metaphyficians in their invefligations of the intellectual phenomena; let us fuppofe the caufes, and fix our attention entirely on the grand refults.

We may obferve in nature two clafles of beings, two claffes of properties, and two claffes of fciences. Beings are either organic or inorganic, properties vital or not vital, and fciences phyfiological or phyfical. Animals and vegetables are organic; minerals, inorganic. Senfibility and contractility are vital properties; gravity, affinity, elafticity, are non-vital properties. Animal and vegetable phyliology, and medicine, compofe the phyfiological fciences; attronomy, chemiltry, \&c. \&c. are phyfical fciences. Thefe two clafles, of fciences relate merely to phenomena. Two others, relating to external and internal forms, confequently defcriptive, correfpond to them; thefe are botany, anatomy, zoology, for organic ; mineralogy, \&c. for inorganic bodies.

From thefe properties are derived all the phenomena in each clafs of fciences. Whatever we fee in allronomy, hydraulics, dynamics, \&c. mult be ultimately referred through the concatenation of caufes, to gravity, elafticity, \&c. In the fame way the vital properijes are the mainfpring at. which we arrive, whatever phenomena we may be contemplating in refpiration, digeltion, fecretion, inflammation, \&c.

Each body poffeffes a certain number of propertics, which efpecially characterize it, and by virtue of which it concurs in its own manner in the production of the phenomena, which are fucceflively developed in the univerfe.

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Obferve furrounding obje Cis ; carry your view towards the molt diftant; ufe the telefcope on the celeftial bodies moving in fpace, or penetrate with the microfcope into the world of thofe concealed from our view by their minutenefs ; you will conftantly fee inert bodics gravitating towards each other, living bodies alfo gravitating, but moreover feeling and performing a motion, which they owe only to shemfelves. Thefe properties are fo inherent in both, that we cannot conceive the bodies without them; to enjoy them and to exift mean the fame thing. Suppofe that they fhould be fuddenly ammihilated, all the phenomena of nature would initantly ceafe.

Differences between the vital properties and the phyfical porvers.-The extent of this difference cannot fail to itrike us on the firft glance. The vital properties, conftantly variable in their intenfity, often pafs with the greatelt rapidity from the lowett to the higheit degree of energy, are fucceffively exalted and weakened in the difierent organs, and affume, under the influence of the flighteft canfes, a thoufand different modifications. Sleep, exercife, reft, digeftion, hunger, the paffions, the effect of furrounding agents, \&c. expofe them at every inflant to numerous revolutions. The others, on the contrary, conftantly the fame at all times, give rife to a feries of phenomena always uniform. Compare fenfibility to attraction; the latter is always in proportion to the mals of the body, in which it is obferved, while the former is conftantly changing in the fame organ, in the fame mafs 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 formulx. The refiftance experienced by a. fluid in paffing through a dead tube, the velocity of a projectile, \&c. may be eafily reduced to a fixed law ; but to calculate with Borelli the power of a mufcle, the velocity of the blood with Keil, the quantity of air entering the lungs with Irwine and Lavoifier, is like building on a mov-ing-fand an edifice which is folid in itfelf, but which quickly falls from the infecurity of its foundation.

From the circumftances juft explained, the vital and phyfical phenomena derive refpectively the characters of irregularity and uniformity. Inert fluids are known, when they have once been accurately analyfed; but one, or even many examinations do not inform us of the nature of the living fluids. Chemical analyfes give us, fays Bichat, the anatomy (Anatomie cadaverique) of them; but their phyfiology confifts in a knowledge of the innumerable variations which they exhibit according to the condition of the refpective organs. The urine differs as it is voided after a meal or after fleep; in winter and in fummer: the mere paflage from a warm to a cold temperature alters its compofition: it is not the fame in the child, the adult, and the old man ; in the male and in the female; in a quiet flate of the mind and in the agitation of paffion. Add to thefe differences the innumerable alterations produced by difeafe. Thefe facts prove that the organs mult undergo continual changes in their mode of action, to produce correlpondent variations in the fubltances feparated from the blood.

The fcience of organized bodies thould be treated in a manner entirely different from thofe, which have inorganic matter for their object. We fhould employ a different language; fince words tranfported from the phyfical fciences to the animal or vegetable economy conftantly recal to us ideas not at all connected with the phenomera of that fcience. If, fays Bichat, men had cultivated phyfiology before natural philofophy, inttead of after it, we cannot doubt that Vor. XX.
they would have difcovered numerous applications of the former to the latter; that they would have defcribed rivers flowing by the tonic action of their banks; cryftals formed by an excitement of the reciprocal fenfibilities of the particles ; planets moving by their mutual irritation at great diftances, \&c. All this would appear to us very unreafonable, as we fee gravity only at the bottom of thefe phenomena: is it more rational to have recourfe to gravity, chemical affinity, and a language entirely founded on thefe fundamental data, in a fcience where their influence is moft obfcure? Natural philofophy, chemiltry, Scc, are comećted, becaufe the fame laws regulate their phenomena: but a valt interval feparates them from the fcience of organifed bodies, becaufe a wide difference exifts between their laws and thofe of life. To call phyfiology the natural philofoply of animals can only lead to inaccurate notions: as well might we denominate altronomy the phyfiology of the ftars.

Difference between the wital properties and thofe which arife 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 effence ; the other connected to it only indirectly, and appearing rather to depend on the organifation, on the texture of the part.
Senfibility, and the power of contracting, are vital properties. Extenfibility (the capability of being ftretched), and the power of recovery, when the extenfion has ceafed, are properties refulting from organifation. The latter derive an increafed energy from life; but they ftill remain in the organs when life has ceafed, and decompofition is the ondy termination of their exiftence. We fhall confider firft the vital properties.
Of the animal and organic fenfibilities. The vital properties are reduced to thofe of perceiving or feeling (fenfibility), and moving (contractility): each of thefe has a different character in the animal and organic lives. In the latter, fenfibility is only the capability of receiving an impreffion: in the former, it is the capability of receiving an impreffion, with the additional power of referring it to a common centre, or confcioufnefs. The flomach is fenfible to the prefence of food, the heart to that of the blood, and an excretory tube to the contact of its proper fluid: but this power ends in the organ itfelf. The organs of fenfe, the mucous furfaces at their origins, the nerves, \&c. are fenfible to the impreffions of bodies which touch them, and moreover tranfmit thefe impreffions to the brain, which is the general centre of the fenfibilities of thefe various organs.

Thus we have an organic and an animal fenfibility. On the former depend all the phenomena of digeftion, circulation, fecretion, exhalation, nutrition, \&c. it is common to plants and animals; the zoophyte enjoys it as well as the molt perfectly organifed quadruped. From the latter flow the fenfations, perception, and pleafure and pain, whick modify them. The perfection of an animal is in proportion to the degree in which he enjoys this fenfibility. It is not an attribute of vegetables.
The difference in thefe two modifications of fentient power is well marked in the mode of their termination in fudden deaths. The animal fenfibility is immediately extinguifhed. There is no trace of this faculty left in the inftant which fucceeds a powerful concuffion of the brain, a great hemorrhage, or an afphyxia : but the organic fenfibility ftill fubfilts for a longer or fhorter time. The lymphatics ftill abforb: the mufcle quivers when pricked; the nails and hairs even feem to grow. All traces of this fenlibility are not deftroyed until after an interval, occafionally of canfiderable length.

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Yet the effential nature of thefe 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 fenfible of the palifage of the food through the mouth and the pharynx: this fenfation becomes weaker in the beginning of the cfophagus, almoit ceafes in the middle of that tube, and difappears at its lower extremity and in the ftomach, where the organic fenfibility alone remains. The urinary and generative organs exhibit exactly the fame phenomenon; there is animal fenfibility near the flkin; it gradually diminifhes, and becomes at laft organic in the interior of the organs.

Different ftimuli, applied to the fame organ, excite in it one or the other of thefe fenfibilities. When ligaments are cut, or irritated by acids or alkalies, they do not tranfmit to the brain the flrong impreffions which they receive. But, if they are twifted, diftended, or torn, acute pain is the confequence. The blood circulates in the arteries without our feeling it, but injcct an extraneous fluid, and the cries of the animal fhew that he is fenfible to the impreffion.

We daily obferve inflammation, by increafing the organic fenfibility of a part, transform it into animal fenifibility. Cartilages, ferous membranes, \&c. which, in their ordinary \&ate, have only the obfcure fenfibility neceffary 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 if only in degree.

The diftinction now explained does not arife 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 diftributed in different proportions, and beftows a different mode of exiftence on each. In thefe varieties there is a certain meafure, below which the excited organ alone receives and perceives the fenfation; and above which it is tranfmitted to the brain.

Although each organ exhibits continual varieties in its fenfibility, yet it feems to poffefs originally a certain proportion, to which it always returns after thefe alternations of augmentation and diminution. This proportion conflitutes the proper life (vita propria) of each part, and fixes the nature of its relations to thofe bodies, which are foreign to it, but which often come in contact with it. The falivary, pancreatic, and biliary ducts, having a proportion of fenfibility exactly analogous to the nature of the fluids which pais through them, admit thofe readily, but reject all others. The larynx refufes admiffion to every thing except the air. The excretory tubes are in contact, on the mucous furfaces, with various fluids that pafs over thefe furfaces, but they never allow them admiffion. In the fame way the lacteals, which open on the furface of the inteltinal canal, abforb chyle only, and not the fluids which may be mixed with it. Thefe relations do sot exift only between the different proportions of fenfibility in the organs, and the various animal fluids; they may alfo take place between external matter and the parts of the animal frame. The particular fenfibility of the bladder and kidnies, and of the falivary glands, eftablifhes the relations between thefe organs and cantharides, mercury, \&c.

It may be enquired, why nature, in the diftribution of the different proportions of fenfibility, has beftowed this property only in inferior degrees on the internal organs, or thofe of the interior life, while the has fo abundantly pro-
vided with it the external organs? why, confequeintly, exch organ concerned in digettion, circulation, refpiration, nutrition, abforption, does not tranfmit to the brain the impreffions which it receives, while all the acts of the animal life fuppofe this tranfmiffion? The reafon feems to be, that all the phenomena, which eftablifh our relations to far: rounding beings, mult be, and are in effect, under the influence of the will, while thofe, which are fubfervient to the purpofes of affimilation, ought to be exempt from that influence. To make a phenomenon dependent on the will, we mult be confcious of it: to exempt it from the influence of that power, this confcioufnefs muit not exitt.

Of the animal and organic contraatilities.-Contraction is the molt common form of motion in the animal organs. Some indeed move by dilatation, as the iris, corpus cavernofum, \&c.; but we know as yet fo little of this kind of motion, that we fhall confine our remarks entirely to the former.

Spontaneous motion, a faculty inherent in living bodies, prefents, like fenfibility, two great modifications diftinct from each other, as we obferve it in the phenomena of the two lives: thefe are the animal and the organic contractility: The former, fubject to the will, has its origin in the brain, ceafes to exit when the organs no longer communicate with the brain, and participates in all the affections of that part: It refides exclufively in the voluntary mufcles, and prefides 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 digettion, circulation, fecretion, \&c. Like the correfponding fenfibilities, they are effentially diftinguifhed in violent deaths, which fuddenly annihilate the animal contractility, allowing the organic ftill to exert itfelf for a longer or fhorter time. The fame difference is obferved in afphyxia, which fo much refembles death: the animal contractility is entirely fufpended, the organic ftill continuing active. In paralyfis alfo, voluntary motion is deftroyed, while the organic movements ftill go on.

Thefe two kinds of contractility are connected to their correfponding fpecies of fenfibility. The fenfations produced by external objects bring the animal contractility into exercife: and before the organic contraction of the heart takes place, its fenfibility has been excited by the conitact of blood.

Yet the connection is not the fame in the two cafes. The animal fenfibility may be excited, without the analogous contractility being neceffarily 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 neceeflarily followed by its contraction. This conjunction is fo conftant, 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 reafon 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 contraftion begins. In the animal life, on the contrary, the two acts are feparated by middle functions, thofe of the nerves and brain, which, if they are not exerted, interrupt the communication. In the fane way we explain this further difference; viz, that there is always a ftrict proportion between the fenfation and the contraction in the organic life, while they may be feparately exalted or diminifhed in the animal.

Two varieties of the organic contrazility.-The animal con• tractility

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eractility is always nearly the fame, in whatever part it may exitt; but the organic difplays two effential modifications, which might feem to indicate a difference of nature, although there is only a diverfity of external appearance. Sometimes it may be obferved very difinctly, while, on other occafions, although it really exifts, infpection alone cannot appretiate it.

Senfible organic contractility may be feen in the heart, ftomach, inteltines, bladder, \&c.: its action is exerted on the animal fluids in confiderable maffes.

It is by virtue of the infenfible organic contractility, that the excretory tubes act on their refpective fluids, the fecretory organs on the blood which they receive, all parts that are nourifhed on their nutritive juices, the lymphatics on the fubitances applied to thefe orifices, \&cc. Whenever the fluids exift in fmall maffes, where they are minutely divided, this fecond kind of contractility is developed.

We may illuftrate the difference between them, by comparing one to the attraction, which is exerted between large maftes 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 alfo, although we cannot perceive its motion.

The fenfible organic contractility correfponds nearly to what has been called irritability; the other to the tonic power, or tonicity. Thefe two words are objectionable, becaufe they indicate a diverfity 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 expreffes the peculiar attribute of each. This view of the matter is confirmed by the fact, that the two properties are connected by infenfible gradations. Between the obficure, but real contractility neceffary for the nutrition of the hair, nails, \&cc. and that which we fee exerted in the motions of the inteftines, ftomach, \&c., there are many fhades which form the tranfition; fuch as the motions of the dartos, of the arteries, of fome parts of the kin.
'lhe circulation will ferve to give us an idea of the gradual tranfition 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 diminifhes; and it is laftly infenfible in the capillaries where tonicity alone is obfervable.

T\% confider, with moft authors, irritability as a property exclufively belonging to mufcles, and conftituting a character by which they are diftinguifhed from other organs, and to exprefs this property by a name indicating this exclufive feat, is taking a confined and erroneous view of the matter. The mufcles undoubtedly occupy the firft rank in this refpect; they poffefs the greateft fhare of organic contractility. But every living organ re-acts, like them, though in a lefs 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 mufcular nature; a rule which confifts in examining whether it contracts under the action of natural or artificial ftimuli. From this mode of judging, a mufcular coat has been affigned to the arteries, although their organization is throughout unlike that of the mufcles; the uterus has been pronounced to be mufcular, although there are great dif,
ferences between it and any mufcles; and a mufcular texture has been admitted in the dartos, iris, \&c.

This faculty of contraction, like fenfibility, is unequally diftributed in the organs; and thefe differences, like thofe of fenfibility, appear to be only differences in degree.

If we were to defignate any kind of contraction in the mufcles 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 fenfibility. The organic is never tranfformed into animal ; however its intenfity may be increafed, it is ftill of the fame nature. The fomach and inteftines are often fo fufceptible, that the dighteft caufe will produce violent motions; but thefe are never influenced by the brain.

The extenfibility and coniracility arifing from organization.Thefe properties depend entitely on the organic arrangement of the parts of the frame. They fucceed and are connected to each other, and are in a ftate of mutual dependence, like the vital phenomena of fenfibility and contractility.

The extenfibility of tiffue, or the power of elongation beyond the ordinary fate, from a foreign impulfe, belongs in a very fenfible manner tơ a great number of organs. The extenfor mufcles are remarkably lengthened where the limbs are bent to the greateft degree; the $\{\mathrm{kin}$ gives way and is ftretched to envelop tumours; aponeurofes are diftended by fluids accumulated under them, as in afcites and pregnancy. The mucous and ferous membranes prefent analogous phenomena. The fibrous membranes and even the bones are fufceptible of this diftention; as, for inftance, the dura mater, cranium and pericranium in hydrocephalus, the extremities and middle of the long bones in the various affections of thofe organs; the kidnies, brain, and liver, in abfceffes of their interior, the fpleen and lung when diftended with blood, the ligaments in hydrops articuli; in a word, all organs, under a thoufand circumftances, offer to us innumerable proofs of this property, which is inherent in their tiflue, but not dependent on life. It fubfifts, as long as the organic ftructure remains, even for a long time after life has become extinct. Putrefaction, decompofition, and whatever affects the organic tiffue, are the only caufes that deftroy the exercife 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 fcale of extenfibility for the different organs. At the top are placed thofe which lave the moft foftnefs in the arrangement of their fibres; as the mufcles, fkin, cellular tiffue, \&c.: at the bottom thofe characterized by coufiderable denfity, as the bones, cartilages, tendons, nails, \&c.

A particular mode of contractility correfponds to this extenfibility; it may be called the contractility of tillue, or contractility through the ceffation of extention. For its exertion in any organ, it is only neceffary that the extenfion thould ceafe. Ordinarily, molt of our organs are maintained in a certain ftate of tenfion by particular caufes; the loconotive mufcles by their antagonifts; the hollow mufcles, by the various fubftances which they enclofe; the veffels 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 thefe caufes ceale to act, contraction immediately takes place; divide a mufcle, and its

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antagonif will be fhortened; empty a hollow mufcular organ, and it will contract; prevent an artery from receiwng blood, and it will be converted into a ligament; cut the flin, and the edges of the incifion will be drawn afunder; remove a tooth, and the focket will be obliterated.

In all thefe cafes contraction follows the ceffation of a natural extenfion; in other inflances it is the confequence of the ceffation of an unnatural extenfion. Thus the abdomen is reduced after parturition or paracentefis; the cellular tiflue after the opening of an abfcefs; the tunica vaginalis after the operation for hydrocele; the flkin of the fcrotum after the removal of a large difeafed tefticle ; and aneurifmal facs after the evacuation of the contained fluid.

This kind of contractility is perfectly independent of life; like the extenfibility, it is comnected only to the tiffue or organic arrangement of parts; but the vital powers beltow on it increafed energy ; thus a divided mufcle retracts much lefs in the dead than in the living 1tate. It terminates only by the diforganization of the parts from decompofition, \&c., and not by the annihilation of their vital propertres.

Moll authors, as Haller, Blumenbach, Barthez, \&c., have confounded the phenomena of this contractility with thofe of the organic infenfible kind, or tonicity; they refer the reduction of the abdomen after its diltention, the retraction of the divided kin , and the corrugation of the fcrotum by cold, and the crifpation of parts by certain poifons, Hlyptics, Sc. to the fame principle. The two former phenomena belong to the contractility of tiflue, which never fuppofes the application of irritants; the latter to tonicity, which is never exerted without their influence.

In order to render the diltinctions, which we have made on this fubject, more clear, let us felect for oblervation an organ in which all the kinds of contractility are united; a voluntary mufcle for example. This mufcle acts, Ift, 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 phyfical ftimulus, which produces in it a general movement analogous to thofe which naturally belong to the heart and other involuntary mufcles; this is the organic fenfible contractility or irritability; 3 dly, 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-
forption, \&c.; this is the infenfible organic contractility or tonicity ; 4 thly, by the tranfverfe fection of its fubfance, producing retraction of the divided ends towards their points of infertion; this is the contractility of tiffue. Each of thefe properties may be leparately deltroyed in a mufcle; divide its nerves and the animal contracility ceafes, although the two organic kirds ftill fubfift. Apply opium to it, and ftimuli will no longer excite it to motion, although the tonic movements determined by the contact of the blood fill remain. Kill the animal, or intercept all the veffels which go to the limb, and the tonic powers will be deftroyed, leaving only the contractility of tiffice, 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 exitt in fmaller number than in the voluntary mufcles, as in the heart or inteltines, which have all the kinds except the znimal ; in the white organs, as the tendons, aponeurofes, bones, \&zc., where the infenfible organic contractility and that of tiffue only are found. In general, the two latter belong to all organs, the former belonging exclufively to fome particular ones. We may therefore felect tonicity, or infenfible organic contractility, as the general character of all living parts; and the contractility of tiffae as the common attribute of all parts, whether living or dead, which are organically compofed. The latter property, like the extenfibility of tiffue, to which it correfponds, has its different degrees; the mufcles, fkin, cellular fubitance, \&c. on one part, and the tendons, aponeurofes, and bones, on the other, form the two extremes of the fcale.

It will be eafily feen, from what we have juft faid, that in the contractility of any organ two things are to be confidered; viz. the power and the caufe which brings that power into exercife. The power or the contractility is always the fame, connected to, and inherent in the organ; but the caufe which determines its exercife varies greatly, and hence the various kinds of contraction. Confequently, the diftinctive epithets fhould be applied rather to the contraction, which expreffes the effect produced, than to the contractility which indicates the principle or caufe.

The general refult of the preceding remarks on the vital properties, is exhibited in the following table, which prefent all thefe properties in one point of view.


The peculiar motions of the iris, corpora cavernofa, \&c. and the dilatation of the heart, are not included in this view, becaufe our ideas on the relations which connect thefe to the other kinds of motion, and the differences which diftinguifh them, are not yet fufficiently clear.

From the properties which have juft been explained, all the functions, all the phenomena of the animal economy, may be deduced; we may refer them all, in ultimate analy, fis, to one or the other, as we conflantly arrive, in the confideration of phyfical phenomena, at the fame principles, viz. attraction, elarticity, \&c.

Wherever the vital properties are in activity, a difengagement of caloric takes place, peculiar to the animal, and compofing for it a temperature independent of that of the medium in which it lives. The word caloricity, or calorification, is improper to exprefs this phenomenon, which is a general effect of the two great vital powers in exercife, and does not fow from any particular faculty. We do not fay digeftibility, refpirability, \&c. becaufe refpiration, digeftion, and other proceffes, are the refults of functions deduced from the common laws: the production of heat is in the fame cafe. The digeltive force of Grimaud is an expreffion

## LIFE.

preflion equally objeetionable. The aflimilation of heterogeneous fubllances to our organs is one of the grand refults of fenfibility and contractility, and not a peculiar property. The fame obfervation will apply to the formative power of Blumenbach, that of fixed fituation of Barthez, and to the various principles admitted by numerous authors who have attributed to functions, or refults, names that indicate laws, or vital properties.

In the article Embryo we have given a fketch of the ftate of the two lives in the foetus: we fhall add here a fhort view of the changes which occur after hirth.

A new mode of exiftence commences as foon 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 exercife, eltablifhing relations, hitherto unknown, between the individual and furrounding objects. While the organs of the internal life act at once in a perfect manner, thofe of the external require a kind of education, and arrive only by degrees at that perfection which they exhibit in the fequel. The fenfations are at firft confufed, and offer only general images: habit gradually deadens thefe firlt impreflions, and then the particular fenfations come to be diftinguifhed, after long and repeated exercife. Thus a man, introduced for the firft time to the magic fpectacle of an opera, perceives only a whole which pleates him ; and he gradually feparates the fources of pleafure arifing from the dancing, the mufic, the decorations, \&c. The education of the brain in this refpect refembles that of the fenfes: all the mental faculties dependent on its action acquire very gradually the degree of precifion to which they are deftined. 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 bafis, at firft affociates irregularly notions which are themfelves irregular: its exertions are foon diftinguifhed by greater clearnefs; and they become at laft rigorous and precife.
The voice and locomotion prefent the fame phenomena: the cries of young animals confift, at firt, of one unformed found, without any diftinct character. Age gradually modifics them; and, after repeated exercife, they acquire the characters peculiar to each fpecies. It is unneceffary to mention fpeech, as that is fo evidently the refult of education.
The mufcles of the newly born animal are in continual action ; but progreflion, or even ftanding, cannot be effected. Habit muft 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, paricularly the general ones, which almoft 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 ourielves; that the exterior life acquires trefh developement every day, and demands a kind of apprenticefhip, which is not obferved in the organic life.

Society exercifes a remarkable influence on this kind of education which the external organs undergo: it enlarges the fphere of action in fome, contracts it in others, and modifies it in all. The occupation in which an individual is habitually employed, almoft always exercifes one particular organ more than the others. The ear of the mufician, the palate of the cook, the brain of the philofopher, the mufcles of the dancer, the larynx of the finger, \&c. have, befides the general education of the external life, a particular education, which frequent exercife carries to a high degree of perfection. Hence, the mufician and painter become able to diftinguifh in a harmony, or a pieture, what efcapes vulgar obfervation. In fome inftances, this perfection of
adion in an exercifed organ is accompanied by an excefs of nutrition, as in the occupations where particular member. are exerted greatly and habitually.
It is no lefs true, that when one organ is confantly occupied, the others are inactive, and appear to lofe in capability what the other gains. The philofopher who fpend. his life in his ftudy, and devotes himfelf to abitract meditations, condemns his locomotive organs to inactivity, and hence lofes the facility of exerting thein: the dancer is in the oppofite ftate. The obfervation of man in fociety will lead us every moment to fimilar remarks: perfection of action in the locomotive organs fcarcely ever coincides with that of the brain or fenfes; and vice verffa. This obfervation naturally leads to a fundamental principle of focial education; wiz. that we fhould never direct the attention to feveral ftudies at once, if we with to fucceed in each; that it is vain for any individual to cultivate various departments of human knowledge and exertion with an expectation of fhining in each; and that in general the fecres of excelling in any one, is, to be inferior in all the relt. For a more detailed account of thefe views, which are not, per. haps, ftrietly phyfiological, fee 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 exift before, are now brought into exercife; and thofe which had begun become niore enlarged, But the organs, in either cafe, require ne education: they exhibit at once a degree of perfection, which thofe of the animal life arrive at only after frequent exercife. Digeftion, refpiration, a great part of the exhalations, and abforptions, begin at birth: after the firlt acks in the refpective organs, they proceed with as great facility as they will ever after poffefs. The glands, which had been hitherto inactive, or at lealt had produced a very fmall quantity of fluid, are excited by various applications to their excretory ducts. The paffage of food over the openings of the falivary ducts, of the chyme over the pancreatic and biliary tubes, \&c. ftimulates the refpective glands. The excretions now alfo begin : all thefe phenomena are at once executed with precifion, 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 fyftem to predominate over the reft: fometimes the blood-veffels, fometimes the pulmonary fyftem, fometimes the galtric organs, and particularly the liver, are exerted beyond their due proportion, and give a peculiar character to the temperament. But the foundation of thefe differences feems to be laid in original difference of Atructure: and the fame is the cafe where one fyftem is remarkably weak.
"Such, then, concludes Bichat, is the leading difference of the two lives, in refpect to the degree of perfection of the various fyitems of functions of which each contits: in the animal, predominance or inferiority of one fyltem arifes from the greater activity or indolence of that fyltem; in the organic, the original conformation is the caufe. Hence, the phyfical temperament and the moral character cannot be changed by education, which has fo vaft an effect in modifying the animal life. The character, if I may ufe the expreffion, is the phyfiognomy of the paffions; the temperament is that of the internal functions: as both are conitantly the fame, and not influenced by habit and exercife, they cannot be affected by education. That may, indeed, beftow fuch perfection on the judgment and reflection, as to make them more powerful than the paffions: it may fortify the animal life, and make it fuperior to the impulfes of the
-rganic: But to attempt altering the character, foftening or exalting the paffions, of which it is the habitual expreffion, or enlarging or contracting their fphere, would be an enterprife analogous to that of permanently raifing or diminifhing the extraordinary force of the heart, or accelerating or retarding the motions of the arteries in the ftate of health. We fhould inform any perfon who entertained the latter project, that circulation and refpiration are not under the influence of the will, and cannot, therefore, be modified by the individual, without the occurrence of difeafe. The fame obfervation will apply to thofe who think they can change the character, and confequently the paffions; fince the latter are the produce of the actions of all the internal organs, or, at leaft, are efpecially feated in them."'

For the mode in which the functions ceafe, the connections of the animal and organic life to each other, and the reciprocal influences of the heart, brain, and lungs, fee Deatir. Cuvier, Leçons d'Anatomie comparée, tom. i. Bichat, Recherches Phyfiologiques fur la Vie et la Mort ; and his Anatomie Generale, in the Confiderations Generales.

Life of Mind, vita mentis, as contra-dillinguifhed from life of body, vita corporis, is held, by the Cartefians, to confilt in a perpetual cogitation, or uninterrupted courfe of thinking ; which feems likewife to have been Ariftotle's meaning; when
 thinking being the only proper act of the mind. But. Mr. Locke endeavours to refute this principle. See Thinking and Soul.
Ltee of Man, vita bominis, 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 occafion of that thought there arifes a certain motion in the body: and now, again, the body moves firtt, 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 ufed for the duration of an animal's being ; or the fpace of time that paffeth between its birth and death.
Life, confidered as an object of Law. See Rights. See alfo Homicide.
Life-Annuities, are annuities, the payments of which depend on the continuance of any given life or lives; and they may be diltinguifhed into annuities to commence immediately, and annuities to commence at fome future period, or reverfionary 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 intereft, it is always equal to the expectation of the life.
For example : -Obfervations fhew, that according to the mean probabilities of the duration of human life, the expectation of a life aged ten is nearly forty years; or, in other words, that a fet of lives at this age will, one with another, enjoy forty years each of exiltence, fome of them enjoying a duration as much longer as others enjoy a fhorter. It is obvious, therefore, that fuppofing money to bear no intereft, 4ol. in hand for each life, would be fufficient to enable a feller to pay to any number of fuch lives $1 /$ o per ann. for their whole duration; or, in other words, that 401 . is, on this fuppofition, the value of a life aged ten.
But if any improvement is made of money by putting it -ut to intereft this will be more than the value; becaule it will be more than fufficient to pay the aniuity ; and as much more than fufficient as the improvement or the interelt is
greater. If, for inflance, any fum now in hand may be fo improved, by being put out to interefl, at 4 per cent. as to double itfelf in eighteen years; the feller of fuch an annuity will (in confequence of putting out half the purchafe-money to intereft) find himfelf, at the end of eighteen years, in pof. Feffion of $42 \%$. or of $20 \%$ more than is fufficient to pay the remainder of the annuities, though he fhould make no farther improvement of the purchafe-money. If he puts out the money to higher intereft he will be a greater gainer; if to lefs, he will be a lefs gainer: but at any rate of intereft he muit be a gainer. The truth is, that fuppofing the intereft to be that jult mentioned, or 4 per cent. and all the improvement poffible made of the money at this interelt, he will find ${ }^{17 \%}$ 10s. 6 d . for each annuity (inftead of $40 l$.) to be fufficient 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 ftrange that this fhould not give the true value.

The truth is, that it will give the value greater than it is; or that a lefs fum than that found in this way will be fufficient to pay the annuity. Suppofing the intereft 4 per cent. the value of an annuity certain for forty years is 19l. i6s. (fee Tab. III. Annuities) ; but the value of a life aged ten, at this rate of intereft, is, as hath been juft faid, no more than 1\%\%. ros. $6 d$. The principal reafon 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 diftances of time from one another, and not to be all made till the end of feventy or eighty years. In this laft cafe there is more time given for the improvement of the purchafe-money, and therefore a lefs. fum will be fufficient to enable a feller 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 thoufand in all, will be made. But, as all the lives will not be extinct in lefs than feventy or eighty yearì, many of the payments will not be made till after the expiration of forty years; and, therefore, a part of the purchafe-money will be improved for a longer time than forty years. In general, it may be obferved that one-balf 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 muft be lefs 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 1l. for forty years. But a lefs fum (or 1750\%.) will pay a hundred fuch annuities to a fet of lives whofe common expectation is forty years; becaufe one-balf 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-balf nearly of the purchaie-money will be improved for more than forty years, and fome of it for more than feventy or eighty years.

Thefe obfervations demonftrate, that it is a miftake to reckon the value of a life-annuity the fame either with the value of an annuity certain for a term of years equal to the

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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 exiting. This is an error into which fome have fallen, but it only proves their utter ignorance of the fubjcet.

The true method of computing the values of life-annuitics may be explained in the following manner. Let us fuppofe that the duration of the annuity is to be only one year. That is, that $1 \%$ is to be paid a year hence, provided a hife now of a given age fhould be then in being. Were it certain that this life would not fail in the year, the value of the annuity would be the fame with the value of it payable a year hence, or with the fum which, now put out to intereft, would increafe to Il , in a year; and this fum, fuppofing interelt at 4 per cent. is 19s. 3 d. See Tab. II. Annuities.

But the payment not being to be made, fhould the life happen to fail in the year, this fum ought to be diminifhed in proportion to the degree of the uncertainty of the life's continuing to exit through the year; and it is ealy to fee that this uncertainty ar chance is in the proportion of the number of perfons at that age living at the end of the year, to the number living at the beginning of it, as fhewn by obfervations. For example :-if it has been found in any fituation that but half the number of perfons 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 juft mentioned ought to be leffened one-half. If it appears that two-thirds, or nine-tenths, or ninety-nine hurdredths, are living the end of the year, the fame value mult be diminifhed only onethird, one-tenth, or one-hundredth. That is, it will be neceflary to multiply it by $\frac{1}{3}, \frac{9}{10}$, or $\frac{99}{100}$. Univerfally then, the prefent value of any fum to be paid a year hence, provided a given life fhould be then exifting, is that fum multiplied by the value of $1 \%$. payable at the end of the year (taken out of Tab. II. under the article Annuities), and alfo by the fraction formed by making the number of the living at the age of the given life (taken out of the Table of Obfervations) the denominator, and the number of the living at the next fucceeding age (or at the end of the year) the numerator. For example:-let the value be fought of $1 / 0$ payable a year hence, if a child aged ten fhould be then living, reckoning intereft at 4 per cent. The value of 1 l. reckoning this intereft, and payable a year hence, is (as hath been juft faid) 19s. 3 d . 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 fuccecding 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: $\rho$, in other words, that the chance or probability of a life aged ten exiting through the year is as $\frac{5623}{5675}$, which fraction, therefore, multiplied by .9615 , gives the value fought, or .9526 equal to $19 \mathrm{r} . \circ \frac{\mathrm{x}}{2} d$.

Again, let us fuppofe that the duration of a life-annuity of Il . is to be two years, or that one payment of Il . is to be made a year hence, provided a given life fhould exilt a year, and a fecond payment of the fame fum at the end of two years, provided the fame life fhould be in exittence at the end of two years. The method of finding the value of the firlt payment has been already explained; and by the very fame reafoning it may be eafily difcovered, that the value of the fecond payment muft be the value of 11. payable at the end of two years, diminifled in proportion to the uncertainty that the given life will exift two years; or (which is the fame) multiplied by the fraction formed by making the num.
ber of the living at the given age the denominator, and the number of the living at the next fuccecding age but one, of at the end of two years, the numerator.

Thus. Let the value be required of $1 \%$. payable yearly for two years, provided a child aged ten fhould live two years, reckoning intereft at 4 per cent.
The value of the payment at the end of the firft yoar has been juft found to be .9526 in decimal parts of a pound, or 19s. $\mathrm{O}_{2} \mathrm{~d}$ d.
The value of the payment at the end of the fecond year is the value of $1 \%$. 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 T'able of Obfervations at the age of twelve to the number of the living at the age of ten. That is, it is .9245 the faid value of 11. payable at the end of two years, taken out of 'lable II. under the article Annuities) multiplied by the fraction $\frac{5573}{5675}$, or .9078, equal to 18 s .2 d . (See Table III. at the end of this article.) To this, add the former value, or 95261 . and the total, or 1.8604 , will be the value of both payments, or of an annuity of $1 \%$, 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 Obfervations) $17.5238 \%$. It is evident, that in the fame method the value of an annuity of 1 l . on a life at any other age is to be found; and that fuppofing the annuity any other fum than $1 l$. its value will be this fum multiplied by the value of an annuity of 1 l.
The calculations of the values of life-annuities may be otherwife explained in the following manner. Suppofe a life-annuity of $1 \%$. payable yearly to every one of 5075 perfons, all now aged ten, the firt payment of which is to be made a year hence. It appears from the Northampton Table of Obfervations (or Table III. under the article Expectation), that only 5623 of thefe perfons will be living at the end of the year; and confequently, that the money then to be paid will be only 5623 . The prefent value, therefore, of the firf payment of the annuities will be the fum which being now put out to intereft will increafe in a year to $5623 l$. That is, it is 5623 l. difcounted for a year, or 54061 . 14s. 3od. for this fum added to its interelt for a ycar (reckoned at 4 per cent.) will juit make up 5623 l . From the fame Table of Obfervations, it appears farther, that of 5675 perfons living at ten years of age, only 5573 will be living at the end of two years. The prefent value, therefore, of the fecond payment of the annuities will be the fum, which being now put out to compound intereft at 4 per cent. will increafe to 5573 l . in two years. The fum is 5152 l .5 s . 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 $5523 l .5+73$ l. 5423 l . \&c. difcounted for three, four, five, \&c. years refpectively, and continued to the year in which all the lives become extinct. The total of all thefe values is $99.443 l$. which, therefore, is the fum that would be fufficient, if improved at 4 per cent., to make good the payment of an annuity of $1 \%$. for life to every one of 5675 perfons aged ten, according to the Northampton Table of Obfervations. The value, therefore, of fuch an annuity payable to only one of this number, mult be the $5675^{\text {th }}$ part of 99,443 l. or $17 \%$. sos. 6 d.

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In the Table of Obfervations, from which the examples here given have been taken, and alfo in the table framed by Dr. Halley, from the bills of mortality at Breflaw in Silcfia, it may be obferved, that the numbers dying every year out of a given number born, continue in the middle itages of life nearly the fame for many years together. It was this circumfance that led M. De Moivre to form his hypothetis of an equal decrement of life through all its ftages after ten. In this hypothefis, the limit or utmolt 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 extinet. Thus, for inftance, if there are feventy-fix perfons living at ten, one of them by this hypothefis will die annually during the term of feventy-fix years, at the end of which time the laft furviving life will have failed. Or, in other words, feventy-five will be living at the end of the firt year, feventyfour at the end of the fecond year, feventy-three at the end of the third year, and fo on for feventy-fix years; from whence it follows that the probability of one perfon's living to the end of the firit, fecond, or third year will be $\frac{75}{76}, \frac{74}{76}$, $\frac{73}{76}$. \&c. refpectively, where it appears that the fractions, and confequently the probabilities they exprefs, decreafe arithmetically. The number of years which a life wants of the age of eighty-fix is in this hypothefis called the complement of the life, and half this complement is always the expectation of the life. That is, according to what has been already faid, it is the number of years which one with another a fet of lives at that age will exilt; or, as the writers on this fubject fometimes fpeak, it is the Jbare of life due to each of them.

It is extremely eafy to calculate the values of life-annuities on this hypothefie. For by what has been jult faid, the value of an annuity on a life aged ten, is the fum of the feries $\frac{75}{76} \times .9615+\frac{74}{76} \times .9245+\frac{73}{76} \times .8889$, \&c. continued to $\frac{1}{76} \times .0527 \%-.9615 \%-.9245 \%-.888 \mathrm{gl} .8 \mathrm{cc}$. and $.0527 l$. being the values (reckoning interelt at 4 per cent.) of 11. payable at the end of $\mathrm{r}^{\prime}, 2,3,8 \mathrm{c}$. to 76 years; or, calling 1. with its intereft for a year, $r$, and $76, n$, the value of the life is $\frac{n-1}{n r}+\frac{n-2}{n r^{2}}+\frac{n-3}{n r^{3}}+, \& \mathrm{c} .=\frac{1}{r}+\frac{1}{r^{2}}+\frac{1}{r^{3}}$ $\ldots .(n)-\frac{1}{n r}-\frac{2}{n r^{2}}-\frac{3}{n r^{3}} \ldots . .(n)=$ $\frac{1}{r-1}-\frac{r}{n \cdot \frac{r-1}{r-1}} \times \frac{1}{\frac{1}{r-I}}-\frac{1}{r^{n} \cdot r-1}$. But $\frac{I}{r-I}$ is
equal to the perpetuity, and $\frac{I}{r-I}-\frac{I}{r^{n} \cdot r-1}$ 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 $1 /$ certain for a number of years equal to the complement. Multiply this walue by the perpetuity increafed by unity, and divide the product by the complement. The quotient fubtracted from the perpetuity will be the value."

The complement in the prefent cafe being 76 , the value of an annuity for 76 years being (fee Tab. III. Annuities) 23.7311 , and the perpetuity 25 , the value of a life aged 10,
will come out 16.88 r . In the fame manner may the value of a life at any other age be computed according to this hypothefis: and thefe values are the fame with thofe in M. De Moive's table of the values of lives.
But it is a neceffary obfervation, that in the firft and laft Atages of life, this hypothefis differs too much from fact: which may be eafily feen, by comparing it with the follow. ing tables of the probabilities of human life. It had better therefore be entirely rejected from the doctrine of annuities, efpecially as we are now furnifhed with correct tables, deduced from real obfervations, of the values both of fingle and joint lives. The labour and difficulty of forming fuch tables are alfo greatly leffened by means of an eafy theorem given by Mr. Simpfon in his book on the Doctrine of Annuities; and fince by Dr. Price in his Treatife on Reverfionary Payments. We fhall here give the explanation and proof of this theorem from Mr. Morgan's Treatife on Amauitics and Affurances, chap. ii. \$2." 'P. 56.
" Were it certain that a perfon of a given age would live to the end of a year, the value of an annuity of $s l$. on fuch a life would be the prefent fum which would increafe in a year to the value of a life one year older, together with the value of the fingle payment of $1 /$. to be made at the end of a year ; that is, it would be 1!. together with the value of a life aged one year older than the given life, multiplied by the value of 1 l. payable at the end of a year. Call the value of a life one year older than the given lifé N , and the value of 21. payable at the end of a year $\frac{1}{r}$; then will the value of an annuity on the given life, on the fuppofition of a certainty that it will exilt a year, be $\frac{1}{r}+\frac{1}{r} \times N$. But the fact is, that it is uncertain whether the given life will exilt to the end of the year. This laft value, therefore, muft be diminifhed in the proportion of this uncertainty; that is, it mult be multiplied by the probability that the given life will furvive one year, which fuppofing $\frac{b}{a}$ to exprefs this probability, will make it $\frac{b}{a r} \times \overline{1+N_{0}}$ "

The great utility of this theorem will appear from the following examples. Suppofe the probabilities of life as they are given in the third of the following tables, or the tables of obfervations for Northampton, and the rate of intereft 4 per cent., or $r=1.04$. By reafoning in the manner already explained, the value of a life aged 95 will be expreffed by the fingle fraction $\frac{1}{4} \times .9615=.2403$. The value of a life one year younger, will, by this thcorem, be $\frac{4}{9 \times 1.04} \times \overline{1+.2403}=.5300$. The value of a life two years younger, by the fame theorem, will'be $\frac{9}{16 \times 1.04}$ $\times \overline{1+.5300}=.82701$. The value of a life three years younger, or at the age of $9^{2}$, will be $\frac{16}{24 \times 1.04} \times$ $\overline{1+.8270}=1.171 \%$. 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 neceffary to determine the values (agreeably to any table of obfervations) of all lives, at all ages, much exceed the number of thofe which mult otherwife have been ufed for finding the fingle value of the youngeft 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 inftead of following him in this, we fhall refume our account of the general principles un which the values of lifeannuities are calculated. We have already explained thefe, as far as annuities on Gingle lives are concerned. From the fame principles the method of finding the value of annuitics on the joint continuance of any two lives, may be underftood. Suppofe the ages of two perfons to be 50 and 60 . It appears in Table III. that of 2857 perfons living at 50 , only 2776 will live to be 51 ; or, in other words, that the probability that a perfon at this age will live a year, is $\frac{2776}{2857^{\circ}}$ Alfo, it appears from the fame table, that the probability that a perfon aged 60 will live to 61, is $\frac{1956}{2038}$. The probability, therefore, that they will botb live a year, (or the former ts be 5 I , and the latter 61, ) is the product of thefe 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 $52,53,54,8 \mathrm{cc}$. and the latter to be $62,6_{3}, 6_{4}, \& \mathrm{c}$. or that they will both live two, three, four, \&cc. years, is by the fame table $\frac{2694}{2857} \times \frac{1874}{2038} 3$ $\frac{2612 \times 1793}{2857 \times 2038}, \frac{2530 \times 1712}{2857} \times \frac{172038}{20}$, \&c. And according to the reafoning already ufed, thefe probabilities multiplied by the values (in T'able II. Ansuiries) of il. payable at the end of one', two, three, four, \&c. years, will give the prefent value of the firtt, fecond, third, fourth, \&c. payments of an annuity dependent, on the joint continuance of the two lives; and the fum of thefe products for one, two, three, four, Sxc. years, will be the value of an annuity of $1 \%$. 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 oldefl life, their fum 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 dimilar manner. The leveral fractions expreffing the refpective probabilities of their continuing one, two, three, four, \&c. years, being multiplied into one another, and alfo into il. difcounted as before ; and the fum of the products ariling from thefe multiplications continued to one, two, three, four, \&c. years, or to the extremity of the oldelt 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 refpect to annuities on the longef of any number of lives, the reafoning is not fo timple. The following explanation, however, of the method of determining their values, when only two lives are concerned, will be eafily undertood. Suppofe the ages of the two perfons to be 50 and 60 ; and for the fake of more perficuity, let $a, b, c, d$, $c$, \&c. be the number of perfons living in the table at the age of the younger life, at the begiming of the firft, fecond, third, \&c. Jears: and, in like manner, let $m, n, o, p, \& c$. Ke the number of perfons living in the table at the age of Vol. XX.
the older life. From what has been already oblerved, the chances of the younger life's furviving the firk, fecord, third, \&ec. year, will be $\frac{b}{a}, \frac{c}{a}, \frac{d}{a}, \& c_{0}$; and the chances of the older life's furviving thofe years refpectively will be $\frac{n}{m},{ }_{m}^{0}, \frac{p}{m}$, \&c. ; and the chances that they will not furvive the firft, fecond, third, \&cc. years, will be $s-\frac{b}{a}$, $\overline{1-\frac{c}{a}}, \overline{1-\frac{d}{a}}$, \&c. and $\overline{1-\frac{n}{m}}, \overline{1-\frac{o}{m}}, \overline{8-\frac{p}{m}}$, \&c. The chance, therefore, that both will die in the fird year will be $\overline{1-\frac{b}{a}} \times \overline{\mathrm{i}-\frac{n}{m}}=1-\frac{b}{a}-\frac{n}{m}+\frac{b \pi}{a m}$ that both will die in the fecond year $\overline{1-\frac{6}{a}} \times \overline{1-\frac{8}{5}}$ $=1-\frac{c}{a}-\frac{0}{m}+\frac{c o}{a m}$, and fo on for the other years. If each of thefe expreffions be fubtrafted from unity, we fhall have $\frac{b}{a}+\frac{n}{m}-\frac{b n}{a m}$ for the chance that they will noi both die, that is, that one or other of them will live to the end of the firft year, $\frac{c}{a}+\frac{o}{m}-\frac{o c}{a m}$ for the chance that they will not both die in two years, \&cc. By continuing thefe expreffions for as many years as are equal to the difference between the age of the younger life and of the oldeit life in the table, and multiplying them refpectively into $1 \%$ difcounted for one, two, three, $\& \mathrm{kc}$. years, we fhall have the whole value of an annuity on the longeft of the two lives. Let $\frac{1}{r}, \frac{1}{r^{2}}, \frac{1}{r}$, be $1 \%$ difcounted for one, two, three, \&c. years, and the feries exprefing the annuity will be $\frac{b}{a r}+$ $\frac{c}{a r^{2}}+\frac{d}{a r^{3}}+8 c \ldots .+\frac{n}{m r}+\frac{o}{m r^{2}}+\frac{p}{m r^{3}}+$ \&c. $-\frac{b n}{a m r}-\frac{c o}{a m r^{2}}-\frac{d p}{a m r^{3}}-\& c$. But the firit of thefe feries is the value of an annuity of $I l$. 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 fubtract the value of the two joint lives, the remainder will be the value of an annuity on the longeft of the two lives."
Example,-Let the ages of the two lives be 20 and 30 , and let interelt be reckoned at 4 l. 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 thefe two values is 30.814 . The value of the joint lives by Table IX. is II.873; and this value fubtracted from 30.814 , leaves 18.941 for the value of an annuity on the longeft of the two lives.

This account leads to an eafy explanation of the method of finding the value of reverfionary life-annuities mentioned at the beginning of this article, that is, of life-annuities which are to commence on the furvivorfhip of one or more lives beyond others. See Reversions and Survitorsimits.
Problems I. - To approximate to the value of a given life according to any given table of obfervations.
Solution.-Take the difference between twice the expecta.
tion of the given life by the given table, and 86 ; and the value deduced from M. De Moivre's Table of the valucs of lives correfponding to that difference, provided it is not lefs than ten, will be the value of the life.
E.annele - The expectation of a life aged 15 is, by the Northampton 'Table of Obfervations, (or Table IV, under the article Expectation,) $36 \frac{1}{2}$. The difierence between twice this number and 86 is 13 . And the value correfponding to the age of 13 in M. De Moivre's 'Table of the values of lives (or Table IV.) is i6.604, reckoning interelt at 4 per cent.; and this is nearly the value of a life aged 15 , by the Northampton Table.

Scholium.-It mult be remembered that this rule is only an approximation, and fhould not be uicd except when recourfo cannot be had to tables giving the values of lives agreeable to given obfervations. The method of calculating fuch tables has been before particularly explained.

Problem II.-To determine the value of any two joint lives by M. De Moivre's hypothefis, or on the fuppolition of an equal decrement of life, through all its 1tages.
Solution. - This value is expreffed by the feries $\frac{\overline{n-1} \cdot \overline{m-1}}{n m r}$ $+\frac{\overline{n-2} \cdot \overline{m-2}}{n m r^{2}}+\frac{\overline{n-3} \cdot \overline{m-3}}{n m r^{3}}+\ldots(m)$ fuppofing $i z$ to be the complement of the younger, and $m$ the complement of the older life, which Mr. Simpfon has given in his Treatife on Annuities, and Mr. Morgan in his edition of Dr. Price's Treatife on Reverfionary Payments, note L, appendix, has demonftrated to be $=V-\frac{V+1}{n} \times$ $\overline{n-m-2 \mathrm{~V}-\mathrm{I}} \times \frac{\mathrm{P}}{m}+2 \mathrm{~V}$, 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 youngef life and the complement of the oldeft life increafed 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 oldeft life; and by this complement divide the product, referving the quotient. From twise the perpetuity fubtract the referved quotient, and multiply the remainder by the perpetuity increafed by unity. This laft product divided by the complement of the youngeft 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 hypothelis are 76 and 7 I . The complement of the oldett life, increafed by unity and twice the perpetuity, (or twice 25 , reckoning interelt at 4 per cent.) is 122 ; which leffened by 76 , the complement of the youngeft life, leaves 46 for the referved difference. This difference multiplied by $23 \cdot 456$, (the value of an annuity certain for 71 years, by Table III. Annuities.) and the product divided by 71, (the complement of the oldeft life,) gives 15.196 , the quotiont to be referved; which fubtracted from double the perpetuity (or from 50), and the remainder (or 34.803 ) multiplied by the perpetuity iucreafed by unity (or by 26 ), gives 904.878 ; which divided by $7^{6}$ (the complement of the youngent life), and the quotient fubtracted from the perpetuity, we bave 13.003 for the value of two joint lives aged to to 15 , by M. Ne Moivre's hypothefis.

By this rule, Table V. in the following. collection of tables, was computed by Dr. Price. (See his Treatife on Reverlioniary Payments.) To this he was induced by the coulideration, that there was no table extant at that time of
the values of joint lives, except Mr. Simpfon's for Londow, ('Table III. in this collection,) which being founded on the llate of human mortality in one of the worlt of all fituations, or among the inhabitants of London taken in the grofs, was by no means fitted for general ufe. The truth alfo is, as lath been before obferved, that ncither do the tables formed from M. De Moivre's hypothefis give the values of fingle and joint lives with the exactnefs neceffary to adapt them properly to general ufe; nor can it indeed be ever neceffary to have recourfe to them, as we are now poffefied of thofe tables, deduced from real obfervations, 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 propofed. Multiply this value by 11. payable at the end of this term, and alfo by the probability that the life will continue fo long. Subtract the product from the prefent value of the life; and the remainder multiplied by the annuity will be the anfwer.

Exainple.-Let the annuity be tol ., the rate of intereft 4l. per cont., the age of the given life 30 years, and the term propofed ${ }_{1} 5$ 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 Il. payable at the end of 15 years (by Table II. under Annuities) is.5553, and the probability that the life will exilt fo long is (by
Table III. under the article Expectation) $\frac{3243}{43^{8} 5^{\circ}}$. Thefe three quantities multiplied into each other are equal to 5.051 , which being fubtracted from 14.78 B , (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.
Problen IV.-To approximate to the value of an annuity for three joint lives, A, B, and C.

Solution.-Let $\mathbf{A}$ be the youngef, and $C$ the oldeft of the three propofed 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 anfwer.
E.rample-Let the three given ages be 20,30 , and 60 . The value, reckoning interelt at 4 per cent., of the two oldelt 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 firf given by Mr. Simpion in his Select Exercifes; and the following comparifon, taken from Dr . Price's Treatife on Reverfionary Payments, will fhew its correctnefs.


Problen V. - To find the value of an annuity on the Iongeft of three lives, $A, B$, and $C$.

Solution.-Let $a, b, c, d$, \&c. be the number of perions living in the table at the age of $A$, at the beginning of the firlt, fecond, third, \&c. years; $m, n, a, p, \& c$. the fame numbers at the age of B ; and $s, t, u$, $w$, , Sc. the like numbers at the age of C , the older of the three lives. By reafoning as in the cafe of the longett of two lives, the probability that $A, B$, and $C$, will die in one, two, three, Sc. years, will be $\overline{1-\frac{b}{a}} \times \overline{1-\frac{n}{n}} \times \overline{1-\frac{t}{s}} \ldots \overline{1-\frac{c}{a}}$ $\times \overline{\mathrm{I}-\frac{q}{m}} \times \overline{\mathrm{I}-\frac{u}{s}} \ldots \overline{\mathrm{I}-\frac{d}{a}} \times \overline{\mathrm{I}-\frac{p}{m}} \times \overline{\mathrm{I}-\frac{w}{s}}$ scc. $=t-\frac{b}{a}-\frac{a t}{m}-\frac{t}{\delta}+\frac{b_{n}}{a_{n}}+\frac{b t}{a_{\delta}}+\frac{n t}{m_{s}}-\frac{b n t}{a m s}$ $\ldots \mathrm{I}-\frac{c}{a}-\frac{o}{m}-\frac{v}{s}+\frac{c \theta}{a m}+\frac{c u}{a s}+\frac{o u}{m s}+\frac{c 0 u}{a m s}$ .... \&c. which being feverally fubtracted from unity, the refpective remaindors, or $\frac{b}{a}+\frac{n}{m}+\frac{t}{s}-\frac{b_{n}}{a m}-\frac{b t}{a s}-$ $\frac{n t}{m s}+\frac{b n t}{a m s} \cdots \frac{c}{a}+\frac{o}{m}+\frac{u}{s}-\frac{c o}{a m}-\frac{c u}{a s}-\frac{0 u}{m s}+$ $\frac{00 u}{a \mathrm{~ms}} \ldots .$. . \&c. will exprefs the probability that one or other of them will live to the end of one, two, three, \&c. years. Thefe fractions being multiplied into $\frac{1}{r}, \frac{1}{r^{2}}$, \&c. we have $\frac{b}{a r}+\frac{c}{a r^{3}}+\frac{d}{a r^{3}}$, sc. $+\frac{n}{m r}+\frac{a}{m r^{2}}+\frac{p}{m r^{3}}+$ $\& c \ldots . .+\frac{t}{s r}+\frac{u}{s r^{2}}+\frac{\varepsilon}{s r^{3}}, \& c \ldots \ldots-\frac{b n}{a m r}-$ $\overline{c o}-\frac{d \rho}{a m r r^{2}}, \& c_{0}-\frac{b t}{a s r}-\frac{c \psi}{a s r^{2}}-\frac{d w}{a s r^{2}}, \& c_{0}-\frac{n t}{m s r}$ $-\frac{o u}{m s r^{2}}-\frac{p w}{m s r^{3}}, \delta c .+\frac{b n t}{a m s r}+\frac{c o u}{a m s r^{2}}+\frac{d p w}{a m s r^{3}}, \& c$. for the value required. Therefore the value of an annuity on the longeft of the three lives, $\mathrm{A}, \mathrm{B}$, and C , is equal to the "fum of each pair of the two joint lives, fubtracted from the fum of the three fingle lives, added to the value of the three joint lives."

Example.-Let the ages of $\mathrm{A}, \mathrm{B}$, and C , be 20,30 , and 60 , refpectively, and intereft of money $4 l$. 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 fum of thefe three values is 27.67 - By TableVI. the value of the fingle life of $A$ is 16.033 , of $B 14.78 \mathrm{I}$, of C 9.039 . By Problem V. the value of the three joint lives is 6.986. Thefe four values added together are equal to 46.839 ; from which deducting 27.67 , the value of each pair of joint lives found above, we have $19.16 g$ for the value fought.

Prollom VI.-To find the value of an annuity granted upon three lives, $A, B$, and $C$, on condition of its ceafing as foon as any two of them become extinct.

Solution. - This annuity mut be paid during the three joint lives, which may be exprefled by $A \operatorname{BC} ;$ allo,
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 ewo joint lives of B and C , after A . "Thede latk three values are refpectively equal to $\bar{A} B-\Lambda \overline{B C}, A C-\bar{A} \bar{C}$, and $B C-A B C$. (Sec article Revehsions.) Confequently the whole value will be $A B+A C+B C-2 A B C$; therefore find the value of each pair of joint lives, viz. of $A$ and $B$, of $\mathbf{A}$ and $\mathbf{C}$, and of $B$ and $C$. 'Ihen from the fum of thefe three values let twice the value of the three joint lives, $A, B$, and $\mathbf{C}$, be deducted, and the renainder will be the anfwer.

Example-Let the ages of $\mathrm{A}, \mathrm{B}$, and C , refpectively be 20,30 , and 60 . By 'l'ables 1X. and XIII. the value of the joint lives,

$$
\left.\begin{array}{l}
\mathrm{A}, \mathrm{~B} \\
\mathrm{~A}, \mathrm{C} \\
\mathrm{~B}, \mathrm{C}
\end{array}\right\} \text { will be }\left\{\begin{array}{l}
11.873 \\
7.097 \\
7.802
\end{array}\right.
$$

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 $13.6,8$ is the valuc required.

See on this fubject Simpfon's Doctrine of Life Annuities, Dr. Price's Treatife on Reverfionary Payments, Mr. Baron Maferes on Life Anmuities, 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 obfervations on the bills of mortality at Breflaw in Silelia.

| Agrs. | Perfons living. | Der. of Lite. | 1gres. | Werfons living. | Dec. of Life. | $\lambda_{8}{ }^{\text {cs. }}$ | $\left\{\begin{array}{l} \text { Perfous } \\ \text { litins:- } \end{array}\right.$ | 1hec. of Late. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 1000 | 145 | 31 | 523 | 8 | 61 | 232 | 10 |
| 2 | S55 | 57 | 32 | 515 | 8 | 62 | 222 | 10 |
| 3 | $79^{8}$ | 38 | 33 | 507 | 8 | 63 | 212 | 10 |
| 4 | 760 | 28 | 34 | 499 | 9 | ${ }^{6} 4$ | 202 | 10 |
| 5 | 732 | 22 | 35 | $49^{\circ}$ | 9 | 65 | 192 | 10 |
| 6 | 710 | 18 | 36 | 481 | 9 | 66 | 152 | 10 |
| 7 | 692 | 12 | 37 | 472 | 9 | 67 | $17^{2}$ | 10 |
| 8 | 683 | 10 | 38 | 463 | 9 | 08 | 162 | 10 |
| 9 | 670 | 9 | 39 | $45+$ | 9 | 69 | 152 | 10 |
| 10 | 661 | 8 | 40 | 445 | 9 | 70 | $14^{2}$ | II |
| 1 I | 653 | 7 | 41 | 436 | 9 | 71 | 131 | 11 |
| 12 | $6 \pm 6$ | 6 | 42 | 427 | 10 | 72 | 120 | $\underline{1}$ |
| 13 | 6.40 | 6 | 43 | 417 | 10 | 73 | 109 | 11 |
| 14 | 634 | 6 | 44 | 407 | 10 | 74 | 98 | jo |
| 15 | 628 | 6 | 45 | 397 | 10 | 75 | 88 | 10 |
| 16 | 622 | 6 | 46 | 387 | 10 | 76 | 78 | 10 |
| 17 | 616 | 6 | 47 | 377 | 10 | 77 | 68 | 10 |
| IS | 610 | 6 | $4^{8}$ | 367 | 10 | 75 | 58 | 9 |
| 19 | 604 | 6 | 49 | 357 | 11 | 79 | 49 | 8 |
| 20 | 598 | 6 | 50 | $3+6$ | 11 | 80 | 41 | 7 |
| 21 | 592 | 6 | 5 I | 335 | 11 | 81 | 34 | 6 |
| 22 | 586 | 7 | 52 | 324 | 11 | i2 | 28 | 5 |
| 23 | 579 | 6 | 53 | 333 | 11 | $8_{3}$ | 23 | 4 |
| 24 | 573 | 6 | 54 | 302 | 10 | 4 | 19 | 4 |
| 25 | 557 | 7 | 55 | 292 | 10 | $\because 5$ | 15 | 4 |
| 26 | 560 | 7 | 56 | 282 | 10 | 45 | 11 | 3 |
| $2{ }^{2}$ | 553 | 7 | 57 | 272 | 10 | 57 | 8 | 3 |
|  | 546 5 | 7 | 58 | 263 | 10 | 88 | 3 | 2 |
| 29 30 | 539 | 8 | 59 | 252 242 | 10 | 90 | 3 | 1 |

## Table II．

Shewing the value of an annuity on one life，according to the probabilitics of life in London，as given in Table I． under the aricle Expectation．


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 Ex－ pectation．

|  |  |  | 寿 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 10 | $1{ }^{1} 4.7{ }^{\text {® }} 3.0$ | 11.6 | 10 | 75 | $5 \cdot 3$ | 5.1 | 4.9 |
|  | $15$ | 114.312 .7 | 11.3 |  |  |  |  |  |
|  | $\begin{aligned} & 20 \\ & 25 \end{aligned}$ | I．${ }_{1}$ | 10.2 |  | 20 | 13.3 | 11.8 | 10.5 |
|  | 33 | 12．3 10．6 | 9.7 |  | 25 | 12.6 | 11．－ | 10.1 |
|  | 35 | 11 .5 10.2 | 9.1 |  | 30 | II． 9 | 10.6 | 9.5 |
| 10 | ＋0 |  | 8.6 |  | 35 | $1 \mathrm{I}, 2$ | 10.0 | 9.0 |
|  | 45 | $110.0 \mid 9.0$ | 8.1 | 15 | $4{ }^{\circ}$ | 10.4 | 9.4 | 8.5 |
|  | 50 | $2.3,8.4$ | 7.6 |  | 45 | 9.6 | 8.8 | 8.0 |
|  | 55 | 8.6 7.8 | 7.1 |  | 50 | 8.9 | 8.2 | $7 \cdot 5$ |
|  | 60 | $7.8 ; 7.2$ | 6.6 |  | 55 | S． 2 | $7 \cdot 6$ | 7.0 |
|  | 65 | 6.96 .5 | 6.1 |  | 60 | 7.5 | 7.0 | 6.5 |
|  | 70 | 6.15 | 5.5 |  | 65 | 6.8 | 6.4 | 6.0 |


| ｜ris | 关 | 号淢 |  |  |  | 总 | 号 | 菏 | （ex |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 70 | 6.0 | $5 \cdot 7$ | $5 \cdot 4$ | 35 | 70 | $5 \cdot 7$ | $5 \cdot 4$ | $5 \cdot 1$ |
| 5 | 75 | 5.2 | 5.0 | 4.8 | 35 | 75 | 5．0 | 4.8 | 4.6 |
| 20 | 20 | 12.8 | 11.3 | 10.1 |  | 40 | 9.1 | 8.1 | $7 \cdot 3$ |
|  | 25 | 12.2 | 10.8 | 9.7 |  | 45 | 8.7 | 7.8 | 7.1 |
|  | 30 | 11.6 | 10.3 | $9 \cdot 2$ |  | 50 | 8.2 | $7 \cdot 4$ | 6.8 |
|  | 35 | 10.9 | 9.8 | 8.8 |  | 55 | 7.6 | 6.9 | 6.4 |
|  | 40 | 10.2 | 9.2 | 8.4 | 4 | 60 | 7.0 | 6.4 | 6.0 |
|  | 45 | 9.5 | 8.6 | 7.9 |  | 65 | 6.4 | 5.9 | $5 \cdot 5$ |
|  | 50 | 8.8 | 8.0 | $7 \cdot 4$ |  | 70 | 5.7 | $5 \cdot 4$ | $5 \cdot 1$ |
|  | 55 | 8.1 | 7.5 | 6.9 |  | 75 | 5.0 | 4.8 | 4.6 |
|  | 60 | $7 \cdot 4$ | 6.9 | 6.4 |  |  |  |  |  |
|  | 65 | 6.7 | 6.3 | $5 \cdot 9$ |  | 45 | 8.3 | $7 \cdot 4$ | 6.7 |
|  | 70 | 6.0 | $5 \cdot 7$ | $5 \cdot 4$ |  | 50 | 7.9 | 7.1 | 6.5 |
|  | 75 | 5.2 | 5.0 | 4.8 |  | 55 | 7.4 | 6.7 | 6.2 |
|  |  | －－ |  |  | 45 | 60 | 6.8 | 6.3 | 5.8 |
| 25 | 25 | 11.8 | 10.5 | $9 \cdot 4$ |  | 65 | 6.3 | 5.8 | $5 \cdot 4$ |
|  | 30 | 11.3 | 10.1 | 9.0 |  | 70 | 5.6 | $5 \cdot 3$ | 5.0 |
|  | 35 | 10.7 | 9.6 | 8.6 |  | 75 | $4 \cdot 9$ | $4 \cdot 7$ | $4 \cdot 5$ |
|  | 40 | 10.0 | 9．1 | 8.2 |  |  |  | 6.8 |  |
|  | 45 | 9.4 | 8.5 | 7.8 |  | 50 | 7.6 | 6.8 | 6.2 |
|  | 50 | 8.7 | $7 \cdot 9$ | 7.3 |  | 55 | 7.2 | 6.5 | 6.0 |
|  | 55 | 8.0 | $7 \cdot 4$ | 6.8 |  | 60. | 6.7 | 6.1 | $5 \cdot 7$ |
|  | 60 | 7.3 | 6.8 | 6.3 | 50 | 65 | 6.2 | $5 \cdot 7$ | $5 \cdot 3$ |
|  | 65 | 6.6 | 6.2 | 5.8 |  | 70 | $5 \cdot 5$ | $5 \cdot 2$ | $4 \cdot 9$ |
|  | 70 | 5.9 | 5.6 | $5 \cdot 3$ |  | 75 | 4.8 | 4.6 | $4 \cdot 4$ |
|  | 75 | 5.1 | 4.9 | 4.7 |  |  |  | 6.2 |  |
| 30 | 30 | 10.8 | 9.6 | 8.6 |  | 65 | 6.9 | 5.2 | $5 \cdot 7$ $5 \cdot 5$ |
|  | 35 | 10.3 | 9.2 | 8.3 | 55 | 65 | 6.0 | 5.6 | 5.4 |
|  | 40 | 9.7 | 8.8 | 8.0 |  | 70 | $5 \cdot 4$ | 5.1 | 4.8 |
|  | 45 | 9.1 | 8.3 | 7.6 |  | 75 | $4 \cdot 7$ | $4 \cdot 5$ | ＋ 3 |
|  | 50 | 8.5 7.9 | 7.8 | 7.2 6.7 |  | 60 | 6.1 | 5.6 | 5.2 |
|  | 60 | 7.2 | 6.7 | 6.2 |  | 65 | 5.7 | $5 \cdot 3$ | 4.9 |
|  | 65 | 6.5 | 6.1 | $5 \cdot 7$ | 60 | 70 | 5.2 | 4.9 | 4.6 |
|  | 70 | 5.8 | $5 \cdot 5$ | 5.2 |  | 75 | 4.6 | 44 | 4.2 |
|  | 75 | 5.1 | 4.9 | 4.7 |  |  |  |  |  |
| 35 |  |  |  |  |  | 65 | $5 \cdot 4$ | 5.0 | 4.7 |
|  | 35 | 9.9 | 8.8 | 8.0 | 65 | 70 | $4 \cdot 9$ | 4.6 | $4 \cdot 4$ |
|  | 40 | $9 \cdot 4$ | 8.5 | 7.7 |  | 75 | $4 \cdot 4$ | 4.2 | 4.0 |
|  | 45 | 8.9 | 3.1 | 7.4 |  |  |  |  |  |
|  | 50 | S． 3 | 7.6 | 7.0 |  | 70 | 4.6 | 4.4 | 4.2 |
|  | 55 | $7 \cdot 7$ | 7.1 | 6.6 |  | 75 | 4.2 | 4.0 | 3.9 |
|  | 60 | 7.1 | 6.5 | 6.1 |  |  |  |  |  |
|  | 65 | 6.4 | 6.0 | 5.6 | 75 | 75 | 3.8 | $3 \cdot 7$ | 3.6 |

## Table IV．

Shewing the prefent value of an annuity of 11 ．on a fingle life，according to M．De Moivre＇s hypothefis．

|  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8 |  |  |  | ， |  |  |
| 9 |  | 18.269 | 16.882 |  |  |  |
| 10 | 19.868 | 18.269 | 16 | 15.672 | 14.607 |  |
| 11 |  | 18.160 |  |  |  |  |
| 12 | 19.6 | 18.049 |  | 15.517 |  |  |
| 13 | 19.4 | 17.9 |  |  |  |  |

LIFE-ANNUITIES.

| Ase. | ${ }^{3}$ perct. | $3 \frac{1}{3}$ perct. | 4 perct. | 4 Iperct. | 5 per ct. | 6 per ct. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| I 4 | $19.33{ }^{1}$ | 17.823 | 16.508 | 15.356 | 14.342 | 12.639 |
| 15 | 19.192 | 17.707 | 16.410 | 15.273 | 14.271 | 12.586 |
| 15 | 19.050 | 17.588 | $16.33^{1} 1$ | 15.189 | 14.197 | 12.532 |
| 17 | 18.905 | 17.467 | 16.209 | 15.102 | $1+123$ | 12.476 |
| IS | 18.759 | 1\% 7 34 | 16.105 | 15.015 | 14.047 | $12 .+19$ |
| 19 | 18.610 | 17.220 | 15.999 | 14.923 | 13.970 | 12.361 |
| 20 | 18.458 | 17.003 | 15.891 | 14.83 I | r3.89r | 12.301 |
| 21 | 18.305 | 16.963 | 15.81 |  | ${ }^{1} 3.810$ | 12.239 |
| 23 | 18.148 | 16.830 | 15.669 | 14.641 | 13.727 | 12.177 |
| 23 | 17.990 | 16.696 | 15.554 | $14.5+3$ | 13.642 | 12.112 |
| $2+$ | 17.827 | 16.559 | $15 \cdot 437$ | ${ }^{1} 4.44^{2}$ | ${ }^{1} 3.555$ | 12.045 |
| 25 | 17.664 | 16.419 | 15.318 | 14.340 | 13.466 | 12.978 |
| 26 | 17.497 | 16.277 | 15.197 | 14.235 | 13.375 | 11.908 |
| 27 | 17.327 | 16.133 | 15.073 | 14.128 | 13.282 | 11.837 |
| 28 | 17.154 | 15.985 | $14.9+6$ | 14.018 | 13.186 | 11.763 |
| 29 | 16.979 | 15.835 | 14.816 | 13.905 | 13.088 | 11.688 |
| 30 | 16.800 | 15.682 | $14.68{ }_{4}$ | 13-791 | 12.988 | 11.610 |
| 31 | 16.620 | 15.526 | 14.549 | ${ }^{1} 3.673$ | 12.855 | 11.530 |
| 32 | 16.436 | 15.367 | 14.411 | 13.553 | 12.780 | 11.449 |
| 33 | 16.248 | $15.20+$ | 14.270 | 13.430 | 12.673 | 11.365 |
| 34 | 16.057 | 15.039 | 14.126 | 13.304 | 12.562 | 11.278 |
| 35 | 15.864 | 14.871 | 13.979 | 13.175 | 12.449 | 11.189 |
| 36 | 15.666 | 14.699 | 13.829 | 13.044 | 12.333 | 11.098 |
| 37 | 15.465 | ${ }^{1}+5.52+$ | 13.676 | 12.909 | 12.214 | $1 I_{\text {I CO3 }}$ |
| 38 | 15.260 | 14.345 | ${ }^{1} 3.519$ | 12.771 | 12.091 | 10.907 |
| 39 | 15.053 | 14.163 | ${ }^{1} 3.359$ | 12.630 | 11.966 | 10.807 |
| 40 | $14.8{ }^{2} 2$ | 13.978 | ${ }^{13.196}$ | 12.485 | 11.837 | 10.704 |
| 41 | 14.626 | 13.789 | 13.028 | 12.337 | 11.705 | 10.599 |
| 42 | 14.407 | 13.596 | 12.858 | 12.185 | 11.570 | 10.490 |
| 43 | 14.185 | 13.399 | 12.683 | 12.029 | 11.431 | 10.378 |
| 44 | 13.958 | 13.199 | 12504 | 11.870 | 11.288 | 10.263 |
| 45 | ${ }^{1} 3.928$ | 12.993 | 12.322 | 11.707 | 11.142 | $10.14+$ |
| 46 | $13 \cdot 493$ | 12.784 | 12.135 | 11.540 | 10.992 | 10.021 |
| 47 | 13.254 | 12.571 | 11.944 | 11.368 | 10.837 | 9.895 |
| $4^{8}$ | 13.012 | 12.354 | $11.74^{8}$ | 11.192 | 10.679 | 9.765 |
| 49 | $12.76+$ | 12.131 | $11.54{ }^{8}$ | 11.012 | 10.515 | 9.630 |
| 50 | 12.511 | 12.604 | $11.3+4$ | 10.827 | 10.348 | $9 \cdot+92$ |
| 51 | 12.255 | 11.673 | Ir.135 | 10.638 | 10.176 | 9.349 |
| 52 | 11.994 | 11.437 | 10.92 I | 10.443 | 9.999 | 9.201 |
| 53 | 11.729 | 11.195 | 10.702 | 10.243 | 9.817 | $9.0+9$ |
| 54 | 11.457 | 10.950 | $10.47^{8}$ | 10.039 | 9.630 | 8.891 |
| 55 | 11.183 | 10.698 | 10.248 | 9.829 | 9.437 | 8.729 |
| 56 | 10.902 | 10. $\mathrm{i}+3$ | 10.014 | 9.614 | 9.239 | 8.561 |
| 57 | 10.616 | 10.181 | 9.773 | $9 \cdot 393$ | 9.036 | 8.387 |
| $5^{8}$ | 10.325 | 9.913 | 9.527 | 9.166 | 8.826 | 8.208 |
| 59 | 10.029 | 9.640 | 9.275 | 8.933 | 8.611 | 8.023 |
| 60 | 9.727 | $9 \cdot 361$ | 9.017 | 8.694 | 8.389 | 7.831 |
| 61 | 9.419 | 9.076 | 8.753 | 8.449 | 8.161 | 7.633 |
| 62 | 9.107 | 8.786 | 8.482 | 8.197 | 7.926 | 7.428 |
| 63 | 8.787 | 8.488 | 8.205 | 7.938 | 7.684 | 7.216 |
| 64 | 8.462 | 8.185 | 7.921 | 7.672 | 7.435 | 6.997 |
| 65 | 8.132 | 7.875 | 7.631 | 7.399 | 7.179 | 6.770 |
| 66 | 7.794 | 7.558 | 7.333 | 7.119 | 6.915 | 6.535 |
| 67 | $7 \cdot 450$ | 7.234 | 7.027 | 6.831 | 6.643 | 6.292 |
| 68 | 7.099 | 6.902 | 6.714 | 6.534 | 6.362 | 6.040 |
| 69 70 | $6.7+3$ 6.378 | 6.565 6.219 | 6.394 6.665 | 6.230 5.918 | 6.073 5.775 | 5.779 5.508 |
| 71 | 6.008 | 5.865 | $5 \cdot 728$ | 5.596 | $5 \cdot 468$ | 5.228 |


| Ase. | $\therefore$ fert. | 4 perct | s perct. | 1tprecer. | 5 fiet ct. | ${ }^{6} 1 \times \mathrm{rct}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 72 | 5.631 | 5.505 | $5 \cdot 3^{8} 3$ | 5.265 | $5 \cdot 152$ | 4.937 |
| 73 | $5 \cdot 246$ | 5.136 | 5.029 | 4.926 | 4.826 | 4.636 |
| 74 | 4.854 | 4.759 | 4.666 | $4 \cdot 576$ | 4.494 | $4 \cdot 324$ |
| 75 | 4.453 | 4.373 | 4.293 | 4.217 | 4.143 | 4.000 |
| 76 | 4.046 | 3.975 | 3.912 | 3.847 | 3.784 | 3.664 |
| 77 | 3.632 | 3.575 | 3.520 | $3 \cdot 467$ | 3.415 | 3.315 |
| $7^{8}$ | 3.207 | 3.163 | 3.111 | 3.076 | 3.034 | 2.953 |
| 79 | 2.776 | 2.741 | 2.767 | 2.673 | 2.641 | 2.578 |
| 80 | 2.334 | 2.309 | 2.284 | 2.259 | 2.235 | 2.188 |
| 8 5 | 1.886 | 1.867 | 1.850 | 1.832 | 1.816 | 1.753 |
| 83 | 1.429 | 1.411 | $1 .+66$ | 1.394 | 1.38 | 1. 362 |
| ¿3 | 0.961 | 0.955 | 0.950 | 0.943 | $0.03{ }^{-}$ | $0.9=5$ |
| 8.4 | c. 484 | 0.483 | 0.481 | 0.479 | $0 .+76$ | 0.472 |
| 85 | c. 0 co | 0.cco | c.cco | c.cco | 0.000 | $0.0 \leq 0$ |

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 79 to three places of decimal3, by Mr. Dodfon, in his Mathematical Repofitory, 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 hypothefis.

|  | 范 |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| 10 | 10 | 15.206 | ${ }^{1} 3.342$ | I 1.855 |
|  | 15 | 14.878 | 13.693 | 11.661 |
|  | 20 | 14.503 | 12.808 | I $1 .+30$ |
|  | 25 | 1.4 .074 | 12.480 | II.182 |
|  | 30 | 13.585 | 12.103 | $10.58{ }_{+}$ |
|  | 35 | 13.025 | 11.665 | 10.537 |
|  | 40 | 12.381 | 11.156 | IC. 128 |
|  | 45 | 11.644 | 10.564 | 9.646 |
|  | 50 | 10.796 | 9.871 | 9.074 |
|  | 55 | 9.822 | 9.059 | 8.391 |
|  | 60 | 8.704 | 8.105 | 7.572 |
|  | 65 | 7.417 | 6.980 | 6.585 |
|  | 70 | 5.936 | 5.652 | 5.391 |
| 15 | 15 | 14.574 | 12.860 | 11.478 |
|  | 20 | 14.22) | 12.593 | 11.266 |
|  | 25 | 13.822 | 12.281 | 11.022 |
|  | 30 | 13.359 | 11.921 | 10.736 |
|  | 35 | 12.824 | II.501 | 10.402 |
|  | 40 | 12.207 | $11 . \mathrm{Cl} 3$ | 10.008 |
|  | 45 | 11.496 | 10.440 | $9 \cdot 5+1$ |
|  | 50 | 10.675 | 9.767 | 8.985 |
|  | 55 | 9.727 | 8.975 | 8.318 |
|  | 60. | 8.632 | 8.041 | 7.515 |
|  | 65 | 7.377 | 6.934 | 6.544 |
|  | 70. | 5.932. | 5.623 | $5 \cdot 354$ |
| - 20. | 20 | 13.904 | 12.341 | 11.067 |
|  | 25 |  | 12.051 | 10.840 |
|  | 30 | 13.098 | 11.711: | $10.55 \%$ |
|  | 35 | $12.594:$ | 11.314 | 10.278 |
|  | 40 | 12.008 | 10.847. | 9:870. |

## IIFE－ANNUITIES．

| v | 3 | 䍑 | $\stackrel{+}{\circ}$ | $\cdots$ | ${ }_{0}$ | ${ }^{3}$ | ${ }^{\circ}$ | Are of the ycungett． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\because \underbrace{}_{i}$ |  | uv8心umb |  | Oज太心u゙寺 | Owgungt |  |  | Age of the eldeft． |
| $\begin{array}{lll} n & a-z & y \\ i & \text { is } \\ \text { cos } & y \end{array}$ | い $\rightarrow \cdots \infty$ it anco 3 <br>  |  |  |  |  |  |  | Value at ${ }^{3}$ per cent． |
|  |  |  |  |  |  |  |  | Value at <br> 4 per cent． |
|  |  |  |  |  |  | nou mono o o o o $i$ |  | Value at 5 por cent． |


|  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 60 | 6.737 | 6.351 | 6.001 |
| 60 | 65 | 6.043 | 5.730 | 5.444 |
|  | 70 | 5.081 | 4.858 | 4.653 |
| 63 | 65 | 5.547 | 5.277 | 5.031 |
| ， | 70 | 4.773 | $4 \cdot 571$ | 4.385 |
| 70 | 70 | 4.270 | $4 \cdot 104$ | 3.952 |

## Table VI．

Shewing the value of an amnuity on any fingle life，accord－ ing to the probabilities of living at Northampton，as given in Table III．under the article Expectation．Interelt reckoned at 3，4，5，6， 7 and 8 per cent．

| Ages． | 3 per cent． | Value at 4 per cent． | Value ar 5 percent． |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Birch |  |  |  |  |  |  |
|  |  | $1{ }^{\text {d }}$ | 11.274 |  |  |  |
| 1 |  | 13.465 | 11.563 | 10.107 | 8.963 | 46 |
| 2 | 18.599 | 15.633 | 13.420 | 11.724 | 10.391 | 321 |
| 3 | 19.575 | 16.462 | 14．135 | 12.348 | 10.941 | 12 |
| 4 | 20.210 | 17.010 | 14.613 | 12.769 | 11.315 | 10.147 |
| 5 | 20.473 | 17.248 | 14.827 | 12.962 | 11.489 | 10.304 |
|  | 20.727 | 17.482 | 15.041 | ${ }^{3} \cdot 156$ | 11.666 | 10.466 |
| 7 | 20.853 | 17.611 | 15.166 | 13.275 | 11.777. | 0.570 |
| 8 | 20.88 J | 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 |
| II | 20.480 | 17.393 | 15.043 | 13.212 | 11.752 | 69 |
| 12 | 20.283 | 17.251 | 14.937 | 13.130 | 11.687 | 17 |
| 13 | 20.081 | 17.103 | 14.826 | 13.044 | 11.618 | 10.461 |
| 14 | 19.872 | 16.950 | 14.7 | 12.953 | 11.545 | 10.401 |
| 15 | 19.657 | 16.791 | 14.588 | 12.557 | 11.467 | 10.337 |
| 16 | 19.43 | 16.625 | 14.460 | 12.755 | II． $3^{8} 4$ | 析 |
| 17 | 19.218 | 16.462 | 14.334 | 12.655 | 11.302 | 10.200 |
| IS | 19.013 | 16.309 | 14.217 | 12.562 | 11.226 | 37 |
| 19 | 18.820 | 16.16 | 14.108 | 12.477 | 11.157 | 10 |
| 20 | 18.638 | 16.033 | 14.007 | 12.398 | 11.094 | 10.030 |
| 21 | $18.47^{\circ}$ | 15.912 | 13.917 | 12.329 | 11.042 | 9.986 |
| 22 | 18.311 | 15.79 | 13.833 | 12.265 | 10.993 | 9.947 |
| 23 | xS．r48 | 15.680 | 13.746 | 12 | 10.942 | 9.907 |
| 24 | 17.983 | 15．560 | 13.658 | 12.132 | 10.890 | 9.865 |
| 25 | 17．814 | 15.438 | 13.567 | 12.063 | 10.836 | 9.833 |
| 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 | 17.289 | 15.053 | 13.278 | I1．841 | 10.663 | 9.685 |
| 29 | 17.107 | I 4.918 | 13.177 | 11.763 | 10 | 9.635 |
| 30 | 16.922 | 1．4．781 | 13.073 | 11.682 | 10．539 | $9 \cdot 584$ |
| 31 | 16.732 | 14.639 | 12.965 | 11.598 | 10.473 | 9.531 |
| 32 | 16.540 | 14.495 | 12.854 | I1．512 | 10.404 | 9.476 |
| 33 | 36.343 | 14.347 | 12.740 | II． 423 | 10.333 | 9.41 S |
| 34 | 16.142 | 14.195 | 12.623 | 11.331 | 10.2 | 9.359 |
| 35 | 15.938 | 14.039 | 12.502 | 11.336 | 10.183 | $9 \cdot 296$ |
| 36 | $15 \cdot 729$ | 13.889 | 12.377 | 11.137 | 10.104 | 9.231 |
| 37 | 15.515 | 13.716 | 12.249 | 11.035 | 10.02 | 9．164 |
| 30 | 15.298 | 13.548 | 12.116 | 10.929 | 9.935 | 9.093 |
| 39 | 15.075 | 13.375 | 11.979 | 10.819 | 9.845 | 9.019 |

## LIFE－ANNUITIES．

|  |  <br>  <br>  |
| :---: | :---: |
| 荷 |  <br>  <br>  |
| 范 |  <br>  <br>  |
| 号烒 |  mging ho 士心，千o <br>  |
| \＃ |  G－minluno <br>  |
| c | 从 <br>  <br>  <br>  |
|  |  |

Shewing the value of an annuity on the joint continuance of two lives，having the fame common ase，according to the Northampton＇l＇able of Obfervations．

| Agcs． | $\begin{aligned} & \text { Vatue at } \\ & \text { s jeer cent. } \end{aligned}$ | l＇eimn at <br> 4 PM Coms． | Valuest <br> 5 per cent． | Value ar 1，pres cent． |
| :---: | :---: | :---: | :---: | :---: |
| 1－1 | 9.491 | 8.251 | 7.287 | 6.715 |
| 2 － 2 | 12.789 | 11.107 | 9.793 | $8.7+1$ |
| $3-3$ | $14.10^{6}$ | 12.325 | 10.862 | 9.689 |
| 4－4 | －15．181 | 13.185 | 11.6121 | 10.365 |
| $5-5$ | 15.638 | 13.591 | 11.908 | 10.691 |
| 6－6 | 16.099 | 14.005 | 12．35 | 11.031 |
| 7 －7 | 16.375 | 14.224 | $12.51,6$ | 11.251 |
| 8 －8 | 16.510 | 14.399 | 12.731 | 11.382 |
| 9－9 | 16.483 | 14.306 | 12.714 | 11.404 |
| 10－10． | 16.339 | $1+377$ | $12.66 ;$ | 11.345 |
| II－ 1 I | 16．142 | 14.133 | $12.54{ }^{\prime}$ | 11.249 |
| 12 －12 | 15.926 | 13.966 | 12.411 | 11.139 |
| 13 －13 | 15.702 | 13.789 | 12.268 | 11.023 |
| 14－1．4 | 15.470 | 13.604 | 12.115 | 10.879 |
| 15－15 | 15.229 | 13.411 | $1 \mathrm{I} . \mathrm{gtc}$ | 10.767 |
| 16－16 | 14.979 | 13.212 | 11.793 | 10.626 |
| $17-17$ | 14.737 | 13.019 | 11.630 | 10.489 |
| 18－18 | $1+516$ | $12 . \mathrm{S}_{4} 1$ | 11.45 | 10.365 |
| 19－19 | 14.316 | 12.679 | 11.351 | 10.255 |
| 20－20 | I4． 133 | 12.535 | 11.232 | 10.156 |
| 21－21 | 13.974. | 12.409 | II．131 | 10.074 |
| 22－22 | 13.830 | 12.293 | 11.042 | 10.002 |
| 23－23 | 13.683 | 12.179 | 10.051 | 9.928 |
| 24－24 | 13．534 | 12.062 | 10.858 | 9.853 |
| 25－25 | 13.383 | $11.9+4$ | 10.704 | $9 \cdot 776$ |
| 26－26 | 13.230 | i1． $\mathrm{I}_{22}$ | 10.667 | 9.697 |
| 27－27 | 13.074 | 11.699 | 10.567 | 9.616 |
| 28－28 | 12.915 | 11.573 | 10.466 | $9 \cdot 533$ |
| 29－29 | 12.754 | II．445 | 10.362 | $9 \cdot 4+8$ |
| $30-30$ | 12.589 | 11.313 | 10.255 | $9 \cdot 360$ |
| 3I－3I | $12.422^{4}$ | 11.179 | 10.146 | 9．270 |
| $32-32$ | 12.253 | 11.042 | 10.034 | 9．1－8 |
| 33－33 | 12.079 | 10.902 | 9.919 | 9.082 |
| $34-34$ | 11.902 | 10.759 | 9.801 | $5.9 .9+$ |
| $35-35$ | 11.722 | 10.612 | 9.680 | 8．583 |
| $36-36$ | 11.539 | 10.462 | 9.555 | 8.778 |
| $37-37$ | 11.351 | 10.307 | $9 \cdot 427$ | 8.670 |
| $3^{8}-38$ | 11.160 | 10.149 | 9．20．4 | 8.558 |
| 39－39 | 10.964 | 9.986 | 9.153 | 8.442 |
| 40－40 | 10.764 | 9.820 | －9．016 | 8.322 |
| 41－41 | 10.565 | 0.654 | 8． 576 | 8.202 |
| 42－42 | 10.369 | 9.491 | 8.737 | S．c83 |
| 43－43 | 10.175 | $9 \cdot 326$ | 8.599 | 7.965 |
| 44－44 | 9.978 | 9.160 | 8.457 | 7.843 |
| 45－45 | 9.776 | 8.990 | $\bigcirc .312$ | 7.718 |
| 46－46 | 9.571 | 8.815 | 5． 162 | 7.589 |
| 47－47 | 9.362 | 8.637 | 8.508 | $7 \cdot 455$ |
| 48－48 | 9． 149 | 8.453 | 7.49 | 7.316 |
| 49－49 | 8.931 | 8.266 | 7.686 | 7.173 |
| $50-50$ | 8.714 | 8.081 | 7.522 | 7.030 |
| 51－51 | 8.507 | 7.900 | 7.366 | 6.893 |
| $52-52$ | 8.304 | 7.723 | 7.213 | 6.758 |
| 53－53 | 5.099 | $7.54+$ | 7.056 | 6.620 |
| 54－54 | 7.801 | 7.36 .2 | 6.897 | 6.480 |
| 55－55 | 7.681 | 7.179 | 6.735 | 6.335 |
| 56－56 | 7.470 | 6.993 | 6.571 | 6.190 |
| 1．57－57 | 7.256 | 6.805 | 6.484. | 6.041 |


| Ages. | Value at 3 per cent. | Value at 4 per cent. | Value at 5 per cent. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 5S-58 | 7.041 | 6.614 | $6.23+$ | 5.890 |
| 59-59 | 6.824 | 6.421 | 6.062 | 5.735 |
| 60-60 | 6.606 | 6.326 | 5.888 | $5 \cdot 579$ |
| 6x-6i | 6.387 | 6.030 | 5.712 | $5 \cdot 420$ |
| $62-62$ | 6.166 | 5.831 | $5 \cdot 533$ | $5 \cdot 259$ |
| $6_{3} 6^{2} 63$ | $5 \cdot 938$ | 5.626 | $5 \cdot 347$ | 5.089 |
| 64-64 | 5.709 | $5 \cdot 417$ | 5.158 | 4.917 |
| 65-65 | $5 \cdot 471$ | $5 \cdot 201$ | 4.960 | $4 \cdot 736$ |
| 66-66 | 5.231 | 4.982 | 4.759 | 4.551 |
| 67-67 | 4.990 | 4.760 | 4.555 | 4.303 |
| 68-68 | $4 \cdot 747$ | 4.537 | $4 \cdot 34^{8}$ | 4.171 |
| 69-69 | 4.504 | 4.312 | 4.140 | 3.977 |
| 70-70 | 4.261 | 4.087 | 3.930 | $3.78{ }^{81}$ |
| 71-71 | 4.020 | 3.562 | $3 \cdot 719$ | $3 \cdot 584$ |
| $72-72$ | 3.781 | 3.639 | 3.510 | 3.387 |
| 73-73 | $3 \cdot 548$ | 3.421 | $3 \cdot 304$ | 3.193 |
| 74 -74 | 3.324 | 3.211 | 3.105 | 3.005 |
| 75-75 | 3.114 | 3.015 | 2.917 | 2.827 |
| $76-76$ | 2.920 | 2.533 | 2.750 | 2.665 |
| 77-77 | 2.741 | 2.656 | 2.583 | 2.511 |
| 78-78 | 2.550 | 2.470 | 2.4 .10 | 2.346 |
| 79-79 | $2.33{ }^{8}$ | 2.271 | 2.217 | 2.161 |
| 80-8o | 2.122 | 2.068 | 2.018 | 1.969 |
| 8ı-8ı | 1.917 | 1. 869 | 1.827 | 1.785 |
| $8_{2}-S_{2}$ | 1.719 | 1.651 | 1.642 | 1.606 |
| $83-83$ | +.538 | 1.510 | 1.472 | 1.441 |
| $84-84$ | 1.416 | 1.397 | 1.357 | 1.330 |
| $85-85$ | $1 \cdot 309$ | 1.339 | 1.256 | 1.23: |
| 86-86 | 1.218 | 1.195 | 1.17 I | 1.149 |
| $87-87$ | 1.141 | 1.124 | 1.008 | 1.078 |
| 8S-88 | 1.103 | 1.030 | 1.063 | 1.0 .44 |
| $89-89$ | 1.036 | 1.015 | 1.001 | $0.95+$ |
| 90-90 | 0.938 | 0.922 | 0.909 | 0.805 |
| $91-91$ | 0.769 | 0.756 | c. 748 | 0.737 |
| 92-92 | 0.591 | 0.583 | 0.576 | 0.569 |
| 93-93 | 0.369 | 0.365 | 0.361 | 0.357 |
| 94-94 | 0.203 | 0.201 | 0.199 | 0.197 |
| 95-95 | 0.060 | 0.060 | 0.059 | 0.058 |
| 96-96 | 0.000 | 0.000 | 0.000 | 0.000 |

## Tamle VIII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

Difference of age five years.

| Ages. | Vaine at <br> 3 per cent. | Value at <br> 4 fer cent. | Valuo at <br> sper cent. | Value at <br> 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| $1-6$ | 12.347 | 10.741 | 9.479 | 8.467 |
| $2-7$ | 14.461 | 12.581 | 11.100 | 9.911 |
| $3-8$ | 35.300 | 13.319 | 11.755 | 10.498 |
| $4-2$ | 15.809 | 13.775 | 12.163 | 10.869 |
| $5-10$ | 15.974 | 13.93 .3 | 12.315 | 11.010 |
| $6-11$ | 16.110 | 14.068 | 12.447 | 11.136 |
| $7-12$ | 16.137 | 14.111 | 12.498 | 11.192 |
| $8-13$ | 16.099 | 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 |


| Ages. | Value at ${ }^{3}$ per cent. | Value at 4 per cent. | Va'ue at 5 per cent. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 11-16 | $15.53{ }^{8}$ | 13.664 | 12.158 | 10.929 |
| 12-17 | 15.308 | 13.480 | 12.009 | 10.805 |
| 13-18 | 15.086 | 13.303 | 11.864 | 10.685 |
| 14-19 | 14.870 | 13.130 | 11.723 | 10.568 |
| 15 -20 | 14.660 | 12.961 | 11.585 | 10.453 |
| 16-21 | 14.457 | 12.799 | 11.452 | 10.342 |
| 17-22 | 14.265 | 12.646 | 11.327 | 10.239 |
| $18-23$ | 14.082 | 12.500 | 11.209 | 10.140 |
| 19-24 | 13.908 | 12.361 | 11.096 | 10.048 |
| 20-25 | ${ }^{1} 3741$ | 12.229 | 10.989 | 9.960 |
| 21-26 | 13.584 | 12.105 | 10.890 | 9.879 |
| 22-27 | 13.433 | 11.987 | 1c.796 | 9.803 |
| 23-2\% | 13.280 | 11.866 | 10.699 | 9.724 |
| 24-29 | 13.129 | 11.743 | 10.600 | 9.643 |
| 25-30 | 12.966 | 11.618 | 10.499 | 9.561 |
| 26-31 | 12.805 | 11.489 | $10.39^{6}$ | 9.476 |
| 27-32 | 12.64 x | 11.359 | IC. 289 | $9 \cdot 389$ |
| 28-33 | 12.474 | 11.225 | 10.181 | $9 \cdot 299$ |
| 29-34 | 12.304 | I 1.088 | 10.069 | 9.207 |
| $30-35$ | 12:131 | 10.948 | 9.954 | 9.112 |
| $3 \mathrm{x}-36$ | 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 |
| $34-3)$ | 11.40 .4 | 10.354 | 9.463 | 8.701 |
| 35-40 | 11.2I3 | 10.196 | 9.331 | 8.589 |
| $36-4{ }^{1}$ | 11021 | 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 | $9 \cdot 381$ | 8.643 | 8.003 |
| $4^{1}-46$ | 10.033 | 9.210 | 8.497 | 7.878 |
| 42-47 | 9.829 | 9.037. | 8.350 | $7 \cdot 751$ |
| 43-48 | 9.624 | 8.862 | 8200 | 7.621 |
| 44-49 | 9.414 | 8.683 | 8.045 | $7 \cdot 488$ |
| 45-50 | $9 \cdot 204$ | 8.503 | 7.891 | $7 \cdot 353$ |
| 46-51 | 8.997 | 8326 | 7.737 | 7.219 |
| 47-52 | 8.790 | 8.147 | 7.582 | 7.184 |
| 48-53 | 8.579 | 7.955 | 7.424 | 6.945 |
| 49-54 | 8.366 | 7.50 | 7.262 | $6.8=2$ |
| 50-55 | 8.152 | 7.593 | 7.098 | 6.658 |
| $51-56$ | $7 \cdot 9+1$ | $7 \cdot 409$ | 6.936 | 6.515 |
| 52-57 | 7.730 | 7.225 | 6.774 | 6.371 |
| $53-58$ | $7 \cdot 518$ | 7.039 | 6.609 | 6.225 |
| 54-59 | $7 \cdot 304$ | 6.850 | $6.44{ }^{2}$ | 6.076 |
| 55-60 | 7.088 | 6.659 | 6.272 | 5.924 |
| 56-61 | 6.870 | 6.465 | 6.100 | 5.770 |
| 57-62 | 6.651 | 6.270 | $5 \cdot 925$ | 5.613 |
| 58-63 | 6.427 | 6.070 | $5 \cdot 744$ | 5.450 |
| 59-64 | 6.201 | 5.867 | 5.561 | $5 \cdot 284$ |
| 60-65 | 5.970 | 5.658 | $5 \cdot 372$ | 5.112 |
| 6I-66 | 5.737 | $5 \cdot 447$ | 5.180 | 4.938 |
| $62-67$ | $5 \cdot 503$ | 5.285 | 4.986 | 4.760 |
| 63-68 | 5.265 | 5.017 | +.786 | 4.576 |
| $64-69$ | 5.025 | 4.798 | 4.585 | 4.390 |
| 65-70 | 4.783 | 4.573 | 4.378 | 4.1.99 |
| 66-71 | 4.540 | 4.349 | 4.169 | 4.005 |
| $67-72$ | 4.298 | 4.124 | 3.960 | 3.811 |
| 68-73 | 4.059 | 3.901 | $3 \cdot 752$ | 3.616 |
| 69-74 | 3.825 | 3.683 | $3 \cdot 347$ | 3.423 |
| 70-75 | 3.599 | 3.471 | $3 \cdot 347$ | 3.236 |
| 71-76 | $3 \cdot 386$ | 3.270 | 3.159 | 3.059 |
| 72-77 | 3.176 | 3.070 | 2.971 | 2.882 |
| $73-781$ | 2.963 | 2.869 | 2.780 | 2.701 |


| Ases. | Value nt 3 per cent. | Value at 4 per cenit. | Value at 5 per cent. | Valuc at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 74-79 | 2.743 | 2.659 | 2.580 | 2.511 |
| 75-80 | 2.526 | 2.448 | 2.381 | 2.323 |
| 76-81 | 2.325 | 2.258 | 2.195 | 2.147 |
| 77-32 | 2.131 | 2.077 | 2.013 | 1.975 |
| $78-83$ | $1.9+7$ | 1.899 | 1.838 | 1.810 |
| 79-8+ | 1.793 | 1.751 | 1.750 | 1.672 |
| $80-85$ | 1.643 | 1.608 | 1.573 | 1.539 |
| $81-86$ | 1.511 | 1.478 | 1.447 | 1.417 |
| $82-87$ | 1.385 | 1.356 | 1.329 | 1.303 |
| 83-88 | 1.284 | 1.259 | 1.235 | 1.212 |
| $84-89$ | 1.188 | 1.164 | 1.145 | $1.12+$ |
| 85-90 | 1.074 | 1.054 | 1.033 | 1.021 |
| 86-91 | 0.921 | 0.902 | 0.892 | 0.879 |
| $87-92$ | 0.756 | 0.738 | 0.734 | 0.725 |
| 88-93 | 0.562 | 0.554 | 0.547 | 0.541 |
| 89-94 | 0.377 | ${ }^{1} 0.373$ | 0.369 | 0.365 |
| 90-95 | 0.179 | 0.177 | 0.175 | 0.174 |
| 91-96 | 0.000 | 0.000 | 0.000 | 0000 |

Table IX.
Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

Difference of age ten years.

| Ages. | Value at 3 per cent. | Value at 4 per cent. | Value at 5 per cent. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 1 - 11 | 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 | 15.850 | 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 |
| 11-2I | 14.974 | 13.217 | 11.797 | 10.631 |
| 12-22 | 14.795 | 13.078 | 11.656 | 10.541 |
| 13-23 | 14.612 | 12.934 | 11.570 | 10.446 |
| 14-24 | 14.424 | 12.78 t | 11.450 | 10.348 |
| 15-25 | 14.230 | 12.630 | I $1.32+$ | 10.244 |
| 16-26 | 14.030 | 12.470 | 11.193 | 10.135 |
| 17-27 | . 13.832 | 12.311 | 11.063 | 10.027 |
| 18-28 | 13.642 | 12.158 | 10.939 | 9.924 |
| 19-29 | 13.461 | 12.013 | 10.820 | 9.826 |
| 20-30 | 13.286 | 11.873 | 10.707 | 9.733 |
| 21-31 | 13.121 | 11.742 | 10.600 | 9.644 |
| 23-32 | 12.961 | 11.615 | 10.498 | 9.561 |
| 23-33 | 12.798 | 11.485 | 10.393 | 9.474 |
| 24-34 | 12.632 | $11.35{ }^{2}$ | 10.285 | 9.386 |
| 25-35 | 12.463 | 11.217 | 10.175 | 9.295 |
| $26-36$ | 12.291 | 11.078 | 10.062 | 9.201 |
| 27-37 | 12.116 | 10.936 | 9.946 | 9.105 |
| 28-38 | 11.937 | 10.791 | 9.826 | 9.005 |
| 29-39 | 11.755 | 10.642 | 9.703 | 8.902 |
| 30-40 | 11.568 | 10.490 | 9.576 | 8.795 |
| $3 \mathrm{I}-41$ | 11.382 | 10.336 | $9.44^{8}$ | 8.688 |
| $32-42$ | 11.195 | 10.182 | 0.320 | 8.580 |



Table X.
Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

Difference of age fificen years.

| Ages. | Value at 3 per cent. | Value at 4 per cent. | Value at 5 jer cent. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| $1-16$ | 11.864 | 10.406 | 9.2. 43 | 8.301 |
| 2-17 | 13.659 | 11.981 | 10.642 | 9.5,5 |
| 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 |
| 6-21 | 14.904 | 13.121 | 11.685 | 10.510 |
| 7-22 | 14.950 | 13.178 | 11.748 | 10.576 |
| 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 | II.153 | 10.110 |
| 15-30 | 13.734 | 12.246 | 11.021 | $10.001{ }^{\prime}$ |
| 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 | 12.744 | 11.445 | 10.363 | $9 \cdot+51$ |
| $21-36$ | 12.567 | 11.302 | 10.246 | 9.354 |
| 22-37 | 12.394 | 11.163 | 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 | 9.6 .47 | 8.855 |
| 27-42 | 11.486 | 10.423 | 9.522 | 8.751 |
| 28-43 | 11.302 | 10.272 | $9 \cdot 396$ | 8.645 |
| 29-44 | 11.114 | 10.117 | 9.267 | 8.5.36 |
| 30-45 | 10,923 | 9.959 | 9. 135 | 8.424 |
| 31-46 | 10.728 | 9.797 | S.098 | 8.309 |
| 32-47 | $10.53{ }^{\circ}$ | 9.631 | 8.858 | 8.189 |
| $33-48$ | 10.327 | $9 \cdot 461$ | 8.714 | 8.066 |
| 34-49 | 10.120 | 9.286 | S. 565 | $7.93{ }^{8}$ |
| 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 | 8.119 | 7.553 |
| $38-53$ | 9.296 | 8.586 | 7.966 | $7 \cdot 421$ |
| 39-54 | 9.085 | 8.406 | 7.810 | 7.286 |
| 40-55 | 8.870 | 8.221 | 7.651 | 7.146 |
| 41-56 | 8.655 | 8.035 | $7 \cdot 489$ | 7.005 |
| 42-57 | 8.439 | 7.848 | $7 \cdot 326$ | 6.562 |
| 43-58 | 8.222 | 7.660 | 7.162 | 6.718 |
| 44-59 | 8.003 | $7 \cdot 469$ | 6.994 | 6.570 |
| 45-60 | $7 \cdot 781$ | 7.274 | 6.822 | 6.418 |
| 46-61 | 7.556 | 7.076 | 6.648 | 6.263 |
| 47-62 | $7 \cdot 328$ | 6.875 | 6.469 | 6.104 |
| $48-63$ | 7.093 | 6.667 | 6.283 | $5 \cdot 937$ |
| 49-64 | 6.854 | 6.454 | 6.093 | 5.767 |
| 50-65 | 6.611 | 6.236 | 5.897 | 5.590 |
| 5x-66 | 6.369 | 6.019 | 3.701 | $5 \cdot 412$ |
| 52-67 | 6.127 | 5.801 | 5.50 .4 | $5 \cdot 233$ |
| 53-68 | 5.88 | 5.580 | 5.303 | 5.050 |
| 54-69 | 5.638 | $5 \cdot 357$ | 5.100 | 4.86 .9 |
| 55-\% | $5 \cdot 391$ | 5.132 | 4.893 | 4.674 |


| Agns. | Value at ${ }^{3}$ per cent. | Value at <br> 4 per cent. | Value at 3 per cent. | Value at 6 pier cent. |
| :---: | :---: | :---: | :---: | :---: |
| $24-44$ | 11.354 | 10.317 | $9 \cdot 435$ | 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 | $8.33^{8}$ |
| 28-48 | 10.572 | 9.667 | 8.590 | 8.217 |
| $29-49$ | 10.366 | 9.495 | 8.744 | 8.092 |
| $30-50$ | 10.160 | $9 \cdot 321$ | 8.506 | $7 \cdot 966$ |
| $3 \mathrm{I}-51$ | 9.957 | 9.151 | S. 451 | 7.841 |
| $32-52$ | 9.7.56 | 8.980 | 8.306 | $7 \cdot 716$ |
| $33-53$ | 9.550 | 8.806 | S. 157 | 7.588 |
| $34-54$ | 9.343 | 8.629 | 8.005 | $7 \cdot 457$ |
| $35-55$ | 9.131 | S. 4.48 | $7 \cdot 849$ | 7-322 |
| 3 $5-56$ | 8.916 | 8.261 | 7.690 | $7 \cdot 183$ |
| 37-57 | 8.699 | 8.076 | $7 \cdot 527$ | 7.041 |
| $3 \mathrm{~S}-55$ | 8.477 | 7.85 | 7.360 | $6.89+$ |
| 39-59 | 8.253 | 7.689 | 7.189 | 6.744 |
| $40-60$ | 8.025 | $7 \cdot 490$ | 7.015 | 6.590 |
| 41 -61 | 7.796 | 7.290 | 6.838 | 6.434 |
| 42-62 | $7 \cdot 567$ | 7.088 | 6.660 | 6.276 |
| 43-63 | 7.332 | 6.881 | 6.477 | 6.112 |
| $44-6$ | 7.095 | 6.671 | 6.289 | $5 \cdot 04+$ |
| $45-65$ | 6.850 | 6.453 | 6.094 | $5 \cdot 769$ |
| 46-66 | 6.602 | 6.230 | 5.894 | $5 \cdot 588$ |
| 47 - 6 | 6.351 | 6.004 | 5.690 | $5 \cdot 403$ |
| $43-68$ | 6.096 | 5.774 | $5 \cdot 4^{81}$ | 5.213 |
| 49-69 | 5.839 | 5.541 | 5.268 | 5.019 |
| 50-70 | $5 \cdot 582$ | $5 \cdot 306$ | 5.054 | ${ }_{4}{ }_{4} 8_{2} 2$ |
| $51-71$ | $5 \cdot 328$ | 5.074 | $4.8+1$ | 4.626 |
| $52-72$ | 5.077 | 4.845 | 4.630 | 4.430 |
| 53-73 | 4.829 | 4.614 | $4 \cdot 417$ | $4.23+$ |
| $54-74$ | 4.585 | 4.359 | $4 \cdot 208$ | 4.040 |
| 55-75 | 4.350 | 4.171 | 4.006 | 3.852 |
| $56-76$ | 4.129 | 3.966 | 3.815 | 3.674 |
| 57-77 | 3.958 | 3.76 I | 3.623 | $3 \cdot 494$ |
| $58-78$ | 3.682 | 3.549 | $3 \cdot 424$ | $3 \cdot 308$ |
| 59-79 | $3.44{ }^{\circ}$ | $3 \cdot 322$ | 3.210 | $3 \cdot 105$ |
| 60-So | $3 \cdot 167$ | 3.092 | 2.992 | 2.899 |
| $61-\mathrm{SI}_{1}$ | 2.964 | 2.870 | 2.782 | 2.699 |
| $62-82$ | 2.739 | 2.656 | 2.578 | 2.504 |
| $63-S_{3}$ | 2.530 | 2.457 | 2.387 | 2.32 I |
| $64-84$ | 2.371 | 2.305 | 2.242 | 2.182 |
| $65-85$ | 2.223 | 2.163 | 2.107 | 2.053 |
| $66-86$ | 2.089 | 2.035 | I. 984 | 1.936 |
| $67-87$ $68-88$ | 1.963 | 1.915 | 1. 870 | 1. 826 |
| 68-88 | £.860 | 1.817 | 1.577 | 1.737 |
| $69-89$ | x .722 | 1.685 | 1.650 | 1.616 |
| 70-90 | 1.545 | 1.515 | I. 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 | $4 \cdot 469$ | 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 Obfervations.

Difference of age twenty-five years.

| Ages. | Value at ${ }^{3}$ per cent. | Value at 4 per cent. | Value at <br> 5 per cemt. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 1-26 | 11.037 | 9.770 | 8.742 | 7.897 |
| 2-27 | 12.722 | I 1. 26.4 | 10.080 | 9.104 |
| 3-28 | 13.307 | 11.790 | 10.555 | 9.537 |
| 4-29 | 13.661 | 12.116 | 10.855 | 9.813 |
| 5-30 | 13.762 | 12.220 | 10.959 | 9.913 |
| 6-31 | 13.859 | 12.322 | 11.062 | 10.015 |
| 7-32 | 13.871 | 12.350 | 11.100 | 10.060 |
| 8-33 | 13.820 | 12.323 | 11.090 | 10.061 |
| 9-34 | 13.698 | 12.234 | 11.024 | 10.012 |
| 10-35 | 13.525 | 12.098 | 10.916 | 9.925 |
| $11-36$ | 13.328 | I 1.941 | 10.788 | 9.820 |
| $12-37$ | 13.120 | 11.773 | 10.651 | 9.707 |
| $13-35$ | 12.906 | 11.600 | 10.509 | 9.588 |
| 14-39 | 12.686 | 11.420 | 10.360 | 9.464 |
| $15-40$ | 12.459 | I 1.234 | 10.205 | 9.333 |
| 16-41 | 12.229 | 1 x .044 | 10.046 | 9.198 |
| $17-42$ | 12.002 | 10.856 | 9.889 | 9.065 |
| 18-43 | 11.785 | 10.677 | 9.739 | 8.938 |
| 19-44 | 11.574 | 10.502 | 9.592 | 8.814 |
| 20-45 | 11.367 | 10.330 | $9 \cdot 448$ | 8.692 |
| $21-46$ | 11.167 | 10.165 | 9.310 | 8.574 |
| 22-47 | 10.969 | 10.001 | 9.173 | 8.458 |
| $23-48$ | 10.768 | 9.833 | 9.031 | $8.33^{8}$ |
| 24-49 | 10.562 | 9.661 | 8.586 | 8.214 |
| 25-50 | 10.356 | $9 \cdot 488$ | 8.739 | 8.089 |
| 26-51 | 10.154 | 9.318 | 8.595 | 7.966 |
| $27-52$ | 9.952 | 9.148 | 8.451 | 7.842 |
| 28-53 | 9.748 | 8.975 | 8.304 | $7 \cdot 716$ |
| 29-54 | 9.540 | 8.799 | 8.153 | $7 \cdot 586$ |
| $30-55$ | $9 \cdot 329$ | 8.619 | 7.999 | $7 \cdot 453$ |
| $31-56$ | 9.115 | 8.436 | 7.841 | $7 \cdot 316$ |
| $32-57$ | 8.897 | 8.250 | 7.680 | 7.175 |
| 33-58 | 8.677 | 8.060 | 7.515 | 7.031 |
| 34-59 | 8.454 | 7.866 | $7 \cdot 346$ | 6.884 |
| 35-60 | 8.227 | 7.669 | 7.174 | 6.732 |
| $36-61$ | 7.997 | $7 \cdot 469$ | 6.998 | 6.577 |
| $37-62$ | $7 \cdot 765$ | $7 \cdot 265$ | 6.819 | 6.418 |
| $38-63$ | $7 \cdot 525$ | 7.053 | 6.631 | 6.252 |
| 39-6.4 | 7.281 | 6.838 | 6.440 | 6.081 |
| 40-65 | 7.030 | 6.614 | 6.240 | 5.901 |
| 41-66 | 6.776 | 6.388 | 6.037 | 5.718 |
| 42-67 | 6.522 | 6.159 | 5.831 | 5.532 |
| 43-68 | 6.266 | $5 \cdot 929$ | 5.622 | $5 \cdot 3+3$ |
| 44-69 | 6.008 | 5.696 | 5.411 | $5 \cdot 150$ |
| 45-70 | $5 \cdot 749$ | $5 \cdot 460$ | $5 \cdot 195$ | 4.953 |
| 46-71 | $5 \cdot 488$ | 5.222 | 4.978 | $4 \cdot 753$ |
| $47-72$ | $5 \cdot 228$ | 4.983 | 4.758 | 4.551 |
| $48-73$ | 4.970 | $4 \cdot 746$ | 4.539 | $4 \cdot 34^{8}$ |
| 49-74 | 4.716 | 4.511 | $4 \cdot 322$ | $4 \cdot 146$ |
| 50-75 | 4.472 | 4.285 | 4.112 | 3.951 |
| $51-76$ | $4 \cdot 245$ | 4.074 | 3.916 | $3 \cdot 768$ |
| $52-77$ | 4.019 | 3:864. | 3.720 | 3.586 |
| 53-78 | 3.787 | 3.648 | $3 \cdot 518$ | 3.396 |
| 54-79 | 3.540 | 3.416 | 3.299 | 3.189 |
| 55-80 | 3.291 | 3.180 | 3.076 | 2.978 |
| 56-8i | 3.051 | 2.953 | 2.861 | 2.774 |

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LIFE-ANNUITIES.

| Anes. | Value at 3 fer cent. | Value at 4 jur cent. | Value at 5 per cent. | Valuc at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| $57-82$ | 2.820 | 2.733 | 2.651 | 2.574 |
| $58-83$ | 2.608 | 2.530 | 2.457 | 2.388 |
| $59-8+$ | 2.446 | 2.376 | 2.310 | 2.247 |
| 60-85 | 2.297 | 2.234 | 2.174 | 2.118 |
| 61-86 | 2.162 | 1.105 | 2.051 | 2.000 |
| 62-87 | 2.036 | 1.985 | 1.937 | 1.891 |
| $63-88$ | 1.932 | I. 886 | 1.843 | 1.802 |
| $64-89$ | 1.790 | 1.751 | 1.714 | 1.678 |
| 65-90 | 1.606 | 1.575 | 1. 544 | 1.515 |
| 66-9: | 1.354 | 1.330 | 1.307 | 1.285 |
| 67-92 | 1.083 | 1.067 | 1.050 | 1.035 |
| $68-9.3$ | 0.770 | 0.760 | 0.750 | 0.740 |
| 6, 9 -94 | 0.497 | 0.491 | 0.485 | 0.480 |
| 70-95 | 0.227 | 0.224 | 0.222 | $0.220^{\circ}$ |
| 71-96 | 0.000 | 8.000 | 0.000 | 0.000 |

## Table XIII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

Difference of age thirty years.

| Agcs. | Value of 3 per cent. | Value at 4 yer cent. | Value at <br> 5 fer cont. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| $1-31$ | 10.605 | 9.438 | 8.483 | 7.691 |
| $2-32$ | 12.203 | 10.865 | $9 \cdot 767$ | $8.85 ;$ |
| 3-33 | 12.743 | II. 355 | 10.213 | 9.263 |
| 4-34 | 13.061 | 11.651 | 10.488 | 9.518 |
| 5-35 | 13.136 | -11.732 | 10.572 | 9.602 |
| $6-36$ | 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.\%OI |
| 9-39 | 12.981 | 11.665 | 10.565 | 9.637 |
| 10-40 | 12.791 | 11.513 | 10.442 | 9.537 |
| 11-41 | 12.580 | $11.3+{ }^{2}$ | 10.302 | $9 .+20$ |
| 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 | $9.85 \%$ | 9.012 |
| $15-45$ | 11.087 | 10.607 | 9.690 | 8.905 |
| 16-46 | I 1. 448 | 10.408 | 9522 | 8.-62 |
| $17-47$ | 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 | 8.667 |
| $22-52$ | 10.111 | 9.284 | 8.568 | $7.9+4$ |
| 23-53 | 9.905 | 9.111 | 8.421 | 7.818 |
| $2.4-54$ | 9.696 | 8.934 | 8.270 | 7.688 |
| $25-55$ | 9.484 | 8.754 | S.116 | 7.555 |
| $26-56$ | 9.269 | 8.570 | 7.958 | $7 \cdot+19$ |
| $27-57$ | 9.051 | 8.383 | 7.797 | 7.279 |
| $28-58$ $20-50$ | 8.830 | 8.193 | 7.632 | 7.135 |
| 29-59 | 8. K 05 | 7.999 | 7.464 | 6.958 |
| $30-60$ | 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 |
| 132-64 | $7 \cdot 429$ | 6.971 | 6.559 | 6.189 |


| Ages. | Value at 3 3 per cent. | Valiee at <br> 4 per cent. | Value st <br> 5 per cent. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 35-65 | 7.177 | 6.747 | 6.360 | 6.010 |
| 36-66 | 6.922 | 6.520 | 6.156 | 5.827 |
| $37-67$ | 6.663 | 6.238 | 5.9+8 | 5.639 |
| $3^{8}-68$ | 6.401 | 6.052 | 5.735 | $5 \cdot 44^{6}$ |
| 39-69 | 6.137 | 5.813 | 5.518 | 5-249 |
| 40-70 | 5.871 | $5 \cdot 571$ | 5.298 | $5 \cdot 0.7$ |
| 41-71 | 5.605 | $5 \cdot 339$ | 5.076 | 4.844 |
| 42-72 | $5 \cdot 341$ | 5.087 | $4.85+$ | 4.640 |
| 43-73 | 5.081 | 4.848 | 4.634 | 4.436 |
| 44-74 | 4.826 | 4.613 | 4.417 | 4.235 |
| 45-75 | 4.580 | $4 \cdot 386$ | 4.206 | 4.040 |
| 46-76 | $4 \cdot 3+8$ | 4.171 | 4.006 | 3.853 |
| 47-77 | 4.115 | 3.954 | 3.805 | 3.666 |
| 48-78 | 3.875 | 3.731 | 3.596 | $3 \cdot 469$ |
| 49-79 | 3.619 | 3.490 | 3.369 | 3.256 |
| $50-80$ | $3 \cdot 362$ | 3.247 | 3.140 | 3.039 |
| $5 \mathrm{I}-8 \mathrm{~S}$ | 3.117 | 3.015 | 2.920 | 2.829 |
| 52-82 | ${ }^{2.883}$ | 2.792 | 2.707 | 2.627 |
| 53-83 | 2.665 | 2.585 | 2.510 | 2.438 |
| $54-84$ | 2.501 | 2.428 | 2.360 | 2.295 |
| 55-85 | 2.349 | 2.28 t | 2.222 | 2.164 |
| 56-86 | 2.211 | 2.153 | 2.097 | 2.044 |
| 57-87 | 2.082 | 2.030 | 1.950 | 1.932 |
| 58-88 | 1.975 | 1. 928. | I. 883 | 1.841 |
| 59-89 | 1.828 | ${ }^{1.788}$ | 1.750 | 1.713 |
| 60-90 | 1.641 | 1. 608 | 1.577 | 1.547 |
| 65 -91 | 1.383 | 1.358 | 1.334 | 1.311 |
| 62-92 | 1.105 | I. 088 | 1.071 | 1.055 |
| 63-93 | 0.785 | 0.774 | 0.764 | 0.754 |
| $64-94$ | 0.506 | 0.500 | 0.494 | 0.489 |
| $65-93$ $66-96$ | 0.230 0.000 | 0.228 0.000 | 0.226 0.000 | 0.224 0.000 |

## Tarle XIV.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

## Difference of age thirty-five ycars.

| Ages. | Value at <br> 3 per cent. | Value at <br> 4 per cent. | Value at <br> 3 per cent. | Value at <br> 6 per cent |
| :---: | :---: | :---: | :---: | :---: |
| $1-36$ | 10.104 | 9.047 | 8.173 | 7.442 |
| $2-37$ | 11.600 | 10.392 | 9.390 | 8.551 |
| $3-38$ | 12.057 | 10.838 | 9.800 | 8.928 |
| $4-39$ | 12.362 | 11.097 | 10.043 | 9.157 |
| $5-40$ | 12.405 | 11.150 | 10.102 | 9.219 |
| $6-41$ | 12.446 | 11.203 | 10.163 | 9.283 |
| $7-42$ | 12.412 | 11.190 | 10.163 | 9.296 |
| $8-43$ | 12.325 | 11.130 | 10.124 | 9.270 |
| $9-44$ | 12.174 | 11.012 | 10.031 | 9.197 |
| $10-45$ | 11.976 | 10.851 | 9.900 | 9.088 |
| $11-46$ | 11.756 | 10.697 | 9.774 | 8.962 |
| $12-47$ | 11.525 | 10.481 | 9.592 | 8.827 |
| $13-48$ | 11.288 | 10.284 | 9.425 | 8.686 |
| $14-49$ | 11.045 | 10.085 | 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 |



Difference of age forty years.

| Ages. | Value at <br> 3 pur cent. | Value at <br> 4 per cent. | Value at <br> s per cent. | Value at <br> 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| $1-41$ | 9.523 | 8.585 | 7.800 | 7.135 |
| $2-42$ | 10.907 | 9.839 | 8942 | 8.182 |
| $3-43$ | 11.343 | 10.242 | 9.315 | 8.528 |
| $4-44$ | 15.578 | 10.468 | 9.531 | 8.733 |

## LIFE-ANNUITIES.

Table XVI.
Table XVII.
Shewing the value of an annuity on the joint continuance Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations. of two lives, according to the Northampton Table of Obfervations.

Difference of age fortyyfrve, years.

| Ages. | Value at 3 per cent. | Value at 4 per cent. | Value at 5 per cent. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| $1-46$ | 8.888 | 8.071 | $7 \cdot 379$ | 6.787 |
| 2-47 | 10.147 | 9.22 x | 8.435 | $7 \cdot 760$ |
| $3 \quad 48$ | 10.515. | 9.566 | 8.759 | 8.063 |
| 4 -49 | 10.697 | 9.744 | 8.932 | 8.230 |
| 5-50 | 10.679 | 9.742 | 8.941 | 8.2.48 |
| 6-51 | 10.664 | 9.745 | 8.956 | 8271 |
| 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 |
| 10-55 | 10.055 | 9.256 | 8.560 | 7.951 |
| 11-56 | 9.814 | 9.052 | 8.386 | 7.801 |
| 12-57 | 9.566 | 8.839 | 8.203 | 7.643 |
| $13-58$ | 9.312 | 8.622 | 8.015 | 7.479 |
| $14-59$ | 9.053 | 8.399 | 7.821 | $7 \cdot 310$ |
| 15-60 | 8.790 | 8.170 | 7.622 | 7.135 |
| 16-61 | 8.521 | 7.935 | $7 \cdot 416$ | 6.953 |
| $17-62$ | 8.252 | 7.700 | 7.208 | 6770 |
| 18-63 | 7.981 | $7 \cdot 462$ | 6.998 | 6.583 |
| $19-64$ | $7 \cdot 714$ | $7 \cdot 226$ | 6.789 | 6.396 |
| 20-65 | $7 \cdot 444$ | 6.986 | 6.576 | 6.205 |
| 21-66 | $7 \cdot 177$ | 6.749 | 6.364 | 6.015 |
| $22-67$ | 6.911 | 6.512 | 6.151 | 5.824 |
| 23-68 | 6.643 | 6.271 | $5 \cdot 934$ | 5.628 |
| 24-69 | 6.372 | 6.027 | 5.713 | $5 \cdot 427$ |
| 25-70 | 6.099 | 5.780 | $5 \cdot 4^{89}$ | 5.223 |
| 26-71 | 5.826 | $5 \cdot 53{ }^{2}$ | 5.263 | $5 \cdot 016$ |
| 27-72 | $5 \cdot 554$ | $5 \cdot 283$ | 5.035 | 4.807 |
| 28-73 | 5.28+ | 5.036 | 4.808 | $4 \cdot 597$ |
| 29-74 | 5.019 | 4.792 | 4.583 | 4.390 |
| $30-75$ | 4.764 | 4.557 | 4.365 | $4 \cdot 188$ |
| $31-76$ | 4.523 | $4 \cdot 335$ | 4.160 | 3.997 |
| $32-77$ | 4.282 | 4.111 | 3.952 | 3.804 |
| 33-78 | 4035 | 3.881 | 3.737 | 3.602 |
| 34-79 | 3.771 | 3.633 | 3.505 | $3 \cdot 364$ |
| 35-80 | $3 \cdot 506$ | $3 \cdot 383$ | 3.268 | 3.160 |
| $36-81$ | 3.251 | 3.142 | 3.040 | 2.944 |
| $37-82$ | 3.005 | 2.909 | 2.818 | 2.733 |
| $38-83$ | 2.779 | 2.694 | 2.613 | 2.537 |
| 39-84 | 2.607 | 2.530 | 2.457 | 2.388 |
| 40-85 | 2.448 | 2.379 | 2.313 | 2.251 |
| 4I-86 | 2.304 | 2.241 | 2.182 | 2.126 |
| $42-87$ | 2.168 | 2.113 | 2.060 | 2.009 |
| 43-88 | 2.055 | 2.006 | 1. 959 | $1.91+$ |
| 44-89 | 1.901 | r.859 | 1.818 | x .779 |
| 45-90 | 1.702 | 1.668 | 1.635 | 1.604 |
| 46-91 | 1.431 | 1.405 | 1. $3^{80}$ | 1.356 |
| 47-92 | 1.140 | 1.122 | 1.105 | 1.089 |
| 48-93 | 0.808 | 0.797 | 0.786 | 0.776 |
| 49-94 | 0.519 | 0.512 | 0.507 | 0.501 |
| 50-95 | 0.235 | 0.233 | 0.231 | 0.229 |
| 51-96 | 0.000 | 0.000 | 0.000 | 0.000 |

Difference of age fffy years.

| Ages. | Value at 3 per cent. | Value at 4 per cent. | Value at 5 per cent. | Value at <br> 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 1-51 | 8.171 | 7.479 | 6.885 | 6.370 |
| 2-52 | 9.300 | 8.520 | 7.848 | 7.264 |
| 3-53 | 9.611 | 8.815 | 8.128 | 7.529 |
| 4-54 | 9.751 | 8.957 | 8.269 | 7.668 |
| 5-55 | 9.707 | 8.931 | 8.256 | 7.663 |
| 6-56 | 9.659 | 8.902 | 8.241 | 7.662 |
| $7-57$ | 9.549 | 8.817 | 8.176 | 7.612 |
| 8-58 | 9.395 | 8.691 | 8.073 | 7.527 |
| 9-59 | 9.191 | 8.519 | 7.927 | 7.403 |
| 10-60 | 8.952 | 8.314 | 7.750 | 7.250 |
| ri-6r | 8.696 | 8.092 | 7.557 | 7.081 |
| 12-62 | 8.433 | 7.863 | 7.357 | 6.905 |
| ${ }^{3} 3-63$ | 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 |
| ${ }_{17}{ }^{2}-63$ | 7.012 | 6.604 | 6.236 | 5.903 |
| 18-68 | 6.721 | $6.3+3$ | 6.001 | 5.689 |
| 19-69 | 6.434 | $6.08+$ | 5.766 | $5 \cdot 476$ |
| 20-70 | 6.149 | 5.826 | $5 \cdot 532$ | $5 \cdot 262$ |
| 21-71 | 5.870 | 5.572 | $5 \cdot 300$ | 5.050 |
| 22-72 | $5 \cdot 595$ | $5 \cdot 32 \mathrm{I}$ | 5.070 | 4.840 |
| 23-7.3 | $5 \cdot 323$ | 5.072 | 4.841 | 4.628 |
| $24-74$ | 5.056 | 4.827 | 4.615 | 4.419 |
| $25-75$ | 4.799 | 4.589 | $4 \cdot 396$ | 4.216 |
| 26-76 | 4.556 | 4.365 | 4.188 | 4.024 |
| 27-77 | 4.313 | 4140 | 3.979 | 3.829 |
| $28-78$ | 4.064 | 3.908 | 3.762 | 3.626 |
| 29-79 | 3.798 | 3.659 | 3.528 | 3.406 |
| 30-80 | $3.53{ }^{\circ}$ | 3.406 | 3.290 | 3.181 |
| $3 \mathrm{I}-8 \mathrm{I}$ | 3.274 | 3.164 | 3.060 | 2.963 |
| 32-82 | 3.027 | 2.929 | 2.838 | 2.751 |
| 33-83 | 2.800 | 2.713 | 2.632 | 2.555 |
| 34-84 | 2.627 | 2.549 | 2.476 | 2.406 |
| 35-85 | 2.468 | 2.398 | 2.331 | 2.268 |
| 36-86 | 2.323 | 2.260 | 2.200 | 2.143 |
| $37-87$ | 2.187 | 2.130 | 2.077 | 2.026 |
| 38-88 | 2.072 | 2.022 | 1.974 | 1.929 |
| 39-89 | 1.915 | 1.872 | 1.832 | 1.792 |
| 40-90 | 1.713 | 1.679 | 1.646 | 1.614 |
| $41-91$ | r. 439 | 1.413 | 1.388 | 1.364 |
| 42-92 | 1.346 | 1.128 | 1.111 | 1.094 |
| 43-93 | 0.811 | 0.800 | 0.790 | 0.779 |
| 44-94 | 0.521 | 0.515 | 0.509 | 0.503 |
| 45-95 | 0.236 | 0.234 | 0.232 | 0.230 |
| 46-96 | 0.000 | 0.000 | 0.000 | 0.000 |

LIFE-ANNUITIES.

Thimee XVIIT.
Table XIX.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

Difference of age fifty-five years.

| Ages. | Value at a per cent. | Value at 4 per cent. | Value at 5 per cent. | Value at 6 per cent. |
| :---: | :---: | :---: | :---: | :---: |
| 1-56 | $7 \cdot 413$ | 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 | $7 \cdot 514$ | 7.017 |
| 5-60 | 8.629 | 8.011 | $7 \cdot 466$ | 6.982 |
| 6-61 | $8.54{ }^{2}$ | 7.944 | $7 \cdot 415$ | 6.945 |
| 7-62 | 8.400 | 7.828 | 7.319 | 6.865 |
| S. 63 | 8.214 | 7.669 | 7.184 | 6.750 |
| 9-64 | 7.984 | $7 \cdot 470$ | 7.010 | 6.598 |
| $10-65$ | $7 \cdot 718$ | 7.236 | 6.803 | 6.414 |
| 11 -66 | $7 \cdot 437$ | 6.987 | 6.581 | 6.215 |
| 1267 | 7.159 | 6.730 | 6.351 | 6.009 |
| 13-63 | 6.857 | 6.468 | 6.116 | 5.796 |
| $14-69$ | 6.562 | - 6.202 | 5.876 | $5 \cdot 578$ |
| 15 -70 | 6.264 | 5.933 | 5.63 I | $5 \cdot 355$ |
| 16-71 | $5 \cdot 964$ | 5.660 | $5 \cdot 382$ | 5.127 |
| $17-72$ | 5.667 | $5 \cdot 389$ | 5.133 | 4.899 |
| 18-73 | 5.378 | 5.123 | 4.889 | 4.673 |
| 19-74 | 5.098 | 4.865 | 4.651 | 4.453 |
| 20-75 | 4.831 | 4.619 | $4 \cdot 424$ | 4.242 |
| $21-76$ | 4.583 | $4 \cdot 391$ | 4.212 | 4.046 |
| 22-77. | 4.339 | 4.164 | +.001 | 3.850 |
| $23-78$ | 4.087 | 3.930 | 3.783 | 3.646 |
| $24-79$ | 3.820 | 3.679 | $3 \cdot 548$ | $3 \cdot 424$ |
| 25-80 | 3.550 | 3.425 | $3 \cdot 308$ | 3.198 |
| 26-81 | 3.292 | $3 \cdot 18 \mathrm{I}$ | 3.077 | 2.979 |
| 27-82 | 3.043 | 2.945 | 2.853 | 2.765 |
| $28-83$ | 2.815 | 2.728 | 2.646 | 2.568 |
| $29-54$ | 2.641 | 2.563 | 2.489 | $2 \cdot+18$ |
| $30-85$ | 2.481 | 2.411 | 2.344 | 2.280 |
| $3 \mathrm{I}-86$ | 2.336 | 2.272 | 2.212 | 2.154 |
| $32-87$ | 2.198 | 2.142 | 2.088 | 2.036 |
| 33-88 | 2.083 | 2.033 | 1.985 | 1.939 |
| $34-89$ | 1.925 | 1.883 | 1.841 | 5.802 |
| $35-90$ | 1.723 | 1.688 | 1.654 | 1.622 |
| $36-91$ | 1.446 | 1.425 | 1.395 | 1.371 |
| 37-92 | 1.152 | 1.134 | 1.116 | 1.099 |
| 38-93 | 0.815 | 0.804 | 0.793 | 0.783 |
| 39-94 | 0.523 | 0.517 | 0.511 | 0.505 |
| 40-95 | 0.237 | 0.235 | 0.233 | 0.231 |
| 4I-96 | 0.000 | 0.000 | 0.000 | 0.000 |

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obfervations.

Difference of age fixty years.

| Ages. | Value at 3 per cent. | Value at 4 per cent. | Value at 5 per ccut. | Value at 6 per ceas. |
| :---: | :---: | :---: | :---: | :---: |
| $1-61$ | 6.571 | 6.1 .23 | $5 \cdot 725$ | 5.372 |
| $2-62$ | 7.391 | 6.894 | 6.452 | 6.059 |
| $3-63$ | 7.545 | 7.048 | 6.605 | 6.209 |
| 4-64 | $7 \cdot 562$ | 7.076 | 6.641 | 6.251 |
| $5-65$ | $7 \cdot 4.29$ | 6.963 | 6.546 | 6.171 |
| 6-66 | 7.290 | 6.846 | 6.447 | 6.087 |
| $7-67$ | 7.104 | 6.684 | 6.306 | 5.963 |
| 8-58 | 6.884 | 6.490 | 6.134 | 5.811 |
| 9-69 | 6.628 | 6.262 | 5.929 | 5.626 |
| 10-70 | 6.347 | 6.008 | 5.700 | $5 \cdot 418$ |
| 11-71 | 6.056 | 5.744 | 5.460 | 5.199 |
| $12-72$ | $5 \cdot 763$ | $5 \cdot 478$ | $5 \cdot 216$ | 4.976 |
| $13-73$ | 5.473 | 5.212 | $4 \cdot 972$ | $4 \cdot 751$ |
| 14-74 | 5.183 | 4.950 | 4.731 | $4 \cdot 528$ |
| 15-75 | 4.911 | 4.695 | 4.495 | $4 \cdot 310$ |
| 16-76 | 4.649 | $4 \cdot 452$ | 4.270 | 4.101 |
| $17-77$ | $4 \cdot 388$ | 4.210 | 4.045 | 3.892 |
| $18-78$ | 4.123 | $3 \cdot 964$ | 3.815 | 3.677 |
| 19-79 | 3.846 | 3.704 | 3.571 | 3.447 |
| 20-80 | $3 \cdot 569$ | $3 \cdot 443$ | $3 \cdot 325$ | 3.214 |
| $2 \mathrm{I}-\mathrm{SI}$ | 3.307 | 3.195 | 3.091 | 2.992 |
| 22-82 | 3.057 | 2.958 | 2.865 | 2.777 |
| $23-83$ | 2.828 | 2.740 | 2.657 | 2.579 |
| 24-84 | 2.653 | 2.574 | 2.499 | 2.429 ' |
| 25-85 | 2.492 | 2.421 | 2.354 | 2.290 |
| 26-86 | 2.346 | 2.282 | 2.221 | 2.163 |
| $27-87$ | 2.208 | 2.151 | 2.096 | 2.044 |
| 28-88 | 2.091. | 2.041 | 1.992 | 1.946 |
| 29-89 | 1.933 | 1.889 | $1.8+8$ | 1.808 |
| 30-90 | 1.729 | 1.694 | 1.660 | 1.62 S |
| $31-91$ | 1.451 | I. 425 | 1.400 | 1.376 |
| $32-92$ | 1.155 | 1.137 | 1.119 | I. 102 |
| 33-93. | 0.817 | 0.806 | 0.795 | 0.785 |
| 34-94 | 0.524 | 0.518 | 0.512 | 0.506 |
| 35-95 | 0.238 | 0.235 | 0.233 | 0.231 |
| $36-96$ | 0.000 | 0.000 | 0.000 | 0.000 |

## Thble XX.

Sherwing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of: Obfervations.

Diffrence of age $\int_{\text {ixtely }}$-five years.

| Ages. | Value at <br> ${ }^{3}$ per cent. | Value at <br> ${ }^{4}$ yer cent. | Value at <br> 5 per cent | Value at <br> 6 ger cent. |
| :---: | :---: | :---: | :---: | :---: |
| 1-66 | 5.633 | 5.295 | 4.996 | 4728 |
| 2-67 | 6.266 | 5.896 | 5-569 | $5 \cdot 276$ |
| 3-68 | 6.330 | 5.965 | $5.6+1$ | 5.352 |
| 4-69 | 6.277 | 5.924 | 5.611 | $5 \cdot 332$ |
| 5-70 | 6.102 | 5.768 | 5.472 | 5:209 |
| 6-71 | 5.925 | 5.610 | 5.331. | 5.084 |
| 7-72 | 5.714 | 5.418 | 5.157 | 4.929 |


| Ases. | Vilue at ${ }_{3}$ per cent. | Value at 4 per cent. | Vitue at ${ }^{5}$ pier cent. | Va lie ar 6 pur cont. |
| :---: | :---: | :---: | :---: | :---: |
| S-73 | 5.480 | 5.204 | 4.963 | 4.752 |
| 9-74 | 5.225 | $49^{69}$ | 4.747 | 4.556 |
| 10-75 | 4.962 | 4.723 | $4 \cdot 522$ | 4.350 |
| 11-76 | $4 \cdot 707$ | 4487 | +301 | 4.148 |
| 12-7\% | $4.4+9$ | 4.368 | 4.195 | $3.9+3$ |
| $13-78$ | 4.185 | 4022 | $3 \cdot 871$ | $3 \cdot 729$ |
| $1+\cdots 9$ | 3.004 | 3.759 | $3 \cdot 624$ | $3 \cdot 497$ |
| 1;-80 | $3 \cdot 621$ | $3+92$ | 3.372 | $3 \cdot 259$ |
| $10-81$ | 3.35 | 3235 | $3 \cdot 1=8$ | 3.028 |
| $17-82$ | 3. $0^{\circ} \mathrm{C}$ | 2987 | 2.893 | 2.804 |
| 18-S3 | $2.8 \div 9$ | 2.760 | 2.677 | 2.598 |
| $10-54$ | 2.608 | 2.589 | 2.513 | 2.442 |
| 20-55 | 2.503 | 2.31 | $2 \cdot 3^{64} 4$ | 2.299 |
| 21-S6 | 2.354 | 2200 | 2.229 | 2.171 |
| $22-87$ | 2.216 | 2.158 | 2.104 | 2.051 |
| 23-88 | 2.c.99 | 20.48 | 1.999 | 1.953 |
| $2+-8_{9}$ | 1.939 | 1.895 | 1.854 | $1.81+$ |
| 25-90 | 1.734 | 1.699 | 1.665 | 1.633 |
| $26-91$ | 1.253 | 1.429 | 1.404 | 1.379 |
| 27-92 | 1.158 | 1.170 | 1.122 | 1.105 |
| 2S-93 | 0.819 | 0808 | 0.797 | 0.786 |
| 29-94 | 0.525 | 0.519 | 0.513 | 0.507 |
| 30-95 | 0.238 | 0.236 | 0.234 | 0.231 |
| $31-96$ | 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 Obfervations.

Difference of age /eventy years.

| Ages. | Value at <br> a per cent. | Value at 4 per cent. | Value at 5 per cent. | Value at 6 per ceut. |
| :---: | :---: | :---: | :---: | :---: |
| $1-71$ | $4.6 \mathrm{r}^{\prime} \mathrm{I}$ | 4.3 So | 4.169 | 3.576 |
| $2-72$ | 5.061 | 4.814 | 4.588 | $4 \cdot 380$ |
| 3-73 | 5.051 | +811 | 4.591 | $4 \cdot 3^{89}$ |
| 4-74 | 4953 | 4.726 | 4.516 | $4 \cdot 323$ |
| 5-75 | 4768 | 4557 | $4 \cdot 362$ | 4.181 |
| 6-76 | 4599 | 4.403 | 4.221 | 4053 |
| 7-77 | $4+102$ | 4.222 | $4 \mathrm{C5} 5$ | 3.899 |
| 8-78 | 4.150 | 4.016 | 3.864 | $3 \cdot 722$ |
| $9-79$ | 3921 | 3.775 | 3.638 | 3.510 |
| 10-80 | 3.647 | 3.517 | $3 \cdot 395$ | 3.281 |
| 11-SI | $3 \cdot 380$ | 3.264 | 3.156 | 3054 |
| $12-82$ | 3.122 | 3020 | 2.924 | 2.833 |
| $13-83$ | 2.884 | 2.794 | 2.769 | 2.628 |
| $14-84$ | 2.703 | 2.622 | 2.545 | 2.472 |
| $15-85$ | 2.535 | 2.462 | 2.393 | 2.327 |
| 16-86 | 2.380 | 2315 | 2.253 | 2.194 |
| $17-87$ | 2.235 | 2.177 | 2.121 | 2.069 |
| 18-88 | 2.112 | 2.061 | 2.012 | 1.965 |
| 19-89 | 1.948 | 1.904 | 1.862 | $1 . \mathrm{S}_{22}$ |
| 20--90 | 1.739 | 1.704 | 1.670 | 1.638 |
| $21-91$ | 1.459 | 1.432 | 1.407 | 1.382 |
| 22-92 | 1.160 | 1.142 | $1.124^{\prime}$ | 1.107 |
| 23-03 | 0.820 | 0.809 | 0.798 | 0.788 |
| 24-34 | 0.525 | 0.520 | 0.514 | 0.508 |
| 25-95 | 0.238 | -236 | 0.234 | 0.232 |
| $20-06$ | 0.000 | - cco | 0.000 | 0.000 |

Lite-Annuities, payable balf-yearly. Thefe are more valuable than life-aunuitics payable yearly, on the two following accounts. Firft, the annuitant in this cafe reccives one-half of every payment half a year fooner; and, ficondly, he has the chance of receiving one half-year's payment more than if he had been paid jearly. Mr. Simpfon, in his Select Exercifes, p. 283, obferves, that the value of thefe two advantages put together (let the rate of interef and the number of lives on which the annuity depends be what they will) will always amount to $\frac{1}{7}$ of a ycar's purchafe; and that if the payments are to be made quartily, thefe advantages will be always worth $\frac{3}{7}$ of a year's purchafe. But Dr. Price, in an effay in the Philofophical Tranfactions, vol. lxvi. part i. P. 109. has flated the differcnces of value between life-annuities, as they are made payable yearly, half-yearly, or quartelly, with more precifion; and from his inveltigations it appears, that a fifth of a year's purchafe is generally an addition more than fufficient to the yearly value of an annuity, in order to obtain its value, payable half-yearly; and thrie-fenths of a year's purchafe, in order to obtain its value, payable quarterly.

Dr. Price has given the following hort and eafy theorems for finding in all cafes thefe differences of value.

Let $r$ be (not $1 /$. with its intereft, but mercly) the intereft of $1 /$. for a year, $n$ the conplement of a given life; $y, b, q, m$, the values refpectively of an annuity certain for $n$ years, payable yearly, half.yearly, quarterly, or momently (fee the article Ansuities); P the perpetuity; Y the prefent value of an annuity on a life, whofe complement is $n$, payable yearly; H the value of the fame annuity payable half-yearly; $Q$ the value of the fame annuity parable quarterly; and $M$ its value payable momently.

$$
\text { Then, } \begin{aligned}
\mathrm{Y} & =\mathrm{P}-\frac{1+r}{r n} \times y \\
\mathrm{H} & =\mathrm{P}-\frac{\mathrm{I}+\frac{r}{2}}{n r} \times \% \\
\mathrm{Q} & =\mathrm{P}-\frac{\mathrm{I}}{\mathrm{I}} \mathrm{r} \frac{r}{4} \times \eta \\
\mathrm{M} & =\mathrm{P}-\frac{n}{n r}
\end{aligned}
$$

Example. - Let the life fuppofed be of the age of 36 . The complement of fuch a life is (by what has been already faid) 50 , according to M. De Moivre's hypothetis; therefore, $n$ will be 50 . Let the rate of intereit be 4 per cent., or $r=0.04, \mathrm{P}=25, \mathrm{Y}=21.482$ (fee Table III. As:suities), $b=21.549$ (by the theorems given under Asxuities), $q=21.5 S_{-}$, by the fame theorems, and $m=$ 21.616. Therefore,

$$
\begin{aligned}
& \mathrm{Y}=25-\frac{1.04}{50 \times 0.04} \times 21.482=13.829 \\
& \mathrm{H}=25-\frac{1.02}{50 \times 0.04} \times 21.949=14.010 \\
& \mathrm{Q}=25-\frac{1.01}{50 \times 0.04} \times 21.582=14.101 \\
& \mathrm{M}=25-\frac{21 . \frac{616}{50 \times .04}}{5}=14.191
\end{aligned}
$$

Thefe theorems, though founded on the hypothefis of an equal decrement of life, give the differences between the

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rearly, half-yearly, and quarterly values, almof exactly the fame, whether thofe vaiues be deduced from real obfervations or from this hypothefis.

For determining the differences between the valucs 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 Reverfionary Payments, (note L, appendix,) has given the following theorems. Let $h, q, m$, denote the fame quantities as above for $t$ years. Let $n$ be the complement of the younger, and $t$ the complement of the older life. Let $r$ alfo be the intereft of $1 /$. for a year, and V the perpetuity: then will the value of the annuity be
$\mathrm{V}-\frac{\mathrm{V}+\frac{1}{2}}{n} \times \overline{\overline{n-t-\frac{1}{2}-2} \overline{\mathrm{~V}} \times \frac{b}{t}+2 \mathrm{~V}}$, or $\mathrm{V}-$
$\frac{\mathrm{V}+\frac{x}{4}}{n} \times \overline{\overline{n-t-\frac{1}{4}-2 \mathrm{~V}} \times \frac{q}{t}+2 \mathrm{~V}}$, or $\mathrm{V}-\frac{\mathrm{V}}{n}$
$\times \overline{n-t-2 V} \times \frac{m}{t}+\varepsilon \mathrm{V}$, according as it is payable half-yearly, quarterly, or momently.

Thus, if the ages of the two lives be 20 and 36 years, the value of the annuity at $4 \%$ 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 thefe theorems to be either $11.427,11.565$, or 1 I .629. If the ages of both lives be 36 , thefe values refpectively will be $10.394,10.600,10.703$, and 10.808 . It may be obferved, 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 fhorter intervals than a year; and therefore, that the addition, in this cafe, to be made to the value of an annuity on the longett of two lives will be lefs than the addition to be made either to the joint or fingle lives.

Lire-Annuities fecured by land, differ from other life-annuities only in the fingle circumftance, that the annuitant, whenever he dies, is entitled to a payment for the time which has lapfed between the payment lait due, and the moment of his death; whereas other annuities fuppofe nothing due for this time. In order to obtain the value of fuch an annuity, $\frac{y}{2 n}$ mult be added to the expreffion in the firf theorem, if it is payable yearly ; $\frac{b}{4 n}$ mutt be added to the expreffion in the fecond theorem, if it is payable half-yearly; and $\frac{q}{8 n}$ muft be added to the expreffion in the third theorem, if the annuity is payable quarterly. For fince $\frac{1}{n}$ is the probability that a life, whofe complement is $n$, fails in any year of its duration, and it is an equal chance whether more or lefs than balf the yearly, half-yearly, or quarterly payment is due at the death of the aniuitant, it frllows 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 $\frac{x}{n} \times \frac{1}{2} \times \frac{q}{4}$, according as the fame is payable either yearly, half-yearly, or quarterly. See Dr. Price's Effay; before quoted.'

The value, therefore, in the laft example, of an annuity payable yearly on a life aged 36 , being 13.829 ; its value, . Vol. XX.
if fecured by land, or to be enjoyed to the lalt 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 x4.0ro + $\frac{21.549}{290}=14.117$; if fecured by land, and payable quarterly, its value will be $14.101+\frac{21.582}{400}=14.155$.

Lies-Annuities, in the contemplation of Lazu, are in fome cafes fold and purchafed in an improvident manner, and with great privacy; and therefore, in order to throw fome check on tranfactions of this kind, the ftatute 17 Geo . III. c. 26 . has directed, that upon the fale of any life-annuity of more than the value of 101 . per annum, (unlefs on a fufficient pledge of lands in fee-fimple, or flock in the public funds; ) the true confideration, which fhall be in money only, fhall be fet forth and defcribed in the fecurity itfelf; and a memorial of the date of the fecurity, of the names of the parties, ceflui que trufts, ceflui que vies, and witneffes, and of the confideration money, fhall, within 21 days after its execution. be inrolled in the court of chancery, elfe the fecurity fhall be null and void; and, in cafe of collufive practices refpecting the confideration, the court, in which any action is brought, or judgment obtained upon fuch collufive fecurity, may order the fame to be annulled; and the judgment, if any, to be vacated; and alfo all contracts for the purchafe of annuities from infants fhall remain utterly void, and be incapable of confirmation after fuch infants arrive to the age of maturity. By 29 Geo. III. c. 4I. § 27 , and other acts that refpect life-annuities, oath of an annuitant's life may be made before a juftice of the peace, who fhall give a certificate thereof, without fee or ftamp-duty, in order to entitle fuch perfon to receive his annuity.

## life-Boat. See Boat.

## Lipe, Complement of. See Complement.

Life Efates, in Lazu, are fuch eftates of freehold as are only for life. (See Estate.) Of thefe fome are conventional, and others merely $\operatorname{leg} a l$. Eftates for life of the firft kind, exprefsly 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 perfon, or for more lives than one; in any of which cafes he is flyled tenant for life; only when he holds the eftate by the life of another, he is ufually called tenant pur autre vie. Thefe eftates for life are like inheritances, of a feodal nature; and for fome time were the higheft effate 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 folemaities, the fame inveltiture or livery of feifin, as fees thernfelves 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. Eltates for life may be created, not only by exprefs words, but alfo by a general grant, without defining or limiting any fpecific eltate. As if we grant to A.B. the manor of Dale, this makes him tenant for life. (Co, Litt. 4I.) Such eflates for life will, generally fpeaking, endure as long as the life for which they are granted ; but there are fome eftates for life, which may de. termine upon future contingencies, before the life for which they are created expires; as an eftate granted to a woman during her widow-hood, or to a man till he be promoted to a benefice. Thefe, while they fubfiit, are reckoned eftates for life; becaufe the time for which they will endure being uncertain, they may by poffibility laft for life, if the contingencies upon which they determine do not fooner happen. 5.A

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The insidents to an eftate for life are principally the folJewing ; and they are applicable not only to that fpecies of tenants for life which are exprefsly created by, deed, but alfo to thofe which are created by act or operation of law. i. Every tenant for life, unlefs reftrained by covenant or agreement, may of common right take upon the land demifed to him reafonable eftovers, or botes. (Co. Litt. 43.) But he is not permitted to cut down timber or do other wafte upon the premifes. (Id. 53.) 2. Tenant for life, or his reprefentatives, flall nor be prejudiced by any fudden determination of his eftate, becaufe fuch a determination is contingent and uneertain. (Ibid. 55.) The advantages alfo of emblements are particularly extended to the parochial clergy by Itat. 28 Hen. VIII. c. If. 3. 'Another incident to ellates for life relates to the under-tenants, or leffees. For they have the fame, nay greater indulgences than their leffors, the original tenants for life.

The fecond eftate for life is of the legal kind, as contradiftinguifhed from concentional; viz. that of tenant " in tail after poffibility of iffue extinct." This happens where ne is tenant in fpecial tail, and a perfon, from whofe body the iffue was to fpring, dies without iffue; or, having left ifue, that iffue becomes extinet; in either of thefe cafes, the furviving tenant in feceial tail becomes tenant in tail after poffibility of iffue extinct. This eftate mult be created by the act of God: that is, by the death of that perfon out of whofe body the iffue was to fpring; for no limitation, conveyance, or other human act can make it. A polibility of iflue is always fuppofed to exit in law, unlefs extinguifled by the death of the parties; even though the donees be each of them 100 years old. (Litt. § $3 \dot{q}^{\circ}$. Co. Litt. 28.) This eftate is of an amphibious nature, parraking partly of an eftate-tail, and partly of an eftate 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 punimable for wafte, \&c. (Co. Litt. 27.) ; or, he is tenant in tail, with many of the reltrictions of a tenant for life; as, to forfeit his eftate if he alienes it in fee-fimple (Ibid. 28.); whereas fuch alienation by tenant in tail, though voidable by the iffue, is no forfeiture of the eftate to the reverfioner; who is not concerned in interelt, till all poffibility of ifue be extinct. But, in general, the law looks uoon this eflate as equivalent to an eftate for life only; and, as fuch, will permit this tenant to exchange his eltate with a tenant for life: which exchange can only be made of eftates that are equal in their nature. (Blackit. Com. b.ii.) See Lease and Terant.

Life, Expectation of. See Expectation.
Lives, Infuramie or Afurance on. See Assurances on Lives.

Life-sverlafing, åname by which the ilicbryfum, or onaphaliun of botanical writers, is fometimes called. See Cüweed.

Life Guards. See Guards.
Life Preferver, againft drowning. Many different artio cles under this denomination have been made, particulariy within the fe few years, by Collins, Spencer, Daniels, and others. But we believe they have all been copied, in a greater or lefs degree, from an apparatus conftructed by John Bentley, efq. about the year 1797. It is however remarkable, that although he exhibited it in public feveral times, lome very important parts of it feem to have efcaped their notice, or at lealt their application of them to their own purpofes. The following is his account of it.

The human body in moft inftances is of the fame fpecific gravity as water ; therefore, any fubftance which is lighter than water, being attached to the body, mult caufe it to foat. The fituation beft 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, fhoilders, and arms above water without any exertion, the article ufed mult difplace a bulk of water equal in weight to thofe parts. The next thing to be attended to, is to enable a perfon who cannot fwim to make progrefs through the water. The hands and fect are too narrow to accomplifh this without a knowledge of the art of fwimming, therefore the fingers and feet mult be artificially zwebbed. Thus the whole apparatus, which he calls a nautilus, confifts of thrce diftinct parts, and are to be thus conitructed.

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 fhould be made in three lengths, the ends quite flat, to fit each other exaclly, fo that, when put together, they form a ring or belt. This is in cafe 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 thefe parts is fewed up in baize, with three ftrong tapes near the end of each piece, by which all of them are fecurely tied together. A flexible pipe, of the thicknefs of a quill, is inferted 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 difcharged. The buoyant, thus prepared, mulk be fecurely tied with flrong tapes, croffed round and over the fhoulders, 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 pofition unlefs force is applied to alter it, and which it will again recover when the force ceafes to act. The fecond part, which is for the hands, is a pair of ciled filk gloves, which, after being made in the ufual 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 writ.

The third part, being for the feet, is made thus: take a piece of half-inch wainfoot or mahogany, II inches long, and so inches wide. Cut it longitudinally into three pieces, two of them $3^{\frac{3}{4}}$ inches broad, and the other $2 \frac{1}{2}$ inches. Fatten them well together with two pair of brafs 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 muft be ferewed, to prevent the fidd-picces from falling down, when walking to or from the water. Two wonden fops are fo.fixed upon this piece as to prevent the fides, when down, coming to a right angle with che middre-piece, that the riling and falling nay be duly performed with the action of the feet. To the upper fide of the middle-pieces. a common leather fhoc, (to fit the perfon) mult be falfened on with two. fcrews through the fole, and near eacle end of: this middle-piece two fmall holes are made with a centre bit, through which good tapes are paffed, to tie round the inltep and over the foot. A pair of theief mult of courfe be provided, and a perfon thus equipped; being perfectly bhoyant in water, and web-foeted and web-fingered, will be able to outfwim any other perfon, and may exitt in the water as long as cold and hunger will permit.

By increafing the dinzenfion of the buoyants a proportionate quantity of provifions, or any other article, may be carried. The inventor has wrote a letter, and otherwife amufed himfelf on the fea; with this apparatus, and believes he could crofs from Daver 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,

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- ortable, and put on in one minute. Perfons provided with it, and being fhipwrecked near the coaft, would feldom be lolt.

Liple- Rent, in Law, a rent which a man receives for a term of life, or for fuftentation of it. Skene.

LIFFAMAT'ULA, in Geograpby, an ifland in the Eaft Indian fea, 25 miles long and fix broad. S. lat. $2^{\circ}$. E. long. $126^{\circ} 1^{\prime \prime}$ 。

LIFFEY, a river of Ireland, which rifes in the northweltern mountains of the county of Wicklow, and winding through the county of Kildare, it pafies through the city of Dublin, and flows into Dublin bay: It derives its chiefimportance from the greatnefs of the city fituated 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 upen to accommodate the judges and gentlemen of the bar: one mile W. from Strabane, and io1 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 diftrict of Rennes; 9 miles N.E. of Rennes. The place contains 2096, and the canton 8372 inhabitants, on a territory of 205 kiliometres, in 7 communes.

LIFTING-Pieces, in a clock, are thofe parts which lift up and unlock the detents in the clock part.

LIFTS, in a Slip, ropes belonging to the yard-arms of all yards. Their ule is to ftop the yard-arms, i. e. to make the end of the yards lang higher or lower, as occafion ferves. The top-fail lifts ferve as theets for the top-gallant yards, as well as for lifts to the top-fail yards. The haling of thefe ropes is called topping tbe lifts: thus they fay, top a flarboard, or top a port, i. e. hale upon the ftarboard or larboard lift.

The lifts for the fprit-fail-yard are called fanding lifts.
LIGAMENT, in its general fenfe, denotes any thing that ties or binds one part to another.

In which fenfe the ancients applied the word to membranes, Skin, flefh, veins, and arteries; as being common ligaments.

Ligament, in its more proper fignification, denotes a white, tourh, folid, inflexible part, ferving to inclofe, and keep together the junctures of the body.

It has no confpicuous cavities, nor has it any fenfe, left it fhould fuffer on the moving of the bones. It is found very different, according to the different parts where it is ufed. It is harder than a membrane, yet fofter than a cartilage : its principal ufe is to gird and frengthen the junctures, to prevent the diflocation of the bones, and even to fadten them together, when they have no articulation. It alfo ferves as a covering to the tendons to feparate them from the mufcles, and to hold up the fufpended entrails, left their weight fhould throw them down. Such are the ligaments of the liver, the bladder, and matrix.

Ligaments are of different fubftances; fome hard, others fuft, membranous, nervous, and cartilaginous; as alfo of different figures and fituations: fome arife from bones, others from cartilages, and others from membranes.

LIGAMENTUM, in Anatomy, a ligament or part connecting orgars together, and limiting their refpective motions. In its moft proper fenfe it denotes the fibrous 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 vanous organs in the chelt and abdomen.

Liganientuas Aunulare, is a name given to different fibrous organs abotit, the wrift and foot, which confine the tendons of the extenfor and flexor mufcles in their fituation. For an account of the annular ligament of the carpus, fee Extre-
urries, The annular ligament of the fore-arm, which confines the extenfor tendons, is defcribed in the articles Extensor communis digitorum, and Fiscia. The defcrip. tion of the annular ligaments of the cord will be found under Fascia.

Lighamentum Arteriofum, is the fibrous cord conneEting together the trunks of the pulmonary artery and the aorta, confilting of the remains of the canalis arteriofus of the fcetus. See Embryo.

Ligamentum Ciliare, in the eye, is the white union of the felerotica and choroid coats. Sce Eye.

Liciamenti Golf. See Intistine.
Lifamentuar Denticulutum, in the fpinal marrow. See Brain.

Ligamentum Nuche. See Head.
Ligamentum Fallopii, or l'oupart's Ligament. Sce Os. liquus externus abdominis.

Ligamentuar Latum, or Sufpenforium Hepatis, lig. coronarium hepatis, et ligamenta lateralia hepatis. Sce Lov゙zR.

Ligamentuss Latum Uteri, et lig. rotundum uteri. See the defcription of the uterus in the article Generation.

Ligamevilum Teres of the hip.joint. See Extremities.
LIGAN, in haw, denotes a wreck contifting of goods funk in the fea, but tied to a cork or buoy, in order to be found again. Over thefe, as well as flotfam and jetfam, the high-admiral hath jurifdiction, as they are in and upon the fea. 5 Rep. $x 06$.

LIGANI, in Geography, a town of Turkifh Armenia; 30 miles E. of Ifpira.

LIGARDES, a town of France, in the department of the Gers ; 7 miles N.E. of Condom.

LIGATURE, among Myfic Divines, fignifies a total fufpenfion of the fuperior faculties, or intellectual powers of the foul. They pretend, that when the foul is arrived at a perfect contemplation, fhe remains deprived of all her operations, and ceafes to act in order to be more ready and prepared to receive the impulfe and communications of divine grace. This' paffive ftate of thefe contemplative people they call their ligature.

Ligature is alfo ufed for a ftate of impotency, in refpect to venery, pretended to be caufed by fome charm, or witchcraft.

Kæmpfer tells of an uncommon kind of ligature, or knotting, in ufe among the people of Maffacar, Java, Malaya, Siam, \&xc. By this charm, or fpell, a man binds up a woman, and a woman a man, fo as to put it out of their power to have to do with any other perfon; the man being thereby rendered impotent to any other woman, and all other meas impotent with refpect to the woman.

Some of their philofophers pretend that this ligature may be effected by the fhutting of a lock, the drawing of a knot, or the fticking of a knife in the wall, at the point of time wherein the prieft is joining a couple together; and that a ligature, thus effected, may be diffolved, by the fpoufe's urining through a ring. This piece of fuperitition is faid to obtain alfo among the Chrittians of the Eaft.

The fame author tells us, that during the ceremony of marriage in Ruffia, he obferved 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 perfons, and done with defign to clude and counter-work any other perfon, that might poffibly be inducing the ligature.

The fecret of inducing a ligature is delivered by the fame author, as he was taught it on the fpot by one of their adepts; which, being a curiolity, we thall not fcruple to add in his

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own words ; not daring to make it Speak Englifh. "Pueilla amafium, vel conjux maritum ligaturus, abfterget a concubitus actu, priapum, indufio-ut feminis quantum poteft excipiet. Hoc probe convolutum fub limine domus fure in terram fepeliat. Ibi quamdiu fepultum reliquerit, tamdiu ejus hafta in nullius preterquam fui (fafcinantis) fervitium obediet, et prius ab hoe nexu non liberabitur quam ex claultro liminis liberctur ipfum linteum : vice verfa, vir lecti fociam ligaturus, menftruatum ab co linteum comburit ; ex cinexibus cum propria urina fubactis, efformato figuram priapi, vel, fi cineres icunculx fingendx non fufficiant, cofdem fubigito cum parte terre, quam recens perminxerit. Formatam iconem caute exficcato, ficcamque affervato loco ficco, ne humorem contrahat. Quamdiu fic fervaveris, omnes artus, dum ad fcopam focix collimaverint, momento contabefcent: ipfe vero dominus. Abrunum hunc fuum prius humectato, quamdiu fic manebit, taídiu fufpenfo nexu priapus ipfi parebit, quin \& alios quotquot focmina properantes admiferit."
M. Marfhal mentions another ridiculous form of ligature, which he received from a Bramin at Hindooltan: "If," fays he, "the little worm in the wood lukerara kara be cut into two, and the one part flirs, 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 perfon." Phil. Tranf. No. 268.

Ligature, Lizaturz, in the Italian Mufic, fignifies a tying or binding together of notes.

Hence fyncopes are often called ligatures, becaufe they are made by the ligature of many notes. There is another fort of ligatures for breves, when there are many of thefe on different lines, or in different fpaces, to be fung to one fyllable.

To under民and this, it mult be obferved, that only breves are capable of this . fpecies of ligature, becaufe their figure admits of their being placed fo clofe together, as to feem one character only, though placed on different degres, unlefs there be occafion to place a femicircle either above or below them, to fhew that they are tied. This kind of ligature regards common time ouly. Breves again muft be confidered as fimple, as having a tail, and as being of different colours. Firit, if they be fimple $日$ and afcend, they contain their natural quantity, i.e. each two femi-breves, as in example A. But if they defcend, 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 firft and laft contain each four femi-breves, and thofe in the middle but two, as in C.


Sccandly, if they have tails $t$, and the tail be turned inpwards the breves contain only one meafure, as well afcending as defcending. "See Ex D. But if it be marked downvards, the breve then contains its natural quantity. See Ex. E. This fpecies of ligature was invented only becaufe the minim, being round, could not be ufed in this manner. And the femicircle was not at that time in ufe.

It may be here remarked, that ordinarily the firlt breve ;atione of every ligature has a tail, and that ufually placed on .the left fide. Laltly, if they be of different colours, i. e. if the firt be white, or open in the midule, and the fecond black,
the firft contains a femi-breve, and the feeond a pointed mis. nim. Example F.


Thefe are the principal ligatures, befides which there are many others, for which fee Character. See alfo Lega. tura.

Ligatures, among Printers, are types confifting of two letters or characters joined together, as $A, \mathcal{E}^{\circ}, f, f, f$. The old editions of Greek authors are extremely full of ligatures; the ligatures of Stephens are, by much, the molt 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 fucceeded, the fineft ancient editions would, in time, have grown ufclefs; and the reading of old manufcripts would have been rendered almoft impracticable to the learned themfelves.

Ligature, in Surgery, is the only means to be depended upon for putting a permanent fop to all bleedings from arteries of confiderable fize. In ordinary cafes, the mouth of the bleeding veffel being expofed, is taken hold of with the tenaculum, or forceps, and tied. In fome inflances, the artery being only punctured, and not cut through, nor brought into view, the furgeon has firft to cut down to the wounded portion of the veffel, and then pafs a double ligature under it by means of an aneurifm-needle, or an cyeprobe. The latter inftrument, having fulfilled its office, is to be 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 cafes of aneurifm, the ligature is introduced under the artery in a very fimilar way.

Whoever is acquainted with the hillory of furgery, mutt be fully fenfible of the immenfe advantage which the moderns have over the ancients in the familiar employment of ligatures for the floppage of hemorrhage. But, although many years have elapfed fince this important improvement in practice began, it was not till very lately that feveral moft interefting circumflances, relative to the ufe 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, whofe Treatife on Hemorrhage demands the earnelt attention of every enlightened practitioner. Before this work appeared, fcarcely any furgeon had a jult conception of the manner in which ligatures effected the fuppreffion of hemorrhage; nor were the principles on which they ought to be made and applied properly underflood. One of the firtt and moft material effects of a ligature applied to an artery, is to produce a diviition of the middle and internal coats of the veffel. This fact was communicated to Dr: Jones by Mr. Thomfon 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 preffure of the ligature, are in the fitteft fate for inflaming and effufing coagulable lymph, and, in fhort, for undergoing that procefs, by which the permanent clofure of the vefiel is to be accompanicd. Hence, ligatures fhould not be thick, irregular, and clumfy; but fmall-
ifh, firm, and round; and they fhould be applied with tightnefs, as it is of confequence that they divide the inner coats of the artery, and the fear of their cutting the veffel quite through is deftitute of foundation. Thefe, however, and numerous other particulars, having been explained in a previous part of this Cyclopadia, we mult avoid unneceffary repetition, by referring the reader to the article Hemor. riage.

Ligeance, Ligeantia, in Lazu, is the true and faithful obedience of a fubject to his fovereign; and is alfo applied to the dominion or territory of the liege lord : thus children are faid to be born in or out of the ligeance of the king, \&c. Stat. 25 Edw. IlI. See Alfegiance and Liege.

LIGHT, that fenfation occafioned in the mind by the view of luminous bodies; or that property in bodies, whereby they are fitted to excite thofe fenfations in us.

Ligist is alfo ufed to denote a certain action of the luminous body, on a medium between it and the eye; by means of which, fome fuppofe the one to act on the other. This they call fecondary, or derivative light: to dittinguifh it from that of luminous bodies, which is called primary, or innate.

Ariftotic explains the nature of light, by fuppofing fome bodies to be tranfparent, as air, water, ice, \&c. ; but fince, in the night-time, we do not fee any thing through thofe bodies, he lays, they are only tranfparent potentially; whereas, in the day, they become really and actually tranfparent: and fince it is light alone that can reduce that power into act, he defines light to be the act of a tranfparent body, confidered as fuch. He adds, that light is not fire, nor is it any thing bodily radiating from the luminous body, and tranfmitted through the tranfparent one; but the mere prefence of fire, or fome other luminous body, at the tranfparent one.

This is Ariftotle's doctrine of light, which his followers miftaking, 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 thofe fenfations which they occafion in us: aduing, that things lucid, or coloured, could not produce any fenfation in us, unlefs they had fomething fimilar in themfelves, fince nibill dat quod in fe non babet.

But the fophifm is apparent ; for we find, that a needle, in pricking the flefh, gives us pain, which nobody ever imagined to exift in the needle. But that it is not necefflary there fhould be any fimilitude between the quality of the object, and the fenfation it produces, appears ittll more evident from a glafs prifm, which is found to exhibit blue, yellow, red, and other colours extremely vivid; and yet no body will fay there is any thing in the glafs prifms like to thofe fenfations.

The Cartefians have refined confiderably on this notion ; and own that light, as it exits in the luminous body, is nothing but a power or faculty of exciting in us a very clear and vivid fenfation; adding, that what is required to the perception of light, is, that we be fo formed, as to be capable of fuch fenfations; that in the hidden pores of tranfparent bodies, there be a certain fubtile matter, which, by reafon of its exceeding fmallnefs, may penetrate even glafs, and yet be ftrong enough to fhake certain capillaments at the bottom of the eye; and lafly, that this matter be impelled by the luminous body, fo as to move the organ of fight.

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 tranfparent bodies; and fecondary 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 Malcbranche explains the nature of light, from a fuppofed analogy bet:ween it and found.

Thus he fuppofes all the parts of a luminous body are in a rapid motion, which, by very quick pulfes, is coultantly comprefling the fubtile matter between the luminous body and the eye, and excites vibrations of preffion. As thefe 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 hypothefis, how ingenious foever, is now defervedly difcarded, fince the great difcoveries made by fir Ifaac Newton on the nature of light. The prinary light they talk of, we now know, conifis.s wholly in a certain motion of the particles of the lucid body, whereby they do not propel any fictitious matter, fuppofed to be lodged in the hidden pores of tranfparent bodies; but throw off from the luminous body certain very fmall particles, which are emittedevery way with great force; and the fecondary or derivative light confilts not in a conatus, but a real motion of thefe particles, receding every way from the luminous body, in right lines, and that with an incredible velocity.

The moft dittinguilhing property of light is that by which it renders objects vifible by fome power, which transfers their exterior figure to the retina of the eye.
We obtain light from three diftinct fources, which will divide our fubject into three heads; namely, folar light, light of combuftion, and phofphorefcent 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 fo little fhould hare been added to the labours of that acute philofopher. It is itrange, that after the evidence of his experiments there could have been two opinions refpecting the nature of light. Huygens fuppofed the phenomena of light to be caufed by anundulatory motion, excited in a fuppofed fubtile and elaftic medium, pervading all fpace : that thefe waves or pulfes are propagated, firft at the luminous body, fuch as the fun or a candle, and tranfmitted in a!l directions. The impreflion made by thefe waves upon the eye is the caufe of vifion. This doetrine has fince been taken up by Euler, who, with much zeal and mathematical labour, fupported it to his death. Newton, however, had given an hypothefis, fupported by clear and friking experiments; and at the fame time had pointed out infurmountable objections to the undulatory hypothefis, fo that the labour and great talents of Euler were exhaufted to little purpofe.

Sir Ifaac Newton argued, with great propriety, that the undulatory motion was inconliftent "ith the phenomena of light. The paffage of light would not be confined ta ftraight lines, but might, like found, be conveyed through crooked tubes, which is contrary to the fact.

Befides, if light conlifted in a mere preffion, or pulfe, it would be propagated to all diftances in the fame inftant of time; the contrary of which appears from the phenomena of the eclipfes of Jupiter's fateliites, which we thall prefently mention.

We fhall therefore, with Newton, confider light as a ma. terial agent, moving with an inmenfe velocity from the point where it is liberated. If its motion be in free fpace, it moves in Itraight lines in the form of radii, and would continue for ever in the fame direction, if not changed in its courfe by the attraction of other matter. Light, therefore, like electricity and caloric, appears in a high degree to be
repellent of itfelf, although it poffeftes attraction for ponderable matter. Indeed, it is to this great repulfion of the particles of light that we are to altribute its progreffive velocity, which, therefore, is as the force by which its particles are feparated.

The fmall extent of the limits of vifion upon the furface of our globe does not enable us to appreciate the velocity with which light moves.

Roemer, a Danifh philofopher, at length found the means of determining this point by the difference of time in the celipfes of Jupiter's fatellites, when the earth was on the fame, or on the contrary fide of the fun, with that planet. The immerlions of thefe fatellites, as the earth approaches towards Jupiter, are found to anticipate fomewhat on the true time, and to commence fooner; and again, as the carth retires from Jupiter, their emerfions, which alone in that cafe can be obferved, happen later and later, or lofe time ; deviating thus, very confiderably on either fide, from the truc time marked by the tables.

This was firlt obferved by M. Roemer, and fince by other altronomers; the reafon of which is not owing to any eccentricity; but apparently follows from this circumttance, that the light of the fun, reffected frgm the fatellites, has farther to travel, before it reaches the eye, in the one cafe than in the other, by a fpace equal to the diameter of the earth's smnual orbit.

The obiervation, whence this conclufion was deduced, were made at the obfervatory belonging to the R yal Academy of Sciences at Paris, from 1670 to 1675 : the principal fact was, that the firlt fatellite fometimes emerged exaetly at the times calculated by the tables, and fometimes not, infomuch that the greatelt variation was about fourteen minutes. The particular obfervation that was the moft triking, was the emerfion of this fatellite obferved at Paris, Nov. $9,157 \sigma$, ten minutes later than it had been obferved in the month of Augult, when the earth was much nearer to Jupiter. Hence Caffini and Roemer both concluded, that this circumftance depended on the diftance of Jupiter with refpect to the earth; and that in order to account for it, they mult fuppofe that the light was about fourteen minutes in croffing the earth's orbit.

But the conclufion was afterwards abandoned and attacked by Monfieur Calfini. M. Roemer's opinion found an able advocate in Dr. Halley; who removed Caffini's difficulty, and left M. Roemer's conctufion in its full force. In a momoir prefented to the academy in $1 z_{0}^{\circ}$, Monfieur Maraldi endeavoured to give a new force to Caffini's arguments; but Montieur Roemer's doctrine found a new defender in Mr. Pound. See Phil. Tranf. N' 136. Phil. Trauf. Abr. by Lowth, vol. i. p. 4o9, 422 . S'Grav. Phyf. Elem. N 2636, feq.

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 oppofite point of its orbit, thefe eclipfes happen about eight minutes later than the tables predict them. Hence it is undeniably certain, that the motion of light is not inflantaneous, funce it takes about $16 \frac{1}{2}$ (or $16^{\prime \prime} 10^{\circ}$ ) mivutes, of time to go through a fpace equal to the diameter of the carth's orbit, which is at dealt 190 millions of miles in length; and confequently the particles of light fly about 19 gig or 200000 miles every fecond of time, which is uear a million of miles fwifter than the motion of a camnon-ball. And as hight is a $6 \frac{1}{\frac{1}{2}}$ minutes in travelling acrofs the earth's orbit, it mult be $8^{\frac{1}{4}}$ (or $8^{\prime} 5^{\prime \prime}$ ) miinutes in comeng from the fun to us; therefore, if the fun were annihilated, we fhould fee lim for $8 \frac{1}{3}$ minutes after;
and if he were again created, he would be $\mathrm{s}_{\frac{1}{4}}\left(\right.$ or $8^{\prime} 5^{\prime \prime}$ ) mi* nutes old before we could fee him. In order to explain this progreflive motion of light, let A and B, Plate IX. Optics, fig. 1, be the earth in two different parts of its orbit, whofe difance 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 inftantaneous, the fatellite I would appear to enter into Jupiter's fhadow F F, at the fame moment of time to a fpectator in A , as to another in B. But it is now well known that the immerfion of the fatellite into the fhadow is feen $8 \frac{\pi}{2}$ (or $8^{\prime} 5^{\prime \prime}$ ) 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 conftantly meeting the light of Jupiter's fatellites fooner, which eccafions an apparent acceleration of their ecliples; and as it moves through the other half H of its orbit, from C to D , it is receding from their light, which occafions an apparent retardation of their eclipfes, becaufe their light is then longer before it overtakes the earth. That thefe accelerations and retardations are not occafioned by any inequality arifing from the motions of the fatellites in eccentric orbits is plain, becaufe it affects them all alike, in whatever parts of their orbits they are eclipfed. Befides, they go often round their orbits every year, and their, motions are no way commenfurate to the earth's. Therefore a phenomenon not to be accounted for from the real motiors of the fatellites, but fo eafily deducible from the motion of the earth, and fo anfwerable to it, muft be allowed to refult from it. And this affords one very good proof of the earth's annual motion. See the fequel of this article.

We fhall here obferve, that the firtt perfon, who conceived the thought of meafuring the velocity of light was Galileo, who has given a particular defcription of his contrivance for this purpofe, in his Treatife on Mechanics, P. 39. He had two men with lights, one of whom was to obferve 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 magined, without fuccefs, at the diftance of one mile; but the members of the academy Del Cimento refumed the experiment, and placed the obfervers, to as little purpofe, at the diftance of two miles. However, the method ufed by M. Roemer, already mentioncd, was the only one adequate to the difcovery of the velocity of light.

Our excellent aftronomer, Dr. Bradley, has found nearly the fame velocity of light, from his accurate obfervations, and moll ingenious theory, to account for fome apparenit motions in the fixed ttars. Phil. Tranf. N 406, or Abridg. vol. vi. p. 150. And for a fummary account of thefe obfervations, \&c. fec Earth and Star.

To underftand this, it mult be premifed, that the fixed ftars are luminous bodies, and at reft, with refpect to our planetary fyltem, from which they are vally remote. In this fyltem alfo the earth is confidered as one of the planets, and moving about the fun.

Suppofe the fun reprefented in S, (Plate IX. Optics, $\left.f_{2} g .2.\right)$ and that the circle ABCD reprefents the path of the earth, or the ecliptic. At the centre S fuppofe a perpendicular S P raifed to the plane of the ecliptic, and that this perpendicular paffes through any fixed Itar. If a fpectator were placed in S , he would fee the ftar in the fame perpendicular; but if the fpectator paffes over the circle A BCD, the diameter of which is fuppofed to bear a fenfible though frmall propertion to the dittance of the ftar, it will be perceived to change its fituation in the heavens. For a fpectator in A would fee the ftar in the line A Pa; in C be would fee the fame tlar in the line CPc;
and fo in any other point of his progrefs; whence it follows, that the far would feem to defcribe a circle in the heavens reprefented by $a b c d$. If the diftance of the Itar was fo very great, that in refpect of it the diameter of the carth's orbit A C might be efteemed a point; in this cafe, the forefaid circle would be entirely infenfible; all the lines drawn from the points of the orbit to the ftar might pals for per. pendiculars to the plane of the ecliptic, and in appearance would correfpond to the fame point in the heavens with the perpendicular in $S$, in which point the Itar would always appear, if its light could reach us in an inltant. But if in this cafe, where the flar is fo remote, the light is fuppofed to be propagated from the flar with a cercain velocity, at the fame time that the earth proceeds in its orbit, the ftar will be feen in an oblique direction to the plane of the orbit; becaufe of the motion compounded of the motion of light, and that of the ipectator.
Suppofe the light to move in the line E G (fig. 3.) making an angle with the line F G, in which the Ipectator is carried along; whom we fhall conceive placed in F. Let the velocity of the fpectator be to the velocity of the light, as F G to E G. While the feectator moves along FG, the light does the fame along EG ; and the particle of light, which is in $E$ when the fpectator is in $F$, enters the eye only when he arrives at G. Now the direction of the light, with refpect to the eye, makes with the line F G the angle EFG. For if we conceive the line FE drawn, and to be carried with a parallel metion along with the eye, fo that in refpect thereof it be at reft, while this continues moving, the light will reach the cye in the direction of the faid line; for when the eye fhall be in $f$, the middle point between $F$ and $G$, the transferred live, will cut E G in its middle point $g$, to which the parsicle of light has reached, and which is likewile the middle point of the transferred line $f e$; wherefore the particle of light, which was in E , in the extremity of the line E E, arrives at, and will enter the cye in the direction e g.
Let the angle E G.F ( figi 4.) be a right cne, and E G to FG as the velocity of the light to the velocity of the earth in its orbit ; then EF 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 $B$ (fy. 5.) it mores in the direction of the tangent to its orbit in this point ; that is, if we fup. pofe the fpectator 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 $\mathrm{S} a$ will reprefent the line in which the fpectator would fee the ftar.

In the fame manner when the earth is in $D$, the feectator in the fun will fee the ftar in $S c$, the angles $P$ S $c$ and $P S ;$ being equal; and the line $S a$ or $S c$, by its revolution aboat PS, would defcribe a cone, whofe bafe in the heavens would be a circle reprefenting the apparent path of the ftar through a whole year. Let us fuppofe this circle to be $a b c d$, as in fig. 5.

When the ftar is not in the perpendicular to the plane of: the ecliptic, but the line PS (fo. Go.) is inclined to that plane, the lines which determine the apparent motion of the Star in the heavens. will form cones, as in the cafes already explained; only they would be oblique, and in both cafes the apparent path of the flar in the heavens would be determined as above: but in this laft cafe it would be an ellipfis, the greater diameter of which would be equal to the diameter of the circle abcd of the former figures; fo that snowing this ellipfis, the circle might eafily be found which
the flar would deferibe, if placed in the perpendicular to the plane of the ecliptic.

The only way to determine, whether the fars defcribe fuch elliples, is by obfervations; in making which there are great dillicultics, which, however, Dr. Bradley has with incomparable indultry furmounted.
Nothing can immediately be determined concerning the forefaid elliptic motion. The diftance of the ftar from the pole of the world mult be meafured at different times of the year, and from the different dillances the elliptic motion is to be determined by calculation, allowing for the motion of the pole itfelf during the fpace of time between the obfervations, for the pole moves in a leffer circle, one degree of which it paffes over in feventy-two years.

Dr. Bradley, making all neceffary allowances, obferved feveral itars at different times of the year, whereby he immediately difcovered, that their diftances 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 ftars at equal diflances from the pole, but fo oppofite, 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 itfelf. But this did not fall out fo ; for the change of the one ftar 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 obferver inferred fronz his obfervations, that the flars 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 ellipfis; and alfo that they move in fuch curves, for each of which the motion in the fame little circle, as abcd (fig 6. ) anfwers, when the ftars are referred to the perpendicular in $S$ to the plane of the ecliptic; and the diameter of this minute circle for them all is $40 \%$.
It is plain from obfervations, to which of the above mentioned caufes we are to afcribe the motion of the ftar. For if the firft takes place, the flar would be carried from a to $c$, while the earth paffed over the part A B C of its orbit; but this, being contrary to obfervation, cannot be the true caufe. But this change in the fituation of the far takes place according to the obfervations, while the earth defcribes the part BCD of its orbit, which is jult what the fecond caufe requires.

If both the caufes took, place at the fame time, the arc defcribed by the earth would differ from that indicated by either of them; befides, this concurrence of the caufts is contrary to the obfersations; uulefs. perhaps, it may be thought reafonable to attribute a little infuence to the firft caufe; but fo very fmall a portion, as not to be fenlibly perceived in the obfervations.

Dr. Bradley himfelf confidered this matter in the following manner: he imagined C A (Plate IX. Optics; fg. 7.) to be a ray of light falling perpendicularly ufor the line B D ; that, if. the eyc is at reit at A , the object mult ap. pear in the direction A C, whether light be propagated in time or in an intant. 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 B.A, then light, moving from $C$ to $A$, whilt the eye moves from $B$ to $A$, that particle of it by which the object will be difcerned when the eye comes to A , is at C , when the ege is at B . Joining the points B, C, he fuppofed the line C B to be a tube, inclined to the line BD in the angle D.BC, of fuch a diameter as to admit but one particle of light. Then it was eafy to conceive, that the particle of light at C , by. which the object mult be feen, when the eye, as it moves along, arrives at. $A$, would pafs through the tube B C, if

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it is inclined to $B \mathrm{D}$ in the angle D BC , and accompanies the eye in its motion from $B$ to $A$; and that it could not come to the eye placed behind fuch a tube, if it had any other inclination to the line $B$ D. If, inftead of fuppofing $C B$ fo fmall a tube, we imagine it to be the axis of a larger ; then, for the fame reafon, the particle of light at C would not pars through that axis, unlefs it is inclined to $\mathbf{B D}$ 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 mult 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 vifible place will not be fo, fince that, no doubt, mult 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 fuppofe that light was propagated in an inftant, then there would be no difference between the real and vifible place of an object, although the eye were in motion; for in that cafe, A C being infinite with refpect to AB , the angle ACB , the difference between the real and vifible place, vanifhes. 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 vifible place of an object, unlefs the eye is moving either directly towards or from the object. And in all cafes the fine of the difference between the real and vifible place of the object will be to the fine of the vifible inclination of the object to the line in which the eye is moving, as the velocity of the eye is to the velocity of light.

He then fhews that if the earth revolve round the fun annually, and the velocity of light be to the velocity of the earth's motion in its orbit, as one thoufand to one, that a ftar really placed in the very pole of the ecliptic, would, to an eye carried along with the earth, feem to change its place continually; and neglecting the fmall difference on the account of the earth's diurnal revolution on its axis, would feem to defcribe a circle round that pole every way diftant from it $3^{\frac{1}{2}}$; fo that its longitude would be varied through all the points of the ecliptic every year, but its latitude would always remain the fame. Its right afcetfion would alfo change, and its declination, according to the different lituation of the fun with refpect to the equinoctial points, and its apparent diftance from the north pole of the equator, would be $7^{\prime}$ lefs at the autumnal than at the vernal equinox.

The greateft alteration of the place of a far in the pole of the ealiptic, or which, in effect, amounts to the fame 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 obferves, to find what would be the difference, upon this account, between the true and apparent place of any other ftar 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 conclufions may be deduced : 1. That the fecond caufe above-mentioned alone takes place in this cafe, viz. that the diftance of the ftars is fo great, that the diameter of the earth's orbit has no fenfible proportion to it. 2. That the angle F E G (fig. 3.) in the above mentioned triangle, is $20^{\circ} \frac{18}{4}$; or, fince the apparent declination of the Itar $\gamma$ Draconis, obferved by Dr. Bradley, on account of the fucceffive propagation of light, would be to the diameter of the little circle which a ftar would feem to defcribe about the pole of the ecliptic as $39^{\prime \prime}$ to $40^{\prime \prime} \cdot 4$; the
half of this is the angle ACB (fig. 7.) which is equal to $20^{\prime \prime} .2$; and confequently the ratio of E G to F G (fig. 3.) or of A C to A B (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 $8^{\prime} 12^{\prime \prime}$. This, Dr. Bradley obferves, is very probably the truth, becaufe it is a medium between 7 and 11, which were the times which it had before been fuppofed to take up, according to different obfervations of the eclipfes of Jupitcr's fatellites. Comparing his obfervations on other ftars, he afterwards concluded, that light is propagated from the fun to the earth in $8^{\prime} 13^{\prime \prime}$; and the near agreement of his obfervations induced him to think, that this fuppofition could not differ fo much as a fecond of a degree from the truth; fo that the time which light fpends in paffing from the fun to us may be determined by thefe obfervations within $5^{\prime \prime}$ or $10^{\prime \prime}$, which is fuch a degree of exactnefs. as we can never hope to attain from the eclipfes of Jupiter's fatelites. 3. That the light prodeeds with the fame velocity from all the ftars; for all have the fame angle FEG. Whence (if we fuppofe that all the flars are not equally diftant from us, as many arguments prove) it will follow, that the motion of light, all the way it paifes through the immenfe fpace above our atmofphere, is equable or uniform. And fince the different methods of determining the velocity of light thus agree in the refult, it is reafonable to conclude, not only that the phenomena above recited are owing to the caufes to which they are afcribed, but alfo that, in the fame medium, light is propagated with the fame velo. city after it has been reflected, as before. 4. Laftly, it mult be confidered, that very fmall differences cannot be perceived; and nobody will deny, but that in meafuring a fmall angle, an error of a fecond may be committed, whatever care is ufed to prevent it; and therefore, although we have faid, that the firlt caule is to be rejected, we do not deny that the fars may poffibly by its influence defcribe a minute circle, whofe diameter is $\mathbf{I}^{\prime \prime}$, or even a little more. S'Gravefande's Phyf. Elem. Math. lib. iii, cap. I. p. 708 , feq.

Hence it appears, that the fucceffive propagation of light will caufe an aberration in the appearances of the ftars, planets, and comets. (See Absbration.) After Dr. Bradley had difcovered this caufe of error in the apparent places of the fixed ftars, M. Clairaut and others inveltigated feveral rules for the computation of this aberration. M. Euler alfo has given us a paper on this fubject. Mem. Acad. Scienc. 1756. Mr. Simpfon, in his Eflays. Mem. de l'Acad. de Berlin, tom. ii. p. I4I, feq.
See remarks on the effect of the aberration of light on the time of the tranfit of Venus over the fun, by Dr. Price, in Phil. Tranf. vol. lx. art. 47. p. 536.

For an account of Mr. Melville's hypothefis of the different velocities of differently coloured rays, fee Refrangibility.
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 hypothenis of preffure, by which fome have accounted for the propagation of light, it might be obferved farther, if light were not a body, but confilted in a mere preffion, or pulfion, it would never be propagated in right lines, but would be continually inflected ad umbram. Thus fir Ifaac Newton: "A preffure on a fluid medium, i. e. a motion propagated by fuch a medium, heyond any obftacles, which impedes any part of its motion, cannot be propagated in right lines, but will be always inflecting and
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diffufing itfelf cvery way, to the quiefeent medium beyond that obftacle. The power of gravity tends downwards; but the preflure of water arifing from it tends every way with an equable force, and is propagated with equal eafe, and equal ftrength, in curves, as in itraight lines. Waves, on the furface of the water, gliding by the extremes of any very large obftacle, inflect and dilate themfelves, ftill diffuf. ing, gradually, into the quiefcent water beyond that obitacle. The waves, pulfes, or vibrations of the air, wherein found confifts, are manifeftly inflected, though not fo confiderably as the waves of water; and founds ate propagated with equal eafe, through crooked tubes, and through Araight lines; but light was never known to move in any curve, nor to inflect itfelf ad umbram." The rays of light, therefore, are fmall corpufcles, emitted with exceeding celerity from the luminous body. As to the force wherewith thefe corpufcles are emitted, fo as to enable them to move at the inconceivable rate of 200,000 miles a fecond ; the fame great author obferves; " Among bodies of the fame 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 fmall magnets, than in large ones, regard being had to the difference of their weights : and the reafon is, that the particles of fmall magnets bcing nearer each other, more eafly unite their forcés intimately together. and act conjunctly. For the fame reafon the rays of light, being of all other bodies the molt minute, it may be expected that their attractive powers fhould be, of all others, the frongeft ; and how ftrong in effeet they are, may be gathered from the following rules: the attraction o ray of light, accordiag to the quantity of its matter, is to the gravity which any projected body bas, 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 defcribes in the place of refraction, to the bending of the curvature defcribed 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 pals from the fun to the earth in the fpace of feven minutes. But now, as in algebra, where affirmative quantities ceafe, there negative ones begin; fo in mechanics, where attraction ceafes, there the repelling power mull fucceed: theretore 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 divifibility of the parts of matter is nowhere more apparent than in the minutenefs 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 muit iffue out of it, when burning, $4^{18,660}$, with 39 ciphers more, particles in the fecond of a minute; valtly more than a thoufand times a thoufand million times the number of fands the whole earth can contain; reckoning ten inches to one foot, and that 100 fands are equal to one incl. See Relig. Philof. vol iii. p. 865.

It muft be acknowledged, that many difficulties and objections have been urged againft the materiality of light, or the ilypothefis of light's confiting of fmall particles emitted from Juminous bodies ; and that many eminent philofophers, both foreigners and Englifh, have recurred to the opinion, that

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light confits of vibrations propagated from the laminous body through a fubtile etherial medium.

The ingenious Dr. Franklin, in a letter dated April 23d, 1752, expreffes his diffatisfaction with the doctrine, that fuppofes particles of matter, called light, continually driven off from the fun's furface, with a fwifnefs fo prodigious. "Muft not," fays he, "the fmalleft portion conceivable have, with fuch a motion, a force exceeding that of a twenty-four pounder difcharged from a cannon? Mult not the fun diminifh exceedingly by fuch a wafte of matter; and the planets, inllead of drawing nearer to him, as fome have feared, recede to greater diftances through the leflened attraction? Yet thefe particles, with this amazing motion, will not drive before them, or remove, the leait and lighteft duft they meet with ; and the fun appears to continue of his anci nt dimenfioss, and his attendants more in their ancient orbits." Accordingly, he conjectures, that all the phenomena of light may be more conveniently folved, by fuppofing univerfal fpace filled with a fubtile claftic fluid; which, when at reft, is not vifible, but whofe vibrations affect that fine ferife in the eye, as thofe of air do the groffer organs of the ear: and that different degrees of the vibration of this medium may occafion the appearances of different colours. The elaftic fluid, he fays, is always the fame, and yet rieaker and fronger fparks differ in apparent colour, fome white, blue, purple, red ; the ftrongeit, white ; the weak ones, red. Franklin's Exp. and Obf. \&c. p. 264, \&c. ed. 1769.
The celebrated Mr. Euler (as we have already obferted), has alfo ftrenuoufly maintained the fame hypo. thefis, in his Theoria Lucis \& Colorum. In the fummary of his arguments againft the common opinion, recited in Acad. Berl. 1752. p. 271, befides the objections aborementioned, he difputes the poffibility, that particles of matter, allowed to move with the amazing velocity of light, fhould penetrate tranfparent fubflances with fo much eafe. In whatever manner they are tranfmitted, thofe bodies muft have pores, difpofed in right lines, and in all poffible directions, in order to form canals for the paffage of the rays: but fuch a ftructure mult take away all folid matter from thofe bodies, and all coherence among their parts, if they do contain any folid matter.

Dr. Horley has taken coafiderable pains to obviate the difficulties fuggefted by Dr. Franklin; and fuppofing that the diameter of each particle of light docs 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 traverfes the femi-diameter of the orbis magnus in $7^{\prime}$, and that this femi-diameter is 229 Ig femi-diameters of the earth, he calculates, that the momentum or force of motion in each particle of light coming from the fun, is icfs than that in an iron ball of $\frac{1}{4}$ th of an inch diameter, moring at the rate of lefs than an inch in twelve thoufand 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, inftead of exceeding the force of a twenty-four pounder difcharged from a cannon, is infinitely lefs than that of the fmalleft fhot difcharged from a pocket-pitol, or lefs than any that art can create. Moreover, he thinks it poffible, that light may be produced by a continual emififion of matter from the fun, without any fuch walte of bis fubitance as fhould fenfibly contraft his dimenfions, or alter the motions of the planets, within any moderate length of time. In proof of this, he obferves, that it is not neceffary to the production of any of the phenomena of light, that the emanation from the fun fhould be continual in a itrict mathe: matical fenfe, or without any interval; and likevife that

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part of the light which iffues 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 fyitems. He proceeds by calculation to thew, that in $3{ }^{3} 5,130,000$ Egyptian years, the fan would lofe ${ }_{73} 3^{\frac{1}{2}}{ }^{2} \mathrm{~d}$ of his matter, and, therefore, that the gravitation towards the fun, at any given dittance, would diminifh in the fame proportion. But this alteration is much too fmall to difcover itfelf in the motion of the earth, or of any of the planets. He alfo computes, that the greatelt Aroke which the retina of a common eye fultains, when the cye, in a bright day, is turned up directly to the fun, does not exceed that which an iron fhot, $\frac{1}{4}$ th of an inch diameter, would give, moving only at the rate of 16.16 inches in a year; but the ordinary ftroke is lefs than the $\pi_{2}^{2} 544^{2}$ th part of this. (Phil. Tranf. vol. 1x. art. 35. vol. lxi. part ii. art. 50.) One of the principal difficulties attending the hypothefis 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 phylical point in the vifible horizon, that does not fend rays to every other point, unlefs where opaque bodies interpofe. Light, in its paffage from one syitem to another, often paffes through torrents of light ifluing from other funs and fy flems, without ever interfering, or being diverted from its courfe either by it, or by the particles of that elaftic medium, which fome have fuppofed to be diffufed through all the mundane fpace. In accounting for this fact, he fuppofes that the particles of light muft be incomparably rare, even when they are the moft denfe ; that is, that the femidiameters of $t$ wo of the neareft particles, in the fame, or in different beams, foon after their emifion, are incomparably lefs than their diftance from one another. This confideration obviates the objection urged by Euler and others againft the materiality of light, from its infuence in difturbing the freedom and perpetuity of the celeltial motions. Bofcovich and others folve the difficulty concerning the non-interference of the particles of light, by fuppofing that each particle is endued with an infuperable impulfive force; but in this cafe, their fpheres of impulfion would be more liable to interfere, and they would, on that account, be more likely to difturb one another. This difficulty, attending the fuppofition, that particles of light move through other light, in all imaginable directions, without perpetual collifions among the particles, and continual defections from a rectilinear courfe, is, in a great degree, obviated, by an eafy computation of Mr. Canton. He obferves, that it is neceffary to allow only a very fmall portion of time between the emiffion of every particle, and the next that follows in the fame direction. Suppofe, for inftance, that one lucid point of the fun's furface emits 150 particles in one fecond, which are more than fufficient to give continual light to the eye, without the leaft appearance of intermiffion-; yet ftill the particles of which it confints will, on account of their great velocity, be more than a thoufand miles behind one another, and thereby leave room enough for others to pafs in all directions. Phil. Tranf, vol. lviii. art. 45: p. 344 .

If we alopt the conclufions drawn from the chevalier d'Arcy's experiments on the duration of the fenfations excited by light, who ftates it at the feventh part of a fccond (Hirt. Acad. Scienc. 1765, Mem. 2.) we may admit an interval of more than 20,000 miles between each particle. Some, in order to anfwer the chief objections of this kind againll the materiality of light, have adopted the hypothefis of M. Befcovich; who advances, in his Theoria Philofophix Naturalis, that matter is not impenetrable, but that it confifts of phyfical points only, endued with
powers of attraction and repulfion, taking place at different diftances ; that is, furrounded with various fpheres of attraction and repulfion, in the fame manner as folid matter is generally fuppofed 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 powere, fuch as we know, do, in fact, exit in the fame place, and counterbalance or overrule one another. Prieftey's Hilt. \&c. of Light, \&c. p. 39 I . That light is a real fubtance, notwithftanding the objections that have been urged againft this hypothefis, feems to be ettablifhed by the phenomena of the Bolognian ftone, and of other fubitances, which poffefs the remarkable property of imbibing light, of retaining it for fome 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 thofe experiments, which demonftrate, that the colour and inward texture of fome bodies are changed, in confequence of their being expofed to the light.

The firft obfervation of this kind appears to have been made by M. Duhamel, who found that the juice of a certain fhell-fifh in Provence contracted a fine purple colour when it was expofed to the light of the fun, and that the ftronger was the light, the more fplendid was the colour. Pieces of cloth dipped in this liquor, and expofed to the fun, became red, though they were inclofed in glafs; but they acquired none of this colour in the fame expofure, if they were covered with the thinneft plates of metal. It was afterwards obferved by Beccarius, Com. Bonon, vol. iv. p. 75, that a quantity of luna cornea, expofed to the rays of the fun, became of a violet colour, whillt part of the fame compofition, 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. Crefar. vol. i. p. 528, \&c.) G. Bonzius was thus led to fome fisbfequent experiments, which feem to prove that various colours are confio derably affected by light, exclufive of heat or any thing elfe. By expofing 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, loft part of their luftre, and were confiderably faded; but when the fame ribbons were expofed to a much greater degree of heat in a dark room, none of the colours were affected, except that a fmall 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 inclofing them in an exhaufted receiver, he found that the change was not occafioned by the air; but no change could be produced in them by the light of torches. Beccarius alfo found by experiments on paper, and a great variety of fubftances, mineral, vegetable, and animal, that the light of the fun produced many changes in the internal ftructure of bodies, and that thofe fubflances which imbibed light were much injured. The ftronger the light, and the longer they were expofed to it, the more injury they regeived; and the injury thus fuftained was found to be lafting. Com. Bon. vol. vi. p. 77, \&c. See Prieftley's Hiftory, p. 378, \&c.

Some writers have attempted to prove the materiality of light, by determining the momentum of their component particles, or by flewing that they had a force, fo as, by their impulfe, to give motion to light bodies. M. HombergAc. Par. 1708. H. p. 25, imagined, that he could not only difperfe pieces of amianthus, and other light fubftances, by the impulfe of the folar rays, but alfo that by throwing

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them upon the end of a kind of lever, connected with the fpring of a watch, he could make it move fenfibly quicker; whence, and from other experiments, was inferred the weight 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. How. ever, Dr. Priefley informs us, that Mr. Mitchell endeavoured to afcertain the momentum of light with fill greater accuracy, ane that his endeavours were not altogether unfuccefsful. Having found that the initrument which he ufed acquired, from the impulfe 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 inftrument 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 fquare feet; 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 fquare foot and half of furface in one fecond of time, ought to be no more than the twelve hundred miilionth 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 wafte by light, one forty thoufandth 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 thoufand grains, which is about fix hundred and feventy pounds, avoirdupois, in fix thoufand years; a quantity which would have fhortened the fun's femi-diameter no more than about ten feet, if it was formed of matter of the denfity of water only. Prieftey, ubi fupra, p. 389 .

The nature of light has not been fatisfactorily afcertained by any of the experiments and inveftigations of philofophers. Some incline to the Newtonian hypothefis, which afcribed it to the emiffion of very minute particles from luminous fubitances, as we have already ftated; and others to the excitation of an undulatory motion, analogous to that which conititutes found, in a very rare and elaftic medium, which pervades the univerfe. There are alfo fome circumflances which induce thofe who entertain the firf hypothefis, 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 paffage, or to fuppofe, with Bofcovich, that the minute particles of light themfelves receive, at the time of their emifion, certain rotatory and vibratory motions, which they retain as long as their projectile motion continues. Thefe additional fuppofitions, howeser neceflary they may have been thought for explaining fome particular phenomena, have never been very generally underftood or admitted, although no attempt has been made to accommodate the theory in any other manner in thefe phenomena. Dr. Young, in his "Courfe of Lectures on Natural Philofophy, \&c." has examined in detail the manner in which the two principal hypothefes refpecting light may be applied to its various affections and properties; for which we refer to vol. i. p. 45 8, \&c. to the fequel of this article, and to other appropriate terms that occur in the Cyclopædia.

The expanfion or extenfion of any portion of light is inconceivable. Dr. Hook thews it is as unlimited as the univerfe; proving it from the immenfe diftance of fome of the fixed ftars, the light whereof becomes fenfible to the eye by means of a telefcope: nor, adds he, are they only the great bodies of the fun or flars that are thus
liable to difperfe their light through the yaft expante of the univerfe, but the fmalle:t fpark of a lucid body mult do the fame, even the fralieft globule ftruck from a feel by a flint.
The method of meafuring the intenfity of different lights, or of the fame light in different circumftances, affords a curious fubject of inveftigation. M. Bouguer purfued is with particular attention, and defcribed an apparatus which he has contrived for this purpofe, in his Traite de Optique, publifhed in Paris, 1760. Dr. Prieftley (ubi infra) bas given an abridged account of the two methods ufed for this purpofe by M. Bouguer. The firft of thefe two methods has been ufed by others fince, and probably before that time, and particularly by count Rumford. See Psotometer.
It is well known that the action of a ftrong light upon the eye, and alfo the impreffion which it leaves upon the eye, makes it infenfible to the effect of a weaker light. M. Bouguer found, that when one light is fixty-four times lefs than another, its prefence or abfence will not be perceived ; and, allowing for different effects on different eyes, he fuppofes that the boundaries, with refpect to different perfons, may lie between fixty and eighty. Being unable to determine the variation of the light of the fun, becaule it is too ftrong, and that of the flars, becaufe it is too weak, at different altitudes, he made his obfervations on the moon, the diminution of the light being in the fame proportion in this cafe and in the others, and found that its light at $19^{\circ} 16^{\prime}$ is to its light at $66^{3} 11^{\prime}$, 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 thoufand times lefs than at the altitude of $66^{\circ} \mathrm{II}^{\prime}$. 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 diminifhed in the proportion of about 2500 to 168 I , in traverfing 7469 toifes of denfe air. He alfo found, that the centre of the fun is confiderably more Iuminous than the extremities of it ; whereas, both the primary and fecondary planets are more luminous at their edges than near their centres. In a comparifon of the light of the fun 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 right following, when the moon was at her mean diftance from the carth, and, after many trials, he concluded, that the light of the fun is about three hundred thoufand times grater. than that of the moon; and, therefore, it is no wonder that philofophers have had fo little fuccefs in their attempts to collect the light of the moon with burning.glaffes; for the largeft of them will not increafe the light a thoufund times, which will ftill leave the light of the moon, in the focus of the mirror, three hundred times lefs than the intenfity 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 I to about gogoo, if no rays were loft at the moon. His method of calculation follows, as far as it is juft, fays Mr. Robins, Math. Tracts, vol. ii. p. 225, directly from the propofition for the fame purpofe of that excellent geometer, James Gregory, in his Geom. Par. Univerf. P. 144; and the general propofition there mentioned for dillinguifhing the proportion between the degrees of light received from any planet, and from the fun, as repeated in David Gregory's Aftronomy, lib. iii. prop. 58. Mr. Robins remarks, that though his eltimate is founded on the fuppofition, that the moou reflects all the light it receives from the fun; yet his argunent is drawn from com-

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paring 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 firit place he fuppoies that the moon, enlightened by the fun, is as luminous as the clouds are at a medium. He, therefore, fuppoled the light of the fun to be equal to that of a whole hemifphere of clouds, or as many moons as would cover the furface of the heavens. But upon this it may be obferved, that the light of the fus thining perpendicularly upon any furfaec, would be equal to the light reflected from the whole hemifphere, if every part of it reflected all the light that fell upon it ; but the light that would, in fact, be reccived from the whole hemifphere (part of it being reseived obliquely) would be only one-half as much as would be received from the whole hemifphere. if every part of it fhone directly upon the furface to be illuminated. In his Remarks, \&c. P. 17, he draws the fame conclufion from a different method of induction ; but in this cafe alfo he made a miltake of one-half, fuppofing all the enlightened hemiSphere 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 fuperficial fection of one great circle, which is juit one-half of the furface of the hemifphere. Prieftley, ubi fupra, p. 540, \&c.

Mr. Mitchell made this computation in a more eafy and accurate manner. Confidering the diftance of the moon from the fun, and that the denfity of the light muft decreafe in the proportion of the fquare of that diftance, he calculated the denfity of the fun's light at that diftance, 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 45000 dth part of the light we receive from that greater luminary. Admitting, therefore, with M. Bonguer, that the moon refects only a 300,000 dh part of it, Mr. Mitchell concludes, that it reflects no more than betwixt the fixth and feventh part of the light that falls upon it. Phil. Tranf. vol. lvii. art. 27, P. 234, \& c .

Dr. Pemberton, in his Courfe of Chemiftry, lect. 2. ftates the greateft light which we can receive from the moon, when at the full, and neareft to the earth; to exceed the light of the fun more than 87,000 times, fuppofing 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 moft that can be fuppofed, then the light of the moon will be exceeded by the fun's light more than 170,000 times: and in the mean diftance 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 produttive of numerous phenomena. Thefe of late have confituted two diftinct branches of fcience. The one has for its object the inveltigation of the phyfical properties of light, for which we are principally indebted to Newton, and which forms the bafis of the fience of optics. The other is confined to the chemical agency of light, refting upon facts difcovered fince the time of that great genius, and which has hitherto occupied the attention of the chemical philofopher.

When a ray of light falls upon the furface of a body, it is either reflected, abforbed, and extinguifhed, or tranfmitted. And under fome circumftances all thefe effeets take place.

The reflection of the ray depends, firft, upon the nature of the body; fecondty, upon the ftate and colour of the furface; and, thirdly, upon the quantity of the angle of incidence. Under all thefe circumftances, however, the angle
at which the ray is rellected is equal to the angle of incidence. The fame laws, therefore, which govern the collifion between perfectly elattic bodies and ablolutely hard furfaces, may be applied to the reflection of light. Of the different bodies which reflect light, metals poffeis this power in the greatelt degree, and perhaps in proportion to their denfity and hardnefs. Smooth or polifhed furfaces reflect more light than rough ones.

Of coloured furfaces the lighteft colours reflect the molt; hence the whiteft metals make the beft reflectors. The order will therefore, in all probability, be as follows, begin* ning with the beft reflectors, white, yellow, red, blue, black. The two extremes are very ftriking, in the wellknown experiment of two pieces of cloth, one white and the other black, laid on the furface of foow in the fun. The black piece very foon finks into the fnow, from abforbing a greater quantity of light, which caufes 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 ftrike their furfaces more perpendicularly, and the quantity of light which enters tranfparent bodies is as the fame. In both inftances, therefore, more light enters the bodies, and lefs is reflected. In the firlt inftance, the light which is not re-flected becomes extinguifhed, producing heat; in the fecond it is tranfmitted, itill retaining the property of light. Hence, therefore, we ought to conclude that the reflection will be inverfely as the angle of incidence, fuppofing the angle to be formed by the ray and the furface of the medium.
M. Bouguer has informed us, that the light reflected from a furface of mercury, when the angle of incidence was $I i_{2}^{\frac{1}{2}}{ }^{\circ}$, was only equal to $\frac{1}{4}$ th of the whole; and he thinks it probable that no fubltance reflects more. It is certain, however, that polifhed filver reflects much more. The fame philofopher obferves, that metallic reflectors change lefs. in their poiver of reflection with the angle of incidence. He made the following experiment with polifhed black marble. At an angle of $33^{\prime} 35^{\prime}$ with the reflecting furface, 6 were reflected, the whole being unity; at $15^{\prime}$ of incidence, 156 were reflected; at $30^{\prime}, .051$; and at $80^{\circ}, .023$. The relt of courfe became extinguifhed, and would heat the marble.

A fimilar diminution of the reflective power, with the angle of incidence, is obferved in tranfparent bodies, by the fame author. The following Table gives the refults with water and plate-glafs.

| Anğle of Incidence. | The Quantity of Light reflefed, the whole being 1000. |  |
| :---: | :---: | :---: |
|  | From Water, | Fron Plate-Glass. |
| $\frac{1}{2}{ }^{\circ}$ | 721 |  |
| 1 | 692 |  |
| $1 \frac{1}{2}$ | 669 |  |
| 2 | 639 |  |
| $2 \frac{1}{2}$ | 614 | $5^{8}+$ |
| 5 | 501 | $5+3$ |


| Angle of Incidence. | The Quassity of Light reflected, the whole being 1000 . |  |
| :---: | :---: | :---: |
|  | From Water. | From P'late-Gilafs, |
| $7^{\text {c }} \frac{1}{2}$ | 409 | 474 |
| 10 | 333 | 412 |
| 12 $\frac{1}{2}$ | 271 | 356 |
| 15 | 211 | 299 |
| $1 \rightarrow \frac{1}{2}$ | 178 |  |
| 20 | I 45 | 222 |
| 25 | 97 | 157 |
| 30 | 65 | 112 |
| 40 | 34 | 57 |
| 50 | 22 | 34 |
| 60 | 19 | 27 |
| 70 | 18 | - 25 |
| 80 | 18 | 25 |
| $9^{\circ}$ | 18 | 25 |

The reflections in this inftance are partly made from the upper, and the reff from the under furface. The remainder of the thoufand parts are tranfmitted, with the exception of a few, which are in all probability extinguifhed.

That, under certain circumitances, the rays of light are extinguifhed, evea in tranfparent bodies, is rendered highly probable by the above inquirer.
Light becomes fo far extinct, by paffing through 679 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 atmofphere were 518,385 toifes in height, we fhould have no light from the fun, even in his meridian. fplendour. It has been eftimated, that of the horizontal fun-beams pafling through about 200 miles of air, one two-thoufandth part only reaches us.
In all the inftances in which light is extinguifhed, it will doubtlefs be fo found that a certain quantity of heat will be generated. Sir Ifäac Newton feems perfectly aware of this fact. In his time, however, heat was fuppofed to arife from motion, and hence he concluded that the light, when it was neither reflected nor tranfmitted, fo acted upon the body it entered, as to put its particles into a vibutary 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 muft 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 dircetly from the fun to
the tops of mountains, which lave not near that effect withs thofe in the valley, agitated with an irregular motion, by feveral reflections.

Whether or not there be always light, where there is fire, has been difputed among authors; as alfo, whether or not there be any luminous body without heat ; heat being confidered by them as a motion that may be infinitely diminifhed, and light a matter that may be mininitely rare ; to which we may add, that no heat is fentible to us, unlefs it be more intenfe than that of our organs of fenfe. M. De Luc, in his Lettres Phyfiques et Morales, \&c. 1780 , obferves, that the rays of the fun, though not warm in themfelves, occafion heat, by giving activity to a fubltance, which refrdes in all bodies, and conititutes a part of their mafs, and which in certain circumflances is capable of producing heat: and that in confequence of this influence, this fubfance becomes an elaftic or igneous fluid. (See Heat.) Caloric, however, is now confidered material, and a diftinct fluid from that of light.

Solar heat is at prefent accounted for in a different way tothat of confidering the heat as extinguifhed light. Dr. Herfchel has, from a feries of experiments, of which we fhall foon give an account, concluded, that the rays of caloric, or rays \{olely producing heat, are emitted from the fun, as well as from terreftrial bodies, affording light and heat : while the rays of light, or fuch as are efliential to vifion and colour, have not the property of producing heat. How far this conclution is warranted, we flall have occafion hereafter to confider.

Befides the properties of light to be reflected and tranfmitted, and that of being ablorbed and extinguifhed, we are prefented with curious phenomena, arifing from the attraction between this fubflance and other matter, which is the caife of the refraction and infection of light. When a ray of light enters any tranfparent medium, in a direction perpendicular to the furface of the fame, the ray will maintain its courfe in the fame direction; but if the ray of light make any angle lefs than a right angle with the furface of the medium, it will not continue in the fame direftion, but will be drawn towards a ftraight 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 fame perpendicular, after it enters the medium, is called the angle of reo frafion. In all the degrees of obliquity at which a ray en. ters any medium, the tine of the angle of incidence has the fame ratid to the fine of the angle of refraction..

The refracting power of different tranfparent bodies is not dependent upon one property alone; it appears, however, to be directly as their denlity, all other things being equal.

Inflammable bodies are found to refract light much more than bodies not inflammable. Sir Ifaac Newton divided. diaphanous bodies into two claffes, each of which refract light as their denfity. The firft confifted of the inflammable, in which it was much more than according to the ratio of their denfity.

The other clafs, which were not inflammable, appeared to obey the fame law as to denfity, with the exception of thediamond and water. The formen of thefe refracked in the compound ratio of inflammability and denfity; and although: it was then not known to be inflammable, Newton ftrongly fufpected it to be entirely an inflammable body ; and that water which appeared to have an intermediate power bec tween the two claffes, he fuppofed, was partly inflammablo.

## LIGHT.

Thefe prophetic obfervations have been verified in the difcovery of the diamond being pure carbon, and in the decompofition of water.
The late difcoveries of Mr. Davy render it very probable that all compound bodies are compofed of inflammable matter and oxygen. Hence it would feem, that the refractive power of bodies is lefs in proportion to the oxygen they contain. Sir Ifaac Newton fulpected that refraction was caufed by inflammable matter alone, from which it would follow, that all diaphanous bodies contained inflammable matter. This, in all probability, is the cafe with the exception of oxygen. It has, however, been proved by M. Biot, that the refractive power of oxygen, although lefs than any fubftance in proportion to its denfity, is neverthelefs appreciable. The fame philofopher alfo afcertained that hydrogen refracts light in a ratio, independent of its denfity, higher than any other fubftance.

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, conftituting 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 darl room, the rays are found to be drawa towards the fides of the hole, by which means they acquire a certain degree of divergence. In confequence of this change in the direction of the rays, the fhadows of hairs, and other flender fubflances held in the beam of light coming through the aperture, are found to become eularged in proportion to the diflance of the place on which the fhadow is caft. See Inflection.
From this circumftance fir Ifaac Newton concluded, that the rays of light mult have pafled as they are reprefented in Plate IX. Optics, fig. 8. in which X reprefents a fection of the hair, and AD, BE, \&c. rays of light paffing by at different diftances, and then falling upon the wall $Q Q$. Since, when the paper which receives the rays is at a great ditance from the hair, the fhadow is broad, it muft follow, as he obferves, that the hair acts upon the rays of light at fome confiderable diftance from it ; the action being ftrongett on thofe rays which are at the lealt diftance, and growing weaker and weaker on thofe which are farther off, as is reprefented in the figure; and from hence it comes to pafs, that the fladow of the hair is much broader in proportion to the diltance of the paper from the hair, when it is nearer than when it is at a great diftance. It is of no moment, whether the hair be furrounded with air, or with any other pellucid fubftance. The fhadows of fcratches made in polifhed plates of glafs, and the veins in the giafs, caft the like broad fhadows; fo that the breadth of fhadow muft proceed from fome other caufe than the refraction of the air.

The fhadows of all bodies, metals, ftones, glafs, wood, horn, $\& \mathrm{c}$. in this light, were bordered with three paralle fringes, or bands of coloured light, whereof that which was contiguous to the fladow was the broadelt and moft luminous, while that which was the moit remote was the narroweft, and fo faint, as not eafily to be vifible. The firt or innermoft fringe was violet, and deep blue next the thadow, light blue, green, and yellow in the middle, and red without. The fecond fringe was almoft contiguous to the firt, and the third to the fecond; and both were blue within, and yellow and red without; but their colours were very faint, efpecially thofe of the third. The colours, therefore, proceeded in the following order from the fhadow: relvet, indigo, pale blue, green, yellow, red; blue, yellow,
red : pale blue, pale yellow, and red. The fhadows made by fcratches and bubbles in polimed plates of glafs, were bordered with the like fringes of coloured light. He alfo obferves, that by looking on the fun through a feather, or black ribbon, held clofe to the eye, feveral rainbows will appear, the fladows which the fibres or threads calt on the retina being bordered with the like fringes of cow lours.

From comparing other experiments, in which a ray of light was made to pafs through a hole into a darkened chamber, and then through a hole in a pafte-board, firlt 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 firft fringe paffed by the edge of the knife at a ditance 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 firtt fringe, and that of the third at a greater diftance than that of the fecond; and that the light, of which the Atreams, obferved in thefe experiments, conifited, paffed by the edges of the knives at lefs diltances than that of any of the fringes.
In another experiment, he placed at the hole a prifm to rcfract the light, and to form, on the oppofite wall, the coloured image of the fun; and he found that the fhadows of all bodies, held in the coloured light between the prifin 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 thofe made in the red light were the largett, thofe made in the violet the leaft, and thofe 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 diftance than thofe which made the like fringes in the violet; fo that the hair, in caufing thefe fringes, aated alike upon the red light, or leaft refrangible rays, at a greater diftance, and upon the violet or molt refrangible rays at a lefs diltance, and thereby occafioned 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 firlt obfervation was held in the white beams of the fun's light, and calt a fhadow, which was bordered with three fringes of coloured light, thote colours arofe not from any new modificatious impreffed 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, compofed the white beam of the fun's light ; but when feparated compofed lights of the feveral colours which they are originally difpofed to exhibit. But for a fuller account of the author's curious experiments, and the conclutions drawn from them with regard to the inflection of light, we muft refer to his well known treatife on Optics, p. 293. \&c.

This attion of bodies on light is found to exert itfelf at a fenfible diftance, though it always increafes as the diftance is diminifhed; as appears very fenfibly in the paffage 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 increafed as the other is brought nearer it. The rays of light, in their paffage out of glafs into vacuum, are not only inflected towards the glafs, but, if they fall too obliquely, they will revert back again to the glafs, and be totally reflected.

The caufe of which reflection camot be attributed to any refiftance of the vacuum, but mult be entirely owing to fome force or power in the glafs, which attracts or draws back the rays as they are paffing into the vacuum. And

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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 pafs inte and through that liquor; which fhews that the rays are not reflected till they come to the polterior furface of the glafs, nor even till they begin to go out of it; for if at their going out, they fall into any of the forefaid mediums, they will not then be reflected, but perfift in their former courfe, the attraction of the glafs being in this cafe counterbalanced by that of the liquor.
Experiments, fimilar to thofe of fir Ifaac Newton on inflected light, were profecuted by M. Maraldi, whofe obfervations chiefly refpect the inflection of light towards other bodies, whereby their fhadows are partially illuminated. Ac. Paris, 1723. M. p. 159. For an abtract, fee Prieftley's Hittory, \&c. of Light, \&c. p. 521, \&c. M. Mairan, without attempting the difcovery of new facts, endeavoured to explain the old ones, by the hypothefis of an atmofphere furrounding all bodies; and confequently making two reflections and refractions of light that impinges upon them, one at the furface of the atmorphere, and the other at that of the body itfelf. This atmolphere he fuppofed to be of a variable denfity, and refractive power, like the air. M. du Tour fucceeded Mairan, and imagined, that he could account for all the phenomena by the help of an atmofphere of an uniform denfity, and of a lefs refrac. tive power than the air, furrounding all bodies. Du Tout varied the Newtonian experiments, and difcovered in the colours produced by the inflection of light more than three fringes, which he exhibited diftinctly in the following manner. He took a circular board, A B E D (Plate IX. Optics, ffg. 9.) thirteen inchies 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 $\mathrm{E} ; \mathrm{B}$ and D being each of them placed at 90 degrees. A flip of parchment three inches broad, and difpofed in the form of a hoop, was fattened 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. Laftly, 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 difpofed, 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 pafing parallel to the plane of the board, projected the image of the fun and fhadow of the pin at A.

In thefe circumiltances he obferved, 1 it, that quite round the concave furface of this hoop, there was a multitude of coloured Atreaks; but that the fpace $m A^{\prime} n$, of about eighteen degrees, the middle of which was occupied by the image of the fun, was covered with a faint light only.
2. The order of the colours in thefe ftreaks was generally fuch, that the molt refrangible rays were the nearelt to the incident ray ECA; fo that, beginning from the point A, the violet was the firft, and the red the lait colour in each of the Atreaks. In fome of them, however, the colours were difpofed in a contrary order.
3. The image of the fun, projected on each fide of the point A, was divided by the fhadow of the pin, which was bordered by two luminous ftreaks.
4. The coloured Itreaks were narrower in fome parts of
the hoop than others, and generally decreafed in breadth in receding from the point $A$.
5. Among thefe coloured fraks, there were fometimes others which were white, a line, or a line and a half in breadth, which were always bordered on both fides by a ftreak of orange colour, at leait when the light of the fun was intenfe, and the chamber fufficiently dark.

From this experiment he thought it was evident, that the rays which paffed beyond the pin were not the only ones that were decompofed; for that thofe which ąre refleged back from the pin were decompofed alfo: from which he concluded that they mult have undergone fome refraction. He alfo thought that thofe which went beyond the pin fufo fered a reflection, fo that they were all affected in a fimilar manner.

In order to account for thefe facts, our author defcribes the progrefs of a ray of light through an uniform atmo. fphere which he fuppofes to furround the pin, and fhews that the differently refrangible rays will be feparated at their emergence from it; but he refers to fome experiments and obfervations in a future memoir, to demonftrate that all the coloured flteaks are produced by rays that are both reflected and refracted. Memoires Prefentés, vol. v. p. 636. 641.

From other obfervations, M. Du Tour concludes, that the refracting atmofpheres, furrounding all kinds of bodies, are of the fame fize; for when he placed a great variety of fubftances, and of different fizes allo, he always found the coloured flreaks of the fame dimenfions. He allo obferves, that this hypothefis contradiets an'obfervation of fir Iface Newton, viz. that thofe rays which pafs the neareft to any body are moft inflected. Mem. de Mathem. and de Phyf. vol. v. p. 650, \&c. or Prieflley, ubi fupra, p. 531, \&c.
M. Le Cat found that, in fome cafes, objects appear magnified by means of the inflection of light. Looking at a diftant fteeple, when a wire of lefs diameter than the pupil of his eye was held pretty near to it, and drawing it feveral times betwixt his eye and that object, he was furprifed to find that, every time the wire pafled before his pupil, the fleeple feemed to change its place, and fome hills beyond the fteeple feemed to have the fame motion, juft as if a lens had been drawn betwixt his eye and them. This difcovery led him to feveral others depending upon the inflection of the rays of light. Thus, he magnified fmall objects, as the head of a pin, by looking at them through a fmall hole in a card; fo that the rays which formed the image, mult neceffarily pafs fo near the circumference of the hole, as to be attracted by it : he alfo exhibited other appearances of a fimilar nature. Traité des Sens, p. 299, \&c. Prieftley, ubi fupra, p. 537, \&c.

Several coincident facts induced fir Ifaac Newton to believe that reflection, refraction, and inflection refulted from the fame caufe, namely, attraction: Of the two latter of thefe properties refulting from this caufe there can be little doubt; , but the laws by which the firft is governed appears to depend rather upon the repulfion than the attraction of the medium. The greateft myttery attending reflection, is in the circumftance of the under furface reflecting light equally with the upper furface. This part certainly goes far to prove, that the reffection of light is not to be explained by confidering the reflecting furface as a hard fubtance, from which the elaftic particies of light are repelled, particularly fince the reflection from the under furface of any medium is in the inverfe ratio of the denfity of the medium, beyond the reflecting furface, and is greatelt when the furface is bounded by a vacuum.

Although

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Although fir Iface 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 reslected from the under furface is attracted by the fame medium in a contrary dircction.

Hence be concludes, that this reffection is lefs as the denfity of the under medium is greater, the attraction of the firlk medium being counteracted by that of the fecond.

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 caufed by fomething like repulfion.

When a ray of light falls upon any reflecting furface, we cannot for a moment fuppofe that any attraction of the medium could caufe it to be reflected, fince the effect produced can arife only from a repellent force, exerted in a direction perpendicularly from the furface of the body. And that the elaftic force exifting between the body and the light is fo perfect, as to make the angle of reflection equal to the angle of incidence. Newton very properly argued, that the reflection could not take place from the particles of light ftriking the hard parts of bodies, on account of the numerous interfices exifting between their molecules; on the contrary, he fuppofed the light which ftruck the folid parts became extinguifhed.

It may here be obferved, that it is equally difficult to explain the action of one folid body upon another, as it may eafily be proved that they do not come into abrolute contact in any initance.

When we attempt to unite the furfaces of fractured bodies, we cannot, in moft inftances, bring the parts within the fphere of attraction; and even where this can be effected, as in two bright furfazes of lead, it may be proved that the parts do not touch.

It feems difficult to conceive how an atmofphere of hy* drogen fhould by its preflure fupport a column of mercury, by the mere action of the folid patts of the two furfaces, fince every particle of hydrogen would be required to act upon 2700 particles of mercury.

We may, without nuch gratuity, confider all folid bodies as compounded of two fpecies of matter; the one poffefing fo great an attraction as to bring the particles into abfolute contact, and the other fo completely repellent of itfelf, as to be infinitely diffipated, if it were rot for its attraction for matter with which it combined. The former of thefe properties is peculiar to all ponderable matter, the latter to the repellent matter denominated light and caloric, and perhaps electricity and magnetifm. Daily experience fhews, that the conftitution of folid and liquid bodies is dependent upon a certain quantity of caloric, oppofed to the oppofite and contending force of the attraction of the particles of the folid body, by which alfo 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 pollefs whiat is called a greater capacity for heat, and the reverfe of this will take place from a conrary change.

Conceiving the above to be the cafe, it will be eafy to infer, that the furfaces of bodies mult be furrounded by atmofpheres of caloric, and it doubtlefs is by thefe atmoSpheres that we are to account for the difficulty of bringing two furfaces together, and by which we may alfo explain the action of the hydrogenous atmofphere upon the mercury. May not we, therefore, draw this general con-
clufion, that the particles of all folid matter can never be brought into contact, eifher in their internal arrangement or on the furfaces; and that the repulfion exifting between the particles of bodies, whether in the fame or in two different bodies, is folely to be attributed to the repulfion be-tween the particles of caloric? And may we not further conclude, that the particlès of hodies, in all fituations, and under all circumftances, are conftantly exerting an attra\&ive force tending to their ulimate contact ? If it fhould be admitted that caloric is the caufe of repulfion, elafticity mult be therefore dependent upon its prefence, acting in a contrary direction to the attractive force. Hence it would be very abfurd to fay that caloric itfelf fhould be elattic, becaufe 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 repulion between itfelf 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 obferved, be caufed by the joint action of two forces. The one arifing from the repulfion 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 increafes in a greater ratio. than their attraction, the radiant caloric will be reflected. A contrary effect would caufe them to be abforbed.

When the direction of the radiant caloric is perpendicular to the receiving furface, its projectile force confpires in the greateft degree with the attraction of the body, and lefs of courfe in proportion to its obliquity. Does not this agree with the eitablifhed fact, that the reflection of both. light and heat is inverfely as the angle of obliquity the ray makes with the furface.

Light and caloric, fo far as their reflec ion is concerned, are fo fimilar, that we may with great propriety apply the fame reafoning to the reflection of light, and the fame abfurdity would arife in confidering light as confifting of elaftic particles, becaufe this would imply the exiftence of attractive matter in its compofition. When, therefore, light is reflected, we are to confider with fir Ifaac Newton, that no action takes place between the particles of light and the folid matter to produce the effect ; but, agreeably to our liypothefis, we mult conclude that the reflection is caufed by the repullion between the particles of light and the caloric of the body.

If the reflection is caufed by the calorific atmofphere on the furface of the body, we may perceive an eafy way of explaining why the reflection of light is confined to the furface of bodies, and why the under furface fhould reflect as much as the upper one.

This hypothetis does not difagree with the fact, of the reflection being, like the refraction, as the denfity of the, medium, becaufe the increafe of denfity will be attended with increafe of attraction between the particles, and it will be evident, that the denfity of the calorific atmofphere will be in the fame proportion, therefore reflection will be as the denfity.

What we obferved refpecting the obliquity of the rays of caloric, will hold good with refpect to light. When the obliquity of rays of light, which fall upon tranfparent bodies is fuch, that the repulion 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 reflection. When the refection is from the under furface, the attraction of the

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medium confires with the repulfion between the light and the caloric atmofphere to caufe total reficetion, and the angle of total refection ought to be rather greater at the under than the upper furface, which has been faid to be the cafe; at leaft it has been obferved by louguer, that more light is reflected from the internal than the external furface. The additional force given by the attraction of the medium to caufe the internal reflection, will be counterafted by any other medium beyond this furface, and this accounts for the tranfmiffion under fuch circumitances. Agreably to the eftablifhed notion, therefore, we hold, that refraction and inflection are caufed by the attraction exilting between the light and the body. But it is more conliftent with our views, to confider reflection and tranfmiffion as being caufed by the repulfion exilting between the particles of light, and between light and the calorific atmofphere of the body, modified and altered under certain circumitances, by the attraction between light and the medium.

Were we only acquainted with the fact, that light was attracted by ponderable matter, we fhould, 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 circumitance of light being more attracted by inflammable than other bodies, when we recollect the great quantity of light and heat furnifhed by thofe 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 difcovered by M. Malus. (See Memoires de la Société d'Arcueil, vol. ii. p. I43.) It appears from the refearches of this philofopher, that light is changed in its properties by particular reflection. If, fays he, we take two plates of glafs, and let two of their furfaces make an angle of $70^{\circ} 50^{\circ}$; then imagine a line which thall bifect this angle. Any ray of light falling upon one of thefe furfaces, in a direction parallel to the above bifectiag line, will be reflected to the other. The light, however, is fo changed in its properties by the firft reflection, as to be completely unfufceptible of being reflected from the fecond furface; but the whole of it will be tranfmitted. This new property of light has been applied, with fome fuccefs, to explain the nyyterious phenomenon of double images formed by the Iceland cryftal, calcareous fpar, \&c. If it be alked, how it happens, fince we afcribe 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 pafs through, and are refracted? The anfwer given by fir Ifaac Newton is as fol. lows:-Every ray of light, in its paffage through any refracting furface. is put into a certain tranfient conflitution or fate, which in the progrefs of the ray returns at equal intervals, and difpofes the ray at every return to be eafily tranfmitted through the next refracting furface, and between the returns to be eafily reflected by it; which alternation of reflection and tranfmiffion appears to be propagated from every furface and to all diftances. What kind of action or difpofition this is, and whether it confilts in a circulating or vibrating motion of the ray, or the medium, or fomewhat elfe, he does not inquire; but allows thofe who are fond of hypothefes to fuppoie, 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. Thefe vibrations, thus propagated in the medium, move falter than the rays, fo as to overtake them; and when any ray is in that part of the ribration which confpires with ite motion, its velocity is in-

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crcafed, fo that it cafily breaks through a refraching furface; but when it is in a cmetrary part of the vibration, which imspedes its motion, it is eafily reflected; and confequently, that every ray is fucceffively difpofed to be cafily reflected, or tranfmitted by every vibration which overtakes it. The returns of which difpofition of any ray to be refected, he calls fits of cafy rgfiction; and thofe of its difpofition th be tranfmitted, he calls fits of cafy tranfmiffion; and the fpace between the returns, the intervals of the fits. Thic reaton, then, why the furfaces of all thick tranfparent bodies reflect part of the light incident on them, and refrakt the refl, is that fome rays in their incidence are in fits of ealy reflection. and others of eafy tranfinifion. Sce Replection, Ru: fraction, and Optics.
Having given fome idea of the nature of light in gencral, we fhall next point out the different fources of light; and under each of thefe heads, detail its more partictular properties as a chemical agent, and its connection with the matter of heat.
Solar Lishtt. - We have already fated the immenfe 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 dircction, till it meets with fome ponderable matter. In approaching any p'anetary body, fuch as our earth, we have reafon to believe that they are mutually attratied. Rays falling perpendicularly upon the aimofphere are equally attratted on every fide, and come in a ftraight line to the earth; while thofe rays which fall obliquely are bent out of their original direction; and fance the atmoSphere is not of uniform denfity, fuch oblique rays will come to the earth in curved lines. If our atmofphere were of aniform 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 extinguifhed in its paflage through the aerial medium, as we may juftly learn from the difference of intenfity in the light, at different altitudes of the fun; but how much mult this lofs of light appear, when we recur to the Itatement already made, namely, that the whole effect of the fun's light would be loft by pafling through 679 feet of feawater, and that the fame effect would take place by its paffage through 3,110,310 feet of air.
The following is a table from M. Bouguer, fhewing the intenfity of the fun's light, at different altitudes, and the thicknefs of air it has to penetrate ar each angle.

| Sun's Altitude. | Thictuefs of Air ia Toifes. | Intenfity of Light, Lie whole being 10,000. |
| :---: | :---: | :---: |
| $90^{3}$ | 3911 | 8123 |
| 80 | 3971 | 8098 |
| 70 | 4162 | 8016 |
| 66 181 | 4295 | 7968 |
| 65 | 4315 | 7958 |
| 60 | 4516 | 7866 |
| . 55 | 4776 | 7759 |
| 50 | 5104 | $7_{7}{ }^{4}$ |

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L. I G H T.

| Sun's Attitude. | Thichnefs of Air in Tuifes. | $\begin{aligned} & \text { Intenfity of Light, } \\ & \text { the whole being } 20,000 \text {. } \end{aligned}$ |
| :---: | :---: | :---: |
| $45^{\prime}$ | 5530 | 7454 |
| 40 | 6086 | 7237 |
| 35 | 6813 | 6963 |
| 30 | 7784 | 6613 |
| 25 | 9191 | 6136 |
| 20 | 1 $3+1$ | 5474 |
| $19{ }^{161}$ | $1174+$ | 5358 |
| 19 | 11890 | $53^{16}$ |
| 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 | ${ }^{2} 3975$ | 2797 |
| 8 | 26672 | 2423 |
| 7 | 29996 | 2031 |
| 6 | 34300 | 1616 |
| 5 | 39893 | 1201 |
| 4 | 47480 | 802 |
| 3 | 58182 | 454 |
| 2 | $74+29$ | 192 |
| 1 | 100930 | 47 |
| - | ${ }_{13} 8823$ | 6 |

The property of light to be refracted had been known long before the time of Newton; but this philofopher was the firft who difcovered that the light of a fun-team was not refracted uniformly. If light were uniformly refracted, the rays which enter any plane furface would retain their relative inclination to each other, while they pafa through the diaphanous medium; and the fame after their emergence, if the furface were a plain. Sir Ifaac Newton, however, has proved, by a feries of elegant experiments, Arengthened by
able reafoning, that the different parts of a folar beam are not refracted in the fame degree. He caufed a beam of light to pafs through a fmall hole in the window-fhutter of a dark room, making the pencil of rays to fall upon one fide of a triangular priim. Thefe rays were fo refracted as to come out at another fide of the prifim. Thefe emergent rays, however, were not parallel as they entercd the other fide ; but each made a certain angle with the other, in confequence of fome being more bent or refracted than the other. The image, or fpectrum, formed by thefe rays upon a thee of white paper, infead of being round, which would have refulted from uniform refraction, was of an oblong fhape. Thofe rays which had been the leaft refracted occupied one end of the fpectrum; and thofe moft 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 vioket.

In order to fhew that each of thefe rays had fpecific properties, not depending upon the medium they paffed through, he caufed them to pals through a fecond prifm, fometimes together, and fometimes feparately; but he always found them to retain their original properties.

By means of two contiguous fpectrums, he caufed a ray of one colour in the one to unite with a different colour int 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 decompofable into its original elements.

He afcertained by direct experiment, that thofe rays which were moft refrangible were alfo molt reflexible. In confequence of this property, he could reflect the different. coloured rays feparately. He caufed the light to fall upon a prifm, fo laid upon a fimilar prifm as to conflitute a parailelopiped, fo that the rays were parallel at their emergence ; but upon turning the two prifms round their common centre, the light became reflected from the upper contiguous furface, and all the rays in their turns arrived at the angle of total reflection. But he obferved that thofe which had been moft refracted were firft reflected; the leaft refrangible being the laft.
Thefe valuable facts were ufed by this able philofopher to explain the colours of natural bodes. He has fhewn that colour is not a fpecific property of bodies, but is caufed by the different rays of light being reflected from the furface of the body; the reft of the rays paffing into, or through the body. Since the time of this philofopher, it has been objected, that the feven colours above mentioned are not primitive. It feemis very obvious that there can be oily thriee 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 excefs; and that when the red is in excefs, they form orange; the green and violet form bluc.

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 fame colour, as a mixture of the jellow with the red produces orange. And it mult be admitted, that the violet, rays excite, in fome degree, the idea of red along with the blue; as in the green, the yellow and blue may be dif. cerned, but none of the red.
When the different coloured rays are mixed together, either by recompofition, or by getting each colour from a

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£eparate fpectrum, the refult will be white light. Hence fir Ifaac Newton concluded, that when the rays are promifcuoufly reflected from any furface it will appear white. It was found by fir Ifaac Newton, and has fince been confirmed by the experiments of Dr. Herfchel, that the different coloured rays have not by any means the fame illuminating power. The violet rays appear to have the leaft luminous effect, the indigo more, the blue a little more, the green very great, between the green and the ycllow the greatelt of all, the yellow the fame as the green, and the red lefs than the yellow. Whien the folar rays are paffed through a convex lens, or reflected from a concave, a very intenfe heat is produced by the concentration of the rays. Count Rumford has fhewn, that when the rays of the fun are made to pafs through a certain aperture, and fall aıpon any fubtance to be heated, white the fame area of light is made to pafs 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 fhort, than that the rays of the fun are capable of exciting fenfible heat. Newton, and the philofophers of his age, accounted for heat by the motion excited in the parts of the body by the agitating power of the abforbed light. Melville fuppofed that the heat was expelled from the terreftrial matter by the light. At prefent, it is generally admitted, on the ftrength of fome valuable experiments made by Dr. Herfchel, that the rays of light and caloric are feparately emitted from the fun, the luminous rays producing light, and the calorific, heat.
This philofopher introduced a beam of light into a dark room, which was decompoled by a prifm, and then expoled a very fenfible thermometer to all the rays in fucceffion, and obferved the heights to which it rofe in a given time. He thus determined, that the heating power of the red to that of the green rays was $2 \frac{3}{4}$ to 1 , and $3 \frac{1}{2}$ to I in red to violet.

On repeating thefe experiments, he found that the greatef quantity of calorific rays were, even bejond the coloured fpectrum at about $\frac{1}{2}$ an inch, from the commencement of the red rays. At a greater diftance from this point it began to diminifh, but was vers perceptible even at the diftance of $1 \frac{1}{2}$ inch.
It will appear from what has been ftated, that thefe caIorific rays are lefs refrangible than the rays of light; hence the calorific focus will fall beyond that of the luminous. Dr. Herfchel made an experiment to verify this inference, but did not come at any thing very conclufive. He afterwards made experiments to collect thefe invifible calorific rays, and caufed them to at independently of the light, by which he concludes, that they are fufficient to account for all the effects produced by the folar rays in exciting heat; that they are capable of pafling through glafs, and of being refracted and reflected, after they have been finally detached from the folar beam.

If we are to confider thefe invifible rays as being truly the fame with artificial heat, emanated from terreftrial bodies, under the temperature of $800^{\circ}$ of Fahrenheit, fome of the experiments of Dr. Herfchel are ftrongly at variance with fome of the experiments of Mr. Lefley, detailed in his work, entitled "An Enquiry into the Nature of Heat,"? efpecially fo far as relates to the tranfmiffion of heat through tranfparent bodies. It appears from the facts given by Mr. Lefley, that the heat of 212 of Fahrenheit is not tranfmitted by glafs in the radiant form, but is firlt abforbed by the glafs, and radiated afrefh from its oppofite furface. He was led to this conclution by the faet, that more heat paffed through whinte paper than the glafs. And what "ill more confirms this idea, he found equally as such heat paffed through two plates of tin, one fide of
each being blacked, and the other polifhed. When the bright fides were placed together, and the black outwards, it tranfmitted as much as the glafs; but when the black fides were together, and the bright fides outward, there was no perceptible quantity pafled through.

That culinary heat does not pafs direetly through glafs, may be tried by holding a pane of glafs hefore 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 tranfmitted; but this will be found to refult from a fecond radiation, and would have been more aburdant, if a plate of metal, painted black, had been in the place of the glafs.

The heat from the fun's rays is not fo affected. It requires no perceptible time to pafs through feveral thick prifms of glafs, and when we hold a convex lens in the fun's beams, we have inftantaneous heat produced upon any opaque body in iţ̦ focus.

We have not yet fufficient ground to eftablifh the iden. tity of light and heat; but if Dr. Herichel's experiments be correct, we muft either conclude that the folar calorific rays are of a different nature from the invifiblerays, or that folar light is converted into caloric from heated bodies. The fame philofopher, however, has made the fame experiments with invifible culinary heat, and with fimilar refults. How fhall we reconcile the feeming contradictions? Dr. Herfchel ufed two thermometers, one of which was his Randard. Mr. Lefley ufed the differential thermometer, an elegant inftrument, invented by himfelf. Dr. Herfchel began his experiments with a red-hot cylinder; and continued them till it became invifibly cold. 'Mr. Lefley ufed a cannitter filled with boiling water. A more particular fet of experiments is till wanting to clear up this myfterious fubject.

Dr. Herfchel has allo given us fome ufeful experimental facts on the relative quantities of light and heat tranfmitted by different fubitances. The following Table fhews the quantity of light and heat, ftopped by colourlefs and tranfparent folid fubitances.

Table I.


Table II.
Shewing the quantity of light and heat ftopped by coloured fubitances.

| Subfances. |  | Stops out of 1000 . |  |
| :---: | :---: | :---: | :---: |
|  |  | Heas. | Light. |
| Very dark red glafs | - | 800 | 999\% ${ }^{\text {¢ }}$ |
| Darkred - | - | 666 | 999 ${ }_{\text {\% }}{ }^{\frac{1}{6}}$ |
| Orange | - | 614 | 779 |
| Yellow - | - | 333 | 819 |
| Pale green | - | 633 | 535 |
| Dark ditto - | - | 849 | 949 |

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Table IIf.
Shewing the ftopping property of what Dr. Herichel calls
fcattering fubflances.

| Sulfitances. |  |  | Stops out of 1000. |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Heat. | Light. |
| Rough crown glars | * | - | 464 | 854 |
| Rough coach ditto | - | - | 571 | 879 |
| Doubly rough |  | - | 667 | 932 |
| Second doubly rough | - | - | 735 | 9+6 |
| The two firt together | - | - | 698 | 969 |
| 'Ithe two next together | - | - | Soo | 979 |
| The four firft together | - | - | 854 | 995 |
| Olive colour burnt in | - | - | 839 | ${ }_{9}{ }_{4}$ |
| Calcined talc | - | - | 867 | 996 |
| White paper - | - | - | 850 | $99+$ |
| Whice linen | - | - | 910 | 952 |
| White Perfan |  | - | 700 | 915 |
| Black muflin | - | - | 714 | 937 |

Table IV.
Shewing the ftoppage out of 1000 of the prifinatic red rays, and the invifible rays.

| Subfances. | Rays. |  |
| :---: | :---: | :---: |
|  | Red. | Inviathe. |
| Blueifl white glafs | 375 | 000 |
| Flint glafs | 143 | 71 |
| Crownglafs - | 294 | 000 |
| Coach glafs - | 200 | 183 |
| Iceland crylal | 250 | 143 |
| Calcinable talc | 433 | -- |
| Dark red glafs - | 692 | 250 |
| Orange - | 500 | coo |
| Yellow | 417 | ${ }^{27} 3$ |
| Pale green | 588 | 200 |
| Dark green | 786 | 375 |
| Blueith green | 462 | 500 |
| Pale blue | 700 | 800 |
| Dark blne | 71 | 750 |
| Indigo | 367 | 167 |
| Pale indigo | 313 | 222 |
| Purple | 444 | 250 |
| Viclet - - - | 400 | 273 |
| Crown glars, one fide rough | 389 | 250 |
| Coach glafs, ditto - | 500 | 600 |
| Crown glafs, both fides rough Coach clafs, ditto | 471 | 500 |
| Coach glafs, ditto - Calcined talc | 833 | 600 |
| Calcined talc | 737 | 714 |

Table V.
Shewing the Aloppage of rays of flane, fire, and invifible rays from a flove.


The experiments in the firft, fecond, and third tables, were made by letting the fun's rays act directly upon one thermometer, while the fame light acted upon another after paffing the different fubitances. ${ }^{\circ}$ 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 fame way, the red rays and the invifible rays being each feparated by the prifm, making two fets of experiments. In each of thefe, the red, or the invifible, acted on one thermometer, and on the other through each of the fubftances.

Table V. is formed from three fets of experiments, made at different times, by caufing, in the firft, the rays of the flame of a candle to act upon one thermometer directly, and upon the other through the fubitances. In the fecond fet the rays of a common fire were ufed; and in the third, the invifible rays of an iron ftove. See Phil. Tranf, for 1800.

An abundance of ufeful knowledge is to be derived from thefe refearches, which may be of the utmoft imp irtance to fociety, as well as in giving aid to different branches of fcience.

In delicate experiments of this kind, the thermometer feems to be the molt important of the apparatus. The fmallnefs of the fcale, and the want of fenlibility in thofe ufed by our ingenious experimenter, were certainly very objectionable, when compared with the differential thermometer of Lefley. A repetition of thefe experimients, under
fuch an advantare, is highly to be recommended. We have already pointed out fome contradictions between thefe and Lefley's experiments.

By comparing the effect of the fubitances upon the folar invirible rays in Table IV, and upon the invilible rays from the iron flove in Table V., we are led to fome very fingular conclufions. It appears, for inttance, that flint-glafs itops none of the invifible rays of the feectrum, although the fame fubltarce ftops 143 out of 1000 of the red rays, 91 of 1000 of direct folar heat, 34 of the direct light. Hence it would feem that calurific rays mixed with the luminous, mult conflitute the gi of sooo, lince all the invifible rays pafs through. We mult from thefe data conclude, that either the light of the folar fpectrum produces heat, or that the calorific part in the coloured rays is of a different nature from the invifible calorific rays. If the latter be admitted, we have as much reafon to conlider the folar beam as confiling of different kinds of heat, as well as of light.

Thefe anomalies are itill increafed, when we turn to Table V., where we find that the fame flint-glafs stops out of 1000 rays 730 invilible rays from a ftove, which would feem to eltablifh that this calorilic matter is fill different from both the vifibie and invilible caloric of the fun; and in the experiments of Mr. Lefley, caloric appears to poffefs fitll very different properties.

We here fee fo much myflery and contradiction, that we mult wait for more particular refearch. It is unlike the fimplicity of nature; the fault mult, therefore, reft with the philofophers.

Sir Ifaac Newto., on finding fo many different fpecies of light, was unwilling to make to many Auids, but fuppofed they differed in the fize of their particles; the largeft being the lealt refrangible, and the fmalleft the molt. The fame thing would take place from the fame particles moving with different velocities; the moft refrangible moving with the lealt, and the lealt refrangible with the greateft velocity.

We have already ftated. a fact difcovered recently by Malus, that light acquires new properties by a peculiar reflection. Does it then appear impoffible that it flould not be changed in paffing through diaphanous media? May not that which moves with the greateft velocity have a greater portion converted into heat; or, in other words, may not this converfion be as the velocity? This idea is flengthened, from the circumftance of calorific rays being found thronghout the fpectrum. The greatelt objections raifed to this idea of light and heat being excited by the fame rays moving with different velocities, are founded on the facts of combined light in phofphorefeent bodies, and in the chemical effects which were thought to be peculiar to light. In our next fubject, however, we fhall thes that all the chemical effects producible by light can be produced by heat.

Belides the propertics of the folar beams to produce heat and light, we find it to have other properties eqnally important to the animated world. This is molt confpicuous in the economy of vegetables. It has been many times proved, that vegetables, growing without light, would not, in the firlt place, have more tendency to grow up wards than in any other direction. This arifes from an evident attraction exifting between light and living vegetables: This fact is familiar to thoie who have placed trees in windows. It is obfervable, that they always lean towards the light. The fame effect would doubtlefs take place, if one fide of a vegetable were fhaded in the open air. The attraction of light is probably not the fame for different vegetables; by which we may account for the different forms of trees. 'I'his is rendered plaulible, when we contralt the fpreading
branches of the oak with the enwering branches of the poplar.
Experience has long aon elfablined, that vegetables become deltitute of fmell and colour, and lofe much of their combutibility, by growing in the dark. We find in Dr. Bhack's lectures, an account given by the celebrated Dr. Kobinfon of Edinburgh In the drain of a conl-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 lenves withered, and foon after new leaves began to fpring up, of a green colour, and of a dififerent thape from that of the old ones. On rubbing one of the leaves between his lingers, he found that it had the imell of cummon 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 fo altered.

This effect of light is not lefs confpienous 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 unlit to be eaten, at the fume time that it would render it more fibrous and tenacious.

From the circumitance of light giving odoar and inflammability to vegetables, and fince thefe properties are molt common to budies containing hydrogen, it would appear that light was effential to the production of hydrogen, perhaps by expelling oxygen; and hence it would alfo appear that hydrogen is neceflary to the colour of vegetables. It has been afferted by Humboldt, that he found verctables growing in the dark mine, having their natural colour, but thefe 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 firit white, and if kept in the dark at the common temperature, would doubilefs remain fo for an indefinite length of time. If, however, it be expofed to the light for a little time, it begins to aflume a purple colour, and ultimately becomes black. This effect takes place more rapidly according to the intenlity of the light. Hence it has been propoled to meafure the intenfity of light by the time of its changing. Aus inftrument has been invented for this purpofe by Mr. Lefley. Sce Photometer.

The general eifect of lighit, as a chemical arent, appears to confilt in difengaging the oxygen, or an acid from bodies which it effers, no doubt, by teffening the affinity of the bafe for oxygen, or the faliive bafe for the acid. Hence, we fiua light is capable of decompoling thofe oxyds and falts, in which the oxygen or acid is bell by a weak aftinity. It therefore detaches oxygen from the oxyds of gold, platina, filver, and the peroxyd of lead: alfo from nitric and liquid oxymuriatic acid. Dr. Herfchel, in his experiments upon light, finding that the folar fpectrum had different illuminating powers in different parts, conjectured that the power of the fun's light to effect chemical changes, might principally belong to fome particular part of the Spectrum, and it appears that this ingenious hint has been confirmed by experiments made by Dr. Woollatton, and alfo by Ritter. It appears that the invifible rays have no action upon the muriat of filver, the red rays a little more, and fo on, increafing to the utmolt boundary of the violet. ray; but the maximum of effect was found at forne diftance beyond the violet. It appears, therefore ${ }_{2}$ from this curious

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fact, that the folar beam confits of rays which have three diltinct effects, one producing light, another heat, and a third prodacing neither, but which effect the greatelt chemical changes in the leaft 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 fpecific property of light, as they have produced limilar effects by heat alone. Dry oxymuriatic acid gas was not decompofed by light nor heat. Liquid oxymuriatic acid was decompofed by a light not Arong, 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 $125^{\circ}$ to $160^{\circ}$ centigrade. The fame was decompofed flowly by diffufe light, but fcarcely any at lefs than $120^{\circ}$ centigrade. The firit oxyd of mercury was converted into the fecond oxyd, and rumning mercury by diffufe light; and the fame 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 decom. pofed by light and by a gentle heat.
They next expofed vegetable colours to the action of light as well as heat.

A vegetable rofe-colour from faffron became white in a thort time by light ; and the fame by expofure for an hour to 160 cent.

Log-wood dye was changed to dark red by light, and by expofice $1 \frac{1}{2}$ hour to $180^{\circ}$ cent.
Brazil-wood dye became white by light, and by $180^{\text {? }}$ of heat, for two hours.

The orange colour of Indian faffron became a dull red by light. The fame was produced by $200^{3}$ 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 half.

In all the effects of light we have hitherto enumerated, although we have fhewn that a mutual attraction exilts between light and other matter, we have not adverted to its remaining i:3 bodies from which it may be eliminated without change. Several bodies appear, however, to poffefs the property in a remarkable degree. Indeed, according to experiments of father Beccaria, almoft any fubftance expofed to the light 'of the fun for a certain time, appeared luminous when broaght into a dark room. This he found to be the cafe, when he made his own hand the fubject of experiment. This property is foon gone in molt bodies; but is reltored by frefh expofure to light. The fubltance molt remarkable for retaining this quality is Canton's phofphorus, which confilts of fulphur and lime. It is prepared by fratifying oyfter-fhells with fulphur in a crucible, and expofing them to the heat of a brifk common fire. The lime of the fhells becomes impregnated with the fulphur, and they are then broken to pieces, and kept for ufe in a thopped phial. This fubflance has the property of fhining in the dark, after expofure to the fun's light, for a fhort time. Its brightnefs 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 lefs bright, and ultimately lofes its shining property; which it re-acquires by expofure to the light. This light is not dependent upon any combuftion, lince it pofteffes this property without oxygen, and is not increafed by :ts prefence. Heat caufes it to fhine brighter; but it gives unt its light fooner, which is only reftored by new light.

Canton, the ingenious difcoverer of this fupflance, intro:duced equal quantities of it into two glafs globes, and expofed them to the fun equally, to give them their greatelt? 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 muck brighter, but it ceafed to be luminous in ten minutes; while the other continued to fhine for two hours after. After the latter, however, had ceafed to fhine, it became luminous by the application of heat. It appears, by the account of this author, when it had ceafed to fhine at one temperature, it always gave out light in a greater, even to the point of ignition; but never after at the fame, or a lower temperature, till it had been expofed anew to the fun's light.

Thefe curious facts, on a firft view, feem to prove that the light of this fubftance is derived from the fun's rays, which enters into combination with it, and is eliminated in the dark. This fuppofition, however, is rendered improbable by other facts. When it has ceafed to thine, its property is reftored by any of the coooured rays of the folar fpectrum. It ought, therefore, to emit that particular light only to which it has been expofed, but contrary to this, under all circumftances, it gives out the fame coloured light, which is generally white.

It feems more agreeable to the phenomena to fuppofe, that the infuence of the light upon this fubitance confifts 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 fpark, as well as light, is capable of giving it its luminous property.

A great variety of fubftances have the property of giving out light by different treatment, fome by heat, others by rubbing, and by percuffion. Moft of tha earthy falts have the property of flining in the dark, by being laid üpon an iron plate, heated a little fhort of ignition. Fluat of lime is by far the molt brilliant by this treatment. The fame is vifible, though in a lefs degree, in -all the carbonats of lime, and in carbonats and fulphat of barytes, and alfo carbonat of flrontian.

Several of the gems have the property of hiuning by rubbing. Quartz pebbles, rubbed brikly together, in the dark, give brilliant flafhes, accompanied by a peculiar odour not unlike that produced by the wheels of a carriage grinding upon ftones. The tourmalin alfo gives out light by rubbing. The fhining property of this clafs of bodies is the fame in vacuo, and any of the gafes. The caufe of there appearances is not even gueffed at: they do not acquire thefe properties from the fun's light, like the phofphorus of Canton.
We are in poffeffion of a number of curious facts relative to phofphorefcence of animal and vegetable fubttances. Canton has furnifhed a number of interefting experiments upon fifh and the flefh of animals: and the fubject has fince been inveltigated and extended by Dr. Hulme. The flefh of animals, particularly veal, at a certain period after death, begins to be lumiuous, and continues fo for fome time. The light is extinguifhed when the meat has arrived at a certain flate of putrefaction. This property, however, is more confpicuous in fifh, and fea-fifh more than that of frefh-water. A feries of experiments is given by Dr. Hulme in the Philofophical Tranfactions for 1800 , page 161.

He generally took about four drachms of the fubltance of different kinds of fifl. 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 occafionally he ufed other falts.

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Two drachms of the ftefh 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 is was dark below. On thaking the phidl, the whole became beautifully luminous, and remained in that fate. 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 thaking as on the firft occafion. In another experiment, the light difappeared entirely on the thred 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 fifh nor the liquid had any fmell of putrefcence. The fame took place in a fecond experiment. In another experiment, he utid 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 thaking the phial, the liquid was luminous; it remained foon the thrd and fourth; and on the lifth 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 fufpended in a room the herring and the mackarel. On the fecond night the kima lide became lumin us; on the third night both files of the whele were exceedingly luminous." Dr. Hulme obferves, that the foft roe of both thefe fifl afforded the molt light. At the time thele fifh became very luminous, Dr. Hulme fcraped off fome of the luminous matter, whicti he named herring's light, or mackarel light. This fubftance he introduced to different folutions of falts.

The folutions ufed were fulphats of magnefia and foda; muriat and phofphat of fods; nitrat of potafh; Rochelle falt ; tartrat of !oda; and fea-water. He allo ufed folutions of honey and fugar : the quantity of water in each was two ounces: the quintity of each fubtance diffolved in the fane 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 mafs of liquid very luminous, and continued for 24 hours. All the above folutions became luminous by adding the fame lucid matter. The phofphat and muriat of foda appear to have been better than the reft. The light with 「ea-water was more permanent, being luminous for feveral days. After the above luminous matter had ceafed to fhine, the light was in fome degree revived by motion What is very remarkable in thele experiments, is the circumbltance, that when the folutions were made ftronger to a certain extent, the light became fuddenly extinguifhed, but was always reftored by dilution with water.

The light is alfo extinguihed by water, lime-water, water impregnated with carbonic acid, or with fulphuretted hydrogen, alcohoi, alkalies, and acids.

In all the above experiments the light is not attended with the leaft elevation of temperature.

By expofing this luminous matter to a certain degree of cold the light is extinguifhed; but is reltored with the return of temperature. A moderate heat caufes it to. be more bright ; but the heat of boiling water entirely extinguifes it, and delloys the property. According to another fet of experiments by Dr. Hulme, in the Phil. Tranf. for 1 §or, page 483 , it appears, that thele fubftances do not fhine brighter in oxygen than atmofpheric air. In nitrogen gas
they do not begin to fhine; although, after the fining hav commenced, they continue to fline in this gas for a limited time: the prefence of oxygen appears to be effential in firft producing this property. Dr. Hulne found, that when two herrings were expofed, with their fides touching, the unexpofed parts remained dark: he found the effeet produced by covering any part with Atrong brown paper.
In hydrogen gas the frefh fifh $b$-gins to fhine; and, if begun, it is very foon extinguifhed: it recovers its property, however, by re-expofure to the air of the atmofphere. By repeated and altcrnate expofure to thefe gafes, the light is loft and regained a number of times. This light is alfo extinguifhed by nitrous, carbowic acid, and fulphur tted hydrogen gafes. This phofphorefence is extinguifhed ith vacuo; but is reftored by letting in the air. The glowworm and rotten wood were found to poffefs limilar properties: they were fimilarly afted upon by the different gafes, by cold, and by moderate heat. The light of the fhining matter from the fifh was extinguifhed by a heat from $96^{\circ}$ to 100 of Falirenheit: the temperature of $110^{\circ}$ impaired, but did not extinguifh the rotten wood: the temperature of $114^{\circ}$ increafed the brilliancy of the glowworm ; but the temperature of $212^{\circ}$ extinguifhed both.

It appears that rotten wood, like the filh, does not give out light till it has been expofed for fome the to the air : it retains its luminous property immerled in fp:ing-water, or difllled-water, and alfo in linfeed oil ; it is, however, extinguifhed by auds, by alcohol, and, perhaps, by alkalies. The luminous matter of the glow-worm is a liguid fecreted and retained in the lower part of the abdomen. If the fluid be fqueezed out, it filll retains its fhining property, and may be fpread upon the palm of the hand; but it foon in this tate difappears.

This property is obferved in fome other infects, particularly the lantern-liy of the Weft Indies.
The light of a great number of thefe artificial and riatural pyrophori dues not appear to depend in the lean upon the prefence of oxygen. Of this kind are phofphorus of Canton, the different earthy falts which fline by the application of heat, and fome other minerals which thine by friction and attrition. Thofe of which we have latt treated require the prefence of oxygen, at leaft to acquire the property of fhining. This circumlance renders the fuppofition 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 eltablinhed, is that, during a certain flate of the animal fubstance, between death and actual putrefaction, fome procefs is carricd on in the prefence of oxygen, by which light is evolved; and that during the time the fubttance is in vacuo, or in fome gas which is dettitute of oxygen, this procefs is fufpended, and by the prefence of other fubftances totally tlopped. The fact of its continuing to fhine in nitrogen, might arife from the prefence of a fmall portion of oxygen. It appears, from the circumftance of its fhining in atmofpheric air, as much as in oxygen, that very little oxygen is neceflary. Forfter afferts that the glow-worm fhines brighter in esygen, but the oxygen does not appear perceptibly impaired. This fhews, that although oxygen is necelfary, the quantity required is very fmall,

It has been too common for chemifts to draw the following conclution, that when light, or light and heat together, are evolved, that it nult either have arifen from combuttion, or that the light is a component part of the body from which it is difengaged. As, for inftance, becaufe Canton's phofphorus thines without the prefence of oxygen,

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the light is called light of combination; and Dr. Hulme has, with lefls foundation, drawn the fame conclufion. Inflead of faying that light and heat are products of combination, from the union of oxygen with inflammable matter, we fhould fay that it is the refult of rapid chemical combination, when the bodies have great aflinity for each other.

We have feveral facts which confirm this idea. When Atrong mineral acids combine with pure potafh, lime, or magnefia, much heat and fome light are emitted. The fame thing is alfo obferved in flacking of lime. In an experiment, made by a fociety of chemitts, it appears, that when a mixture of fulphur and copper filings is expofed to a red heat, in a glafs tube, the oxygen being excluded, the two fubitances fuddenly combine, attended with the difengagement of lisht. In thofe chemical changes where heat and light are difengaged, the following law will obtain. The change of temperature will be as the differnce between the ipecific heat of the compound body, and half the fum of the fpecific heat of the bodies before combination ; while the inteufity of the light and heat will be inverfely as the time in which this change has been taking place.

We fhall here leave the fubject of phofphorefcent light, to give fome account of that produced by combuftion; in treating which, we fhall find our progrefs much facilitated, by confidering combuftion as dependent on the above law, rather than upon the laws of combution, as laid down by Lavoifier, who was of opinion, that the light and heat furnifhed by combultion were entirely derived from the oxygen. If, as we have fuppofed, the quantity of heat be greater, as the fpecific heat of the refulting compound is lefs than the mean of the bodies befare combination, we ought to have heat evolved whenever fuch change can be proved; and by afcertaining, before hand, the feccific heat of the compound, and of the elements, the quantity of heat may be known. Experience has already given great ftrength to this notion. The intenfity of the light and heat, however, during thefe changes, will not depend upon the abfolute 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 combuttion. In the flow combunion of hydrogen gas, the light is not'great, but the whoie heat \%'s greater than that afforded by any other combuttible body. On the other hand, the abfolute quantity of heat afforded by the combuttion of phofphorus, is much lefs 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 intenlity of light, however, will alfo be inverfely as the fpace which it occupies, and hence it will be as the fpecific gravity of the combuttible body. We may therefore conclude, that the quantity of light afforded by combultion will be as the rapidity of combultion, which will be as the affinity of the body for oxygen, as the denfity of the burning body, and inverfely as the cohefion of the body. The difference of cohefion between charcoal and the diamond accounts for the relative combultibility of thefe two bodies. For this reafon, foft iron wire ought to afford more vivid combution in oxygen than theel wire.

In order to obtain a relative idea of the value of different combultible bodies, ufed for procuring artificial light, we fhall detail fome ingenious experiment: inade by Dr. 'Henry, and publifhed in Nicholfon's Journal, vol. xi. p. 65 .

Dr. Henry, with a view to afcertain the relative value of the combultible gafes, made fome trials with hydrogen, carburetted hydrogen, and carbonic oxyd. Thicfe he found
did but afford a very inferior light, compared with the Splen. did light given by the gas afforded by the deltructive dittillation of pit-coal, which is equal to the light given by the fineft fpermaceti oil. The following table points out the refult of his experiments, and clearly thews the caufe of the fuperior property of coal gas to produce light.

| Kind of Gas. |  | Meafures of rarlonic acid protured. |
| :---: | :---: | :---: |
| Pure hydrogen | 50 to 54 | None |
| Gas from moift coal | 60 | 35 |
| Do. Wood (oak) | 54 | 33 |
| Do. dricd peat | 68 | $\div 3$ |
| Do. from cannelcoal | 170 | 100 |
| Do. Lamp oil | 190 | 124 |
| Do. Wax | 220 | 137 |
| Pure olefiant gas | 244 | ${ }^{179}{ }^{\circ}$ |

The firt column contains the different gafes, 100 meafures of each being ufed in each experiment. The fecond, the meafures of oxygen which were confumed, while each of the 100 meafures were burning. The third, the quantity in meafures of carbonic acid, which refulted from the combuftion. It is a fact, already afcertained, that every meafure of carbonic acid gas has refulted from a meafure of oxygen; confequently, the quantity of oxygen confumed in its formation is equal in meafure to the numbers in the third column ; the excefs of oxygen, therefore, appearing in the fecond. By fubtracting 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 excefs of oxygen, in the fecond column, will combine with two meafures of hydrogen, to form water. In order. to form fome idea of the relative value of thefe combultible gafes, we will compare the firit, which is pure hydrogen, and the latt, or the pure ole fiant gas, which has the greateft efficacy in producing light. The 50 meafures of oxygen in the firit combine with 100 of hydrogen, and fince no carbonic acid is produced, this is the whole effect. In the laft experiment, I79 of carbonic acid is formed at the expence of 179 meafures of oxygen, and about sths its weight of carbon, which would alone have furnifhed confiderable tight. Since, however, $28+$ meafures of oxygen are expended, we have $2 \$ 4-179=105$ meafures of oxygen, which would require 200 meafures of hydrogen. If, therefore, hydrogen and carbon were equally efficacious as combultible bodies in producing light, the quantity of light in one, to that in the other, would beas $210+\frac{5}{5} \times 179: 100$, or as 25 to $i$ nearly. The ratio of the fpecific gravities of thele grafes is as 90 to 8 nearly; therefore, multiplying thefe rarios, we get 270 to 8 , or 34 to 1 nearly, for the relative intenlity of the light of each.

Thefe different gafes are here fuppofed by Dr. Heary to be mixtures of feveral gafes, the compofition of which is known, and all confilting of different proportions of hydrogen and carbon, with the exception of the carbonic oxyd,

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which contains oxyzen. Now, fetting afide the later 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 nore effective than hydrogen, but becaufe the fpecilic gravity of the yas is increafed by the carbon. Since, therefore, the olefiant gas contains the mont, and is of the greatelt fpecific gravity in confequence, thofe gafes which contain the greatelt quantity of olefiant gas, mult be the beit for producing light by combuktion. Now, it may be feen in the table, that the gafes obtained from lamp oil and wax are the next to the olefiant gas in their effect of giving light ; and hense we may conclude that thofe gales contain a large proportion of olefiant gas, and of courie feem well fitted for producing artificial light. If we may judge by analogy, we may expect that the fpermaceti fat will ftand as high as the oil, and the beft tallow may, perhaps, be the next in order. During the burning of thefe fubltances, the vapour which, when kindled, contitutes the flame, may confilt of a great proportion of the olefiant gas. In the burning of all fatty fubltances, hewever, there is a great redundancy of carbon, which flies off with the gafeous products in the form of fmoke, and which is burnt in the Argand lamp. The above facts will furnifh an elegant and fimple method of appretiating the relative value of the different combultible bodies to produce light. See Gas-lights, Lamp, and Consbustion.

The light which is furnifhed by combution, and commonly called artuicial light, is confidered by moft philofophers as being a component part of the bodies employed in the combuftion. Even in the fimple procefs 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 fhould give out light at the fame temperature, which is faid to be about $800^{\circ}$ Fah. It would appear, from a fact given by the late Mr. Wedgewood, that the emanating medium is heat or light, according to the denlity of the body from which it is emanated. The heated air is fo hot, as to make a thin תlip of gold appear red-hot, although the aerial medium did not become luminous. Terreftrial light, as it appears to poffefs moft of the properties of folar light, like it, can be tranfmitted and refracted by tranfparent bodies, and it frictly refembles 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 Herfchel has made a number of expariments upon terreltrial heat, in order to compare it with the heat furnifhed 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 terreftrial heat and folar heat differ effentially. Artificial heat does not pafs through glafs, while the folar calorifc rays pafs eafily through the fubftance of a prifm, and afterwards through a convex lens.

It has been found that artificial light has fome chemical properties. The Abbe Teffer found that the green colour of vegetables is produced by the light of a lamp. This fact has been conlirmed by Decandolle.
Ligilt, for the Properties of reflected, fee Reflection, Mikror, \&c.
Light, for the Properties, ©'c. of refraeled, fee Refracthon, Leess, \&c.
Ligirt, for the Doarine of the Colours of, fee Colour, Refraction, and Refrangiblety.

Ligut, for the Marner in whbich it affeds our Senfes, and bow it contributes to Wifion, fee Vision.

Light from Dianionds and other Bodies. See Licit, fupra, Diamond, Electricity, and Phosphorus.

Vob. XX.

Ligut, Exbilision of, by fiving Animals. This fingular property belongs only to creatures of a fimple Rerueture. It appears to relide only in certain \{pecies of the four lath claffes as eltablifhed by modern naiuraliits, viz. mollufia, infeits, worms, and anplyytes.

The mollufith and werrens contain each but a fingle fpecies. which has been infertained to thew lighe; for the account of certain fpecies of lepas, murex, and chanad yie'dintry ligh:。 dues not feem to reft upon any grod authority, and the Rories toid by Brugucire and by Flaugergucs of carth-warms being luminous, are improbable 1 il themfelves, even if they were not contrary to common obfervation. Sce Journal d'Hifoire Naturelle, tom. ii, and Journal de Phyfique, tom. xvi.
The examples of luminous feecies are more numerous amongtt infocts than in any other clafs. They are to be found in the following genera; cluler, lumpyris, fulgora, pazifus, foclopcndra, cancer, bynceus, and limulus.

There are alfo many luminous zoophytcs, particulariy in the genus Medufa, and in the new genus Berce.
Some writers have attributed the property of flining while alive to certain fifbes; but, as it would appear, upon very queftionable grounds. In a serage from France to Cayenne, Mr. Bajon faw in the fea a number of lumirous points which fhone when truck, and another appearance of pale flames, about three feet below the furface of the water. He likewife obferved in the migration of the dorado and other fifhes, that their bodies were ft:dded with fimilar luminous points. Upon examination he difcosered thofe to be minute fpheres which adhered to the furface of the fing. Thefe were moft probably the fmall fpecies of luminous medufa. We fhall hereafter notice that Bajon's obferrations therefore fhewed no property of fhining in the fift themfelves.
Godeheu de Riville fates in a paper he fent to the Academy of Sciences, that he found in the Scomber pelanis, on opening it alive, an oil which was extremely luminous. It fhould. be obferved, that Riville was prepoffeffed with the opinion of all the luminous appearances of the fea being occafioned by a peculiar oily fluid: other parts of his Memoir fhew inaccuracy of information; and it may be added, that if the oil of fifles were ufually luminous, as fuppofed by Riville, it would be a fact very generally known.

We flall now proceed to confider the luminous property in thofe animals which have been afcertained to poffefs it. Afterwards we fhall defcribe the peculiar organs from which the light is known in certain fpecies to emanate ; and lafly, we thall examine the opinions that have been entertained refpecting the nature and origin of animal light.

The fpecies of Pbolas, deferibed by Pliny under the name of Dadylus, has long been known to polefs remarkable powers of evolving light. It is recorded by Pliny, that every part of this aximal's fabfance is charged with a fluid, which, like liquid phofphorus, reriders any object luminous with whic's it comes into contact.

Reaumur has confirmed the obfersations of Pliny; he found alfo that the water contained in the thell of the dactylus, and other fluids in which the animal might be immerfed, acquired the property of ficing, and after touching the creature, the hazds communicated to common water a milky or pale phofphoric appearance. Reaumur obferved that the light was moft vivid when the dazylus was frefh; it afterwards gradually declined until it became extinct. He dried the entire animal, which deprived it of all power of fhining, but this was reltored in a weaker degree even after four, or five days, by moiltening it either with frefl or falt water. So far from the procefs of diflolution being at

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ali neceffary to the luminous appearance of the daajitus, Reaumur found that it was deitroyed by putting putrid individuals amongt thofe which had beer recently taken. Mem. de l'Acad. des Sc. de Paris, 1712.

There are three luminous fpecies of elater; the notisurus, phofphoreus, and ignitus. The firt of thefe thines fo brilliantly, that before the arrival of the Spaniards in South America, it is faid many tribes of Indians ufed no other light for tranfacting their ordinary bufinefs; and at prefent the women wear the infeck at night as an ornament in their head-drefs. Dr. Patrick Brown, in his Hittory of Jamaica, fays, the elater noctilucus is feldom met with during the day, it being then torpid; it flies by night, at which time it emits an unfteady light, having alternate moments of darknefs. He obferved, alfo, that the extinction of the light depended upon the will of the animal.
It is well known, that in the elaters the light proceeds from the fmooth yellow fpots fituated upon the corcelet; but Dr. Brown feems to think that all the internal fubftance is equally luminous, and that the yellow fpots appear fo in a greater degree than the other parts, in confequence of the tranfparency of the fhell at thefe places favouring the tranfmiffion of the light. He fays, in forcing the rings that cover the different parts of the body a little afunder, you may obferve the fame light to iffue from all the entrails indifcriminately. The internal parts of infects are fo tranfparent, and would permit fo much light to pafs through them from the proper organs, that Brown might readily have taken up the above opinion without its being well founded. Thus we have oblerved, on opening the glownsworm at the back in the dark, that the light thone through all the inteltinal parts.

There is fome obfcurity in the accounts of naturalifts with reípect to the elater phofphoreus. Degeer diftinguifhes it from the nodilucus, on account of the yellow fots being vifible on both the upper and lower fides of the corcelet; but we have found that this is to be obferved in the latter fpecies alfo. The principal, and perhaps the only real diftinction of the phopphoreus, is its fmaller fize than the noclilucus.

The elater ignitus of Fabricius is confiderably fmaller than the preceding fpecies, and is fufficiently characterifed by having the margins of the corcelet yellow, in place of the two yeilow fpots.

The genus Lampyris contains many fpecies which emit light; of thefe we may mention the $L$. nociluca, or common gloru-zvorm; L. folenditula, of which Degeer confiders the nociluca as a variety; the $L$. ignita, $L$. phofphorea, $L$. nitidula, L. lucida, L. italica, L. japonica, and L. penfylvanica, which laft appears to be the Pyralis minor of Brown. Probably other fpecies of lampyris'might be enumerated amongt thofe that have the property of fhining; but as the light of all the lampyrides appeara to be produced nearly in the fame manner, it is not fo neceffary to our purpofe, to fix with precifion the number of the luminous fpecies.

The lampyrides, like the elaters, have the power of regulating at pleafure the degree of their light, or of fufpending it altogether. The colour of the light depends upon its Atreugth; when very weak it is of a faint emerald colour, and in its moft vivid ftate it is a bright yellow or orange colour.

The glow-worms of this country are only luminous in the feafon for procreation, which lafts during the fummer months; when the females are impregnated, and have depofited their eggs, they thine no longer. This circumftance has authorifed the common opinion, that the exhibition of light is made for the purpore of guiding or inviting the male infect.

The glow-worms moft 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 difplay 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 fplendour for a few nights, after which they again retire. Their difappearance probably depends upon their meeting with the male infect, for we have not obferved that the ftate of the weather has any influence upon them. They commonly begin to fhime before it is quite dark, and extinguifh their light fome time before the approach of day. It is remarkable with what regularity their inltinet guides them in this particular; we have kept them the whole day in darknefs, without their fhewing any defire to move or expofe their light, yet in the evening, although purpofely placed near burning candles, they crawled about and flone with brilliancy.
The light of the glow-worm is always molt vivid when the creature is in motion; it may alfo be excited or encreafed by turning the infect on its back, or otherwife teazing it. But the luminous appearance is interrupted at all times by fhort and irregular periods of either diminithed light or total darknefs; ufually, however, there are two fmall fpots on the laft ring of the abdomen, which retain their light whillt the other luminous rings ceafe to fline.
The lampyris italica has been obferved, like the nosiluca, 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 ftronger, fometirnes weaker, and at times dying wholly away. The light is always renewed in a few feconds, the obfcure intervals being of fhorter continuance than the moments of illumination, which the creature feems able to command at pleafure. Every pert of the abdomen appears to yield light in this infect, which is flronger and more conftant than what is emitted by the elater nociliuczus. Brown's Hittory 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 miftaken by Linnæus for the perfect female infect.
M. Gueneau de Montbiellard not only fates the larva and chryfalis of the glow-worm to be phofphorefcent, but that the eggs alfo for two, three, five, or more days after they are expelled from the female, emit light without intermiffion or decreafe, and that for an equal time their light declines until it becomes extinct. . He obferves, that it is. not nèceflary for the eggs to be fecundated, but thofe which thone longeft produced the larvæ. In one inftance he did not find the eggs to be luminous; on another occafion, fome eggs, which were laid on the 12 th of June, fhewed a degree of light, even on the 28 th of July. Memoire fur la Lampyre. Acad. de Dijon.
We have very frequently had great numbers of the eggs of the glow-worm in our polfeffion, but we never faw them in a luminous ftate, except upon one occation, when they fhone unremittingly for feveral days together, as deferibed by Montbiellard; the fact is, therefore, the more remarkable, on account of the rarity of its occurrence.
Befides the fpecies of fulgora, in which the luminous faculty has been noticed, there are probably feveral others, if we may judge by analogy of ftructure, that alfo poffefs it. The individuals moft diftinguifhed for this property, are the lanternaria, candelaria, and pyrorbyncbus.

The fulgora lanternavia difplays a very brilliant farkling

Hight, which is only feen during the night when the infeet is in motion. Madam Merian having once collected a number of this fpecies, fhe enclofed them in a box, without being aware of their luminous property. Being one night attracted by the noife that proceeded from the box, fhe opened it, and, to her great furprife, found every infect in motion, and yieldEng a ftrong light. Merian Surin.

Cuvier feems to entertain fome doubts of the luminous property of the lanternaria. He fays, in his Tableau Elementaire de l'Hifoire Naturelle, fome voyagers have afferted, that the projection from the head of the infect emits a vivid Jight, but it appears, at lealt, that this does not exilt at all times.

The fulgora candelaria has been obferved to throw out flafhes of light, which are fucceeded by moments of obfcurity.

The fulgora pyrorbynchus has been reported to fhed a radiant light.

With refpect to the luminous property of the other ful. gora, we are not in poffeffion of any particulars.

The paufius /pberocerus has been difcovered to yield light by Dr. Afzelius. On going to look at his fpecimen one evening, he fays, he happened to ftand between the light and the box in which it was contained, fo that his fhadow fell upon the infect; he obferved, to his great aftonifhment, the globes of the antennx, like two lanterns, fpreading a dim phofphoric light. He examined the infect feveral times during that night, when the fame appearance ftill prefented itfelf; he was, however, difappointed in not having the opportunity of making further obfervations upon the animal, as it was fo much exhaufted it died before morning, and he was not able to procure another fpecimen. Limnæan Tranfactions, vol. iv.
The folopendra eleariea is an infeat frequently found in this country, but is not obferved to be luminous at all times. Degeer faid he never faw it emit light, which was probably owing to the animal being only luminous under particular circumftances. It would appear that this fpecies is incapable of fhining unlefs after expofure to folar light. In feveral experiments that were made upon the foolopendra redrica, it was found, that the creature could not be excited to fhine after it had remained all day in a dark fituation, but a fhort expofure to the light appeared to be fufficient to reftore the luminous property.

The light produced by the fcolopendra slearica has a dull phofphoric appearance; it is a momentary emanation, which only takes place when the creature is diturbed or preffed.

The fcolopendra phofphorea is but imperfectly known; in the edition of the Syitema Naturx, publifhed in 1767 , Linnxus ftates, that this infect is an inhabitant of Afia; that it yields, during the night, a light refembling that of the glorvfoorm, and that it is caught by falling from the fley on fhips in the Indian and 式:hiopian feas, 100 miles from the continent. Linnæus quotes as his authority, Car. Gueft. Ekeberg, who, he fays, faws, defcribed, and delineated the animal.

Ekeberg was a Swede, and the captain of an Eall Indiaman. He made fourteen voyages, but, as far as we can learn, rever publifhed his difcovery of the fcolopendra phofphorea, and as we have no fubfequent accounts of this infect by other voyagers, its real characters, and perhaps exiftence, mult remain doubtful.

The canter fulgens was difcovered by fir Jofeph Banks, during his firit voyage with captain Cook, in the paffage from Madeira to Rio de Janeiro. He obferved, that its whole body was illuminzted, and produced very vivid flathes of light. Phil. Tranf. 1810, part ii.

Hablitzl relates, that a cable being on one occafion drawn up from the fea, it was found to exhibit light, and, upon clofer infpection, it was perceived to be covered with the cancer pulex. Hablitzl ap. Pall. n. nord. Beytr. 4. p. 396.
Thules and Bernard, of the academy of Verfailles, allo reported, that they met with the cancor pulex entirely luminous.
In different fyftems of natural hiflory, the property of fhining is attributed to this fpecies of cancer, probably only on the above authorities. The accuracy of the affertion might perhaps be fill called in queftion, as the cancer puleef being frequently under our eyes, its luminous property, if it exifted, could hardly efcape more general obfervation.

In 1754, Godeheu de Riville difcovered a luminous teftaccous infect on the coaft of Malabar, which appears to belong to that divifion of the Linnean genus, monoculus, called by Muller lynceus.

Riville, perceiving the fea around his fhip to errit a very brilliant light, procured fome of the water and ftrained it ; after which it ceafed to thine, but the cloth was covered with luminous fpecks, that refembled in form and magnitude the ova of fifh; on being examined in the light, with a magnifying glafs, they were difcovered to have an internal motion ; fome that were fet at liberty in the water were feen to fwim with great rapidity like water fleas. Riville feized one of thefe with a pair of forceps, which caufed it to fhed a luminous liquor of a blue colour, that illuminated the water to the diftance of two or three lines.

Some of thefe animals were put into frefh water, which they furvived only a few feconds, and defcended, ftruggling, to the bottom of the veffel; many of them rendered much Iuminous fluid while dying.

Riville defcribes this creature as being enclofed in a fhell refembling an almond, fplit along the fide, and notched at the upper end, which is fo tranfparent that all the internal parts are feen through it. The infect has four jointed antennæ, furnifhed at their extremities with long fetr. There are two feet armed with hooks; and below thefe, a thick foot terminating in feveral claws. The vifcera are contained in a round fac; and at the lower part of the fhell there is found a number of azure-coloured globules, which Riville confidered as refervoirs of the luminous fluid, becaufe they became of a dull yeliow colour when the animal was about to die: but they are more probably the ova, which are allo vilible in this fituation in other teftaceous infects.
The luminous liquor fhed by the animal does not, Riville fays, mix with water, but floats on the furface like globules of oil. By ftraining fome water from which the animals had been removed, timilar globules were left in a diftinct form upon the cloth. From thefe circumftances, he was difpofed to believe that the globules he faw were really of an oily nature : which opinion he was in a great meafure induced to adopt, from a preconceived theory, that all the luminous appearances of aumals depend upon the occafional prefence of an oily fluid. Memoire fur la Mer lumineufe. Menı. Etrang. de l'Acad. des Scien. tom. iii.

A few years ago, captain Horfburg prefented fir Jofeph Banks with fame notes on the luminous appearance of the fea, and a drawing of a phofphorefcent marine infect, which have been publifhed in a paper of. Mr. Macartney's communicated to the Royal Society in 1810.
Captain Horburg remarks, that the Iuminous ${ }^{\circ}$ fate of the fea between the tropics is geverally accompanied with the appearance of a great number of marine animals, of various kinds, upon the furface of the water; to many of which he does not, however, attribute the property of

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Thining. At other times, when the water which gave out light was examined, it appeared only to contain fmall patticles of a dufky flraw colour, which difolved under the fighteft touch of the finger.

Captain Horfourg likewife obferves, that in Bombay, dluring the hot weather in the months of May and June, he las frequently feenthe edges of the foa much illuminated by minute fparkling points. Thefe, whilit in the water, nlways avoided feizure, by moving away from the hand, fo that it was with difficulty he procured any of them. Upon two occafiono he fuccceded in detecting the animals that caufed the light of the fea. At fun-rile, on April 12th, 1798 , in the Arabian fea, he perceived feveral luminous fpots in the water, which conceiving to be animals, he went in the boat, and with fome difficulty caught one. This infect, he fays, refembled the wood-loufe in appearance, and was about one-third of an inch in length. When viewed with the microfcope, it feemed to be formed by fections of a thin cruftaceous nature. During the time any fluid remained in the animal, it fhone brilliantly like the fire-fly.

In the month of June of the fame year, he picked up an infect on a fandy beach, which gave light. This was alfo covered with a thin thell, but was of a different fliape and a larger fize than the animal taken in the Arabian fea.

Mr. Macartney entertains no doubt that both thele infects were monoculi. The firit he refers to the genus $L i$ mulus of Miiller, and gives it the fpecilic name of Noaillucus. Sce Phil. Tranfact. ISio, part ii.

The light of the fea has been moft frequently afcribed to the prefence of a minute fpecies of worm, the nereis nociluca of Linnæus, even by thofe who did not pretend to have feen the animal.

This creature was firf defcribed under the name of lucsioketta marina, in a fmall pamphlet publihed by Dr. Vianelli at Venice, in 1 749. He found about thirty of them on the leaf of an alga, taken up from the lake of Chioggia. By fhaking the leaf, he fucceeded in procuring one of thefe 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 fub. flance. Wher it was examined under the microfcope, he difcovered that it had the figure of a worm, and confilted of joints or fegments. It had two antennx; a number of fetaceous proceffes along each fide of the body, which he conlidered as fins; and under thefe, other twilted proceffes znalogous to feet. Nuove Scoperte Intorno le Luci notturne dell' Acqua marina fatte da Guefeppe Vianelli.

Vianelli's obfervations were repeated foon after by Grifelini. Ha procured fome of thefe animals upon the feaweed, on which they are ufually found; and having placed one of them in fome water, between two concave glafles, he fubjected it to microfcopic examination with the higheft magnifying powers: by which means, all the parts of the worm were very evident. He defcribes the head as having two fhort antennx, and a horn-fhaped procefs between thefe, and two dark coloured eyes. The lateral proceffes, lice fays, form tranfparent cafes, which terminate in a denticulated manner, and contain each a tuft of hair. The other procefles are alfo tranfparent, extenfile, and fometimes entwined together.

He obferved that the light is fhed at all feafons, but is moit triking and moft frequently feen in fummer. When the wind is about to change from the S.E. into the E., the light is increafed; and in the dark winter nights which fucceed a warmefun, the luminous appearance is produced as in fummer.

Grifelini further mentions the hining of another marine iufect, which appears to be the monoculus difeovered by Riville. Obfervations de François Grifelini fur la Scolopendre marine luifante, Venife 1750.

The fame animal has likewife been defcribed and figured by Adler, under the name of the nercis phofphorans. His. defcription coincides with that of Grifelini. He flates that this §pecies is found in the African and Indian oceans, but that it is ravely met with in the Northern feas. Amcenitates Academicx Carol. Linne.
'The nercis nociluca was feen by the abbé. Nollet, M. Rigand, and Fougeroux de Bondaroy. The latter, however, defcribes it to be the fize of the bead of a fnall pin. He fays it increafes, diminifhes, or extinguifhes its light at pleafure, which commonly iffues from the pofterior part of the body; but when fully illuminated, the head only is opaque. The colour of the light is blueifh. When fqueezed, it theds a train of luminous fluid; which appear* ance is alfo feen, in a degree, when it is agitated in the water. He mentions having obferved two fizes of the animal, but cannot determine whether thefe are different ages, fexes, or fpecies. Mem. de l'Acad. des Scien. 1767.
The abbè. Dicquemare flates, that-he faw the luminous animals difcovered by Vianelli; that he exhibited them tohis pupils during his lectures, and deliseated them at thefame time. Thefe drawings he fent to Rigaud, whol returned for anfwer, that the deligns were precifely the fame of thofe which he had himfelf executed. Journal de Phyfique, tom. vi.

Spallanzani allo afferted that he had feen the nereis noti*luca.

After fuch a ftriking concurrence of teflimony, we cannot prefume to doubt the exitence of this fpecies. of luminous animal: but we are led to think that it never. vifits the coafts of this country; as in numerous examinations-we have made of fea-water in a luminous ftate, we have not met with it: Judging from our own experience, and comparing it with the obfervations of others, we are led to conclude that tho nereis nociluca is, generally Speaking, a rare fpecies, and that the light of the fea is moft frequently occafioned by medufa.
The largeft and moft fplendid of the luminous medufa is the pellucens, which was dificovered by fir Jofeph Banks, in the firlt voyage of captain Cook. It was taken up from thefea, at the fame time with the cancer fulgens already mentioned, in the paffage from Madeira to Rio de Janeiro. This fpecies meafures fix inches acrofs the crown or umbella, which is marked by a number of opaque lines that pafs off from the centre to the circumference. The edge of the umbella is divided into a number of lobules, which fucceed: each other, one large and two fmall ones alternately. From within the margin of the umbella there is fufpended a number of long cord-fhaped tentacula. The central part of the animal is opaque, and furnifhes four thick irregularly fhaped proceffes, which hang down in the midit of the tentacula.

The medufa pellucens throws out flafhes of light during its contractions. which are fo vivid as to affect the fight of the beholders. When the water in which thefe animals, and fome of the cancer fulgens, were contained, was emptied out of a bucket, it appeared like a Itream of fire, or fufed gold. Phil. Tranf. 1810 , part ii..

The medufa noailuca is deferibed by Forfal; as meafuring. about three inches in diameter, and about one and a half inch in depth. Its furface is convex, of a reddilh glafs colour, with brown fpots. The margin is notched into 16 lobules.

The central part, containing the vilcera, hangs down for fome way, and is furrounded by eight fomewhat broad tentacula. Forfkal, Deferiptiones Animalium.

This fpecies is reported to be extremely luminous, particuIarly round the margin.

Forlkal has defcribed alfo a fpecies of luminous animal under the name of medufa denfa. It appears to be a beroc, and correfponds moll nearly with the medufa pileus of Gmelin.
A. luminous fpecies of medufa was difcovered by Spallanzani in the ftrait of Mefina. Its form is convex, with a finbriated 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 fmall groups of Yong thin bodics, entwined together like inteftines, and adhering to an entangled mafs of fmall tubes of a filver colour, that are extremely tranfparent and elaitic. At the internal edge of the cavity of the umbella there is a thin mufcular lamina. The purfe communicates with four lateral orifices, and has an aperture befides. Spallanzani reprefents this fpecies as being exceedingly luminous. He fays it fhines like a torch, and is vifible 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 fud. denly extinct, and re-appears after a confiderable interval.. He fuppofes that the ceffation of the light depends upon the animal being at perfect reft. Memoria fopra le medufe fofforiche. Mem. della Suc. Ital. tomo vii. and Spallanzani's. Travels in the Two Sicilies.

Spallanzani further Rates, that he difcovered in that part of the fea next the eaftern coaft of Genoa, in addition to the nereis noctiluca, five other fpecies of fea glow-roorms, as he calls them, two of which he met with again in returning from Meffina to Lipari. He propofed to give a defeription of thefe animals in his Voyage to Conftantinople, which book, as far as we can learn, was never publifhed:. We muft, however, confefs, that Spallanzani's known fondnefs for the wonderful, would lead us to receive thefe difcoveries with fome degree of diltruit, particularly as they have not been confirmed by the obfervation 3 of others.

One of the molt brilliant of the whole tribe of luminous. creatures has been lately difcovered by Mr. Peron in the Atlantic ocean. Moft naturalifts would, from the general appearance and Atructure of the animal, confider it as a fpeciesof beroo, but Peron has created a new genus, of which this is the only fpecies yet difcovered, and which he calls the Pyreforaa 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 fpread over the internal furface of the cavity. The circular aperture, or mouth, is furrounded internally by a number of rubercles. The external furface is tludded with fome'thick elongated' tubercles, and others of a fmaller fize. They are the principal feat of the light, and fhine like polified diamonds. The interior of the fubftance of the body contains a number of fmall elongated glands, which are alfo more luminous than the tranfparent part.
The colour of this animal when at reit, 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 inftantly of the -red colour of fufed iron ; -it afterwards paffes through different tints, as aurnra, orange, green, and azure blue, according to the firength of its illumination.

The pyrefoma, when at the fame depth in the fea, 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 obferved to perform regular and alternate motions of contraction and dilatation. The light is evolved during the contractile motions, and thefe may be excited irregularly, by touching the animal, or merely by agitating the water in which it is contained. The pyrefoma, like all the other luminous mariue animals, exhibits no light after death.

Mr. Peren only met with this fpecies in a certain latitude, and obferves that the mollufica and zoophytes, which are found at great depths in the fea, or at great diftances from any fhore, always inhabit particular regions of the ocean, out of which they are very rarely met with. Annales du Mufeum d'Hitoire Naturelle. Mem. par Peron. 24 Cahier.

The pennatula phofpborea is well known to exhibit light, which, Dr. Shaw ttates in his Hiltory of Algiers, is fo ftrong, that it directs the fifhermer in their oscupation.

The luminous effect is confined to the plumule of the pernatula, or that part which is inhabited by the polyps. Spal'anzani, in a letter to Bonnet, ftates that the light is only. emitted when the fea pin is in motion, and that there is amucous luminous-fubfance furnihed 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 ftalk. (Mem. Soc. Ital. tomoii) Otherfpecies of pennatula are faid to be luminous, particularly the. grifea, argentea, and grandis. 'The light exhibited by the latt. is reported to be an afh colour.

In a paper upon luminous animals communicated by $\mathrm{Mr}_{\mathrm{s}}$. Macartney to the Royal Society in 1810, he gives an account of three fpecies he difcovered on our own coafts. One. is a beroe not defcribed by authors. Another agrees fo. nearly with the medufa bemijpherica, that he conceives it to be the fame, or at leaft a variety of it. The third is a minute fpecies of medufa, which he believes to be the luminous animal. fo often feen by navigators, although it has never been diftinctly examined or defcribed.

Mr. Macartney firt met with thefe animals in the month. of, October 1804, at Herne bay, a fmall. watering place: upon the northern coalt of Kent. Having obferved the feato be extremely luminous for feveral nights, he had aconfiderable quantity of the water taken up. When perfectly: at reft, no light was emitted, but on the flighteft agitation of the veffel in which the water was contained, a brilliant fcin* tillation was perceived, particularly towards the furface; and when the veffel was fuddenly ftruck, a flath of light iffued from the top of the water, in confequence of fo many points flining at the fame moment. When any of thefe fparkling points were removed from the water, shey no longeryiclded any light. They were fo tranfparent, that in the air they appeared like globules of water.. They were more minute than the head of the fmallet pin. - Upon the flighteft touch, they broke and vanifhed from the fight. Having furained a quantity of the luminous water, a great number of thete tranfparent corpuicles were obtained upon the cloth, and the wator which had been: ftrained, did not afterwards exhibit the leatt light. He then put fome fea-water that had been rendered particularly clear; by repeated filtrations, into a large glafs, and having floated in it a fine cloth; on which he had previoufly collected a number of luminous points, feveral of them were liberated, and became diftinctly vifible in their natural element, by placing the glafs before a piece of dark coloured papes. They were obferved to have a tendency to come to the furface of the water, and after the glafs was fet by for fome time, they were found congregated together, and when thus collected in a body, they had a duky

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Araw colour, although individually they were fo tranfparent, as to be perfectly invifible, except under particular circumftances. Their fubftance was indeed fo extremely tender and delicate, that they did not become opaque in diltilled vinegar or alcohol, until immerfed in thefe liquors for a confiderable time.

On examining thefe minute globules with the microfcope, he found that they were not quite perfect Spheres, but had an irregular depreffion on one fide, which was formed of an opaque fubtance, that projected a little way inwards, producing fuch an appearance as would arife from tying the neck of a round bag, and turning it into the body.

The motions of thefe creatures in the water were flow and graceful, and not accompanied by any vifible contraction of their bodies. After death they always fublided to the bottom of the veffel.

From the fparkling light afforded by this fpecies, he has given it the name of medufa fciatillans.

The night following that, on which he difcovered the preceding animal, he caught the two other luminous fpecies. One of thefe he has called beroe fulgens.

This molt 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 affign, as it is varied by partial contractions, at the animal's pleafure. He has reprefented the two extremes of form that this creature affumes: the firt is fomewhat that of a cucumber, which, as being the one it takes when at reft, fhould perhaps be confidered as its proper fhape: the other refembles a pear, and is the figure it has in the moft contracted ftate. The body is hollow, or forms internally an infundibular cavity, which has a wide opening before, and appears alfo to have a fmall aperture, pofteriorly through which it difcharges it excrement. The pofterior two-thirds of the body are ornamented with eight longitudinal ciliated ribs, the proceffes of which are kept in fuch a rapid rotatory motion, while the animal is fwimming, that they appear like the continual paffage of a fluid along the ribs. The ciliated ribs have been defcribed by profeffor Mitchell, as arteries, in a luminous beroe, which probably was no other than the fpecies we are now fpeaking of.

When the beroe fulgens fwam gently near the furface of the water, its whole body became occafionally illuminated in a glight degree; during its contractions, a ftronger light iffued from the ribs, and when a fudden fhock was communicated to the water, in which feveral of thefe animals were placed, a vivid flafh was thrown out. When the body was broken, the fragments continued luminous for fome feconds, and being rubbed on the hand, left a light like that of phof: phorus; this however, as well as every other mode of emitting light, ceafed after the death of the animal.

The bemilpherical fpecies of medufa had a very faint purple colour. The largett individuals meafured about three quarters of an inch in diameter. The margin of the umbella was undivided, and furrounded internally by a row of pale brown fpots, and numerous fmall twilted tentacula : four opaque lines croffed in an arched manner from the circumference, towards the centre of the animal ; an opaque irre-gular-fhaped procefs hung down from the middle of the umbella; swhen this part was examined with a lens of high powers, it was difcovered to be inclofed in a fheath in which it moved, and that the extremity of the procefs was divided into four tentacula, covered with little cups or fuckers, like thofe on the tentacula of the cuttle fifh.

This fpecies of medufa bears a ftriking refemblance to the agures of the malufa hemi/pherica, publifhed by Gronovius and Muller ; indeel it difers as little from thefe figures, as
they do from each other. Its luminous property, howeres; was not obferved by thefe naturalifts, which is the more extraordinary, as Multer examined it at night, and fays it is fo tranfparent, that it can only be feen with the light of a lamp. If it gould be ftill confidered as a diftinct fpecies; or as a variety of the bemi/pherica, Mr. Macartney propofes to call it the medufa lucida.
In this fpecies, the central part and the fpot round the margin, are commonly feen to thine on lifting the animal out of the water into the air, prcfenting the appearance of an illuminated wheel, and when it is expofed to the ufual percuffion of the water, the tranfparent 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 obfervations upon the animals which occafion it. He found that they always retreated from the furface of the water, as foon as the moon rofe, and that expofure to the day light took away their property of fhining, 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 animals. The firit night he faw this fingular phenomenon was extremely darik, many of the meduya fcintillans, and medufa bemi/pberice had been obferved at low water, but on the return of the tide they had fuddenly difappeared. On looking towards the fea, he was aftonifhed to perceive a flafh of light, about fix yards broad, extend from the fhore, for apparently the ditanee of a mile and a half along tho furface of the water. The fecond time that he faw this fort of light'spoceed from the fea, it did not take the fame form, but was diffured over the furface of the waves next the fhore, and was fo ftrong, that he could for the moment difinetly fee his fervant, who ftood at a little diftance from him ; who alfo perceived it, and called out to him at the inftant. On both thefe occaíons the flath was vifible for about four or five feconds, and although he watched for a confiderable time, it was not repeated.
A diffuled luminous appearance of the fea, in fome refpects different from this, has been defcribed by fereral navigators.
Godeheu de Riville faw the fea affume the appearance of a plain of fnow on the coatt of Malabar. Mem. Etrang. de l'Acad. des Sc. tom. iii.

Captain Newland, in a paper publifhed in the Journal de Phyfique, ftates that he has feen the fea appear like milk for a few nights. Cook and Peroufe alfo obferved it to be $\mathbf{2}$ ftraw 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 flaftes of lightning.

Captain Horburg, in the notes he gave to fir Jofeph Banks, fays there is a peculiar phenomenon fometimes feen within a few degrees diftance of the coaft of Malabar, during the rainy monfoon, which he had an opportunity of oblerving. At midnight the weather was cloudy, and the fea was particularly dark, when fuddenly it changed to a white flaming colour all around. This bore no refemblance to the fparkling or glowing appearance he had obierved on other occafions in feas near the equator, but was a regular white colour, like milk, and did not continue more , than ten minutes. A fimilar phenomenon, he fays, is frequently feen in the Banda fea, and is very alarming to thofe who have never perceived or heard of fuch an appearance before.

## LI G H T.

This fingular phenomenon appears to be explained by fome obfervations communicated to Mr. Macartney by Mr. Lang ttaff. In going from New Holland to China, about half an hour after funfet, every perfon on board was aftonifhed by a milky appearance of the fea: the fhip feemed to be furrounded by ice covered with fnow. Some of the company fuppofed they were in foundings, and that a coral bottom gave this curious reflection, but on founding with go fathoms of line no bottom was met with. A bucket of water being hauled up, Mr. Langftaff examined it in the dark, and difcovered a great number of globular bodies, each about the fize of a pia's head, linked together. The chains thus formed did not exceed three inches in length, and emitted a pale phofphoric light. By introducing his hand into the water, Mr. Langllaff raifed upon it feveral 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 tranfparent, that they could not be perceived when the hand was taken into the light.
This extraordinary appearance of the fea was vifible for two nights. As foon as the moon exerted her influence, the fea changed to its natural dark colour, and exhibited diftinct glittering points, as at other times.

This account of Mr. Langftaff is very important, as it proves that the diffufed light of the fea is produced by an affemblage of minute medufa on the furface of the water.
In June 1806, at Margate, Mr. Macartney collected a great number of the fmall luminows medufa. A bucket of the water being fet by for fome time, the animals fought the furfake, and kept up a continual fparkling, which was occafioned by the motions of individuals, as the water was perfectly at reft. A fmall quantity of the luminous water was put into a glafs jar, and on flanding fome time, the medufac collected at the top of the jar, and formed a gelatinous mafs, one inch and a half thick, and of a reddifh or mud colour, leaving the water underneath perfectly clear.

In order to afcertain if thefe animals would materially alter their fize, or affume the figure of any other known fpecies of medufa, 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 firft taken, their form was not in the flighteft degree altered, and their fize but little increafed. This experiment confirmed his opinion of their being a diftinct fpecies, as the young aclinie and meduf\& exhibit the form of the parent in a much fhorter period than the above.
In September 1806, he took at Sandgate allo a number of the beroe fulgens: they were of various dimenfions, from the full fize down to that of the medufa fintillans: they could, however, be clearly diftinguifhed from the latter fpecies by their figure.
In April r8og, Mr. Macartney caught a number of the beroe fulgens in the fea at Haftings; 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 perfon unaccuftomed to obferve thefe creatures, would have been taken for a phofphoric fubbtance. On putting a number of them into a glafs, containing clear fea-water, they ftill fhewed a difpofition to congregate upon the furface. It was obferved that when they adhered together, they fhewed no contractile motion in any part of their body, which explains the caufe of the pale or white
colour of the diffufed light of the ocean. The flafhet of light which Mr. Macartncy faw come from tnu fea as Herne bay, were probably produced by a fudden and general effort of the medufa to feparate from each other, and defeend in the water.

The medufa fiantillans almof conflantly exits in the dif. ferent branches of Milford haven that are called pills. Mr. Macartney fometimes found thefe animals colleeted in fuch valt numbers in thofe fituations, that they bore a confiderable proportion to the volume of the water in which they were contained: thus, from a gallon of fea-water in a luminous ftate, he ftrained above a pint of thefe medufa. The fea under fuch circumftances yields more fupport in fwimming, and the water taftes more difagreeably than ufual; probably the difference of denfity, that has been remarked at different times in the water of the fea, may be referred to this caufe.
Mr. Macartney concludes that the medufa feintillans is the ufual caufe of the luminous appearance of the fea, not only around this country, but in other latitudes. Belides the places already mentioned, he has found this fpecies on dif. ferent parts of the coafts of Suffex, at Tenby, and in the bays of Dublin and Carlingford in Ireland. Many writers, he obferves, have miftaken this fpecies of medufa for the nereis nodiluca, and fome navigators have actually defcribed the medufa finutillans, without being aware of its nature. Mr. Bajon, during his voyage from France to Cayenne, collected many luminous poists in the fea, which he fays, when examined by a lens, were found to be minute foheres. They difappeared in the air. Dr. Le Roy, in failing from Naples to France, obferved the fparkling appearance of the fea which is ufually produced by the medufa fcinsillans. By filtering the water, he feparated luminous particles from it, which he preferved in fpirits of wine: they were, he fays, like the head of a pin, and did not at all refemble the nereis noaituca, defcribed by Vianelli; their colour approached a yellow-brown, and their fubitance was extremely tender and fragile. Notwithitanding this flriking refemblance to the medufa fcintillans, Le Roy, in confequence of a preconceived theory, did not fuppofe what he faw, were animals, but particles of an oily or bituminous nature. Obferv. fur un lumiere produite par l'Eau de la Mer. Mem. Etrang. des Sc.

The minute globules feen by Mr. Langftaff in the Indiah ocean, in all probability, were the fcintillating fpecies of medufa; on his feeirg fome of thefe animals that had been preferved in fpirits, he entertained the fame opinion.

Profeffor Mitchell, of New York, found the luminous appearance on the coait of America, to be occafioned by minute animals, that, from his defcription, plainly belonged to this fpecies of medufa, notwithftanding which, he fuppofed them to be a number of the nereis noziluca. Phil. Mag. vol. x. p. 20.

The luminous aumalcule, difcovered by Forter off the Cape of Good Hope, in his voyage round the world, bears fo ttrong a refemblance to the medufa fintillans, that there is every reafon for believing them the fame. He defcribes his animalcule as being a little gelatinous globule, lefs than the head of a pin; tranfparent, but a little brownifh in its colour; and of fo foft a texture, that it was deltroyed by the flightelt touch. On being highly maguified, he perceived on one fide a depreflion, in which there was a tube that paffed into the body, and communicated with four or five inteltinal facs.

Many writers have afcribed the light of the fea to otlier caufes than luminous animals. Martin fuppofes it to be occafioned by putrefaction: Silberfchlag believed it to be phofphoric;
phofphoric: profffor T. Maycr conjectured, that the furface of the foa imbilech licht, which it afterwards difcharged. Buion and Gentil thought the light of the fea was electric, be aufe it was excited hy friction. Fortter conceised thet it was fonctimes clectric, fonetimes cauled from putrefaction, and at whers by the prefence of lising animals. Fongeroux do Bondaroy believed that it came fometimes frons electric lires, but more frequently from the putrefaction of marine animals and plants.

It is unneceffary to enter into a difcullion of the above opinions: their authors have not attempted to fupport them by any argument or experiments; they merely gave them as fpeculations. It is fufficient to flate, that they are contradicted by all the beft obfervations upon the fubject.

The only animals which are known to poffers ditinct organs for the procuction of light are, the luminous fpecies of impyris, elater, fulyora, and faufus. Of thefe Mr. Macartney has given the following defcription.

Whe light of the lampyrides is known to proceed from fome of the laf rings of the abdomen, which, when not illuminated, are of a pale yellow colour. Upon the internal furface of thele rings, there is fpread a layer of a peculiar foft yellow fubltance, which has been compared to patte, but by examiuation with a lens, I found it to be organized like the common interititial fubltance of the infect's body, except that it is of a clofer texture, and a paler yellow colour. This fubltance does not entirely cover the inner furface of the rings, being more or lefs deficient along their edges, where it prefents an irregular waving outline. I have oblerved in the glow-worm, that it is abforbed, and its place fupplied by comron intertitial fubfance, after the feafon for giving light is paft.

The fegments of the abdomen, behind which this peculiar fubitance is fituated, are thin and trapfparent, in order to expofe the internal illumiation.

The number of luminous rings varies in different fpecies of lampyris, and, as it would feem, at different periods in the fame individual.

Befides the luminous fubftance above defcribed, 1 have difcovered in the common glowestorn, on the inner fide of the laft abdominal ring, two bodies, whicli to the naked eye appear more minute than the head of the fmalleft pin. They are lodged in two llight depreffions, formed in the fhell of the ring, which is at theie points particularly tranfparent. Cn examining thefe bodies under the microfcope, I found that they were facs containing a foft yellow fub. ftance, of a more clofe and homogeneous texture, than that rwhich lines the inner durface of the rings. The membrane forming the facs appeared to be of two layers, each of which is compofed by a tranfparent filvery fibre, in the fame manner as the internal membrane of the refpiratory tubes of infects, except that, in this cafe, the fibre paffes in a fpiral, inftead of a circular direction. This membrane, although fo delicately confructed, is fo elaltic as to preferve its form after the fac is ruptured, and the contents difcharged.

The light that proceeds from thefe facs is lefs under the controul of the infect, than that of the luminous fubltance fpread on the rings: it is rarely ever entirely extinguihed in the feafon that the glow-worm gives light, even during the day; and when ail the other rings are dark, thefe facs often flhine brightly.

The circumitance of there being points, which give a more permanent light than the other parts of the luminous sings of the abdonen, has been noticed before by the Conte :G. de Rayoumouiki. He flates the number of thefe luminous points to vary from two to five. Riem de la Soc. de Laustame, tom. iu.

I mult however remark, that I never faw more than two of thefe luminous points, which were always upon the $\ln$ (t ring of the body, and that the figures which accompany the memoir of the Comte de Razoumoufki, bear farcely any refemblance to the infect they are interded to reprefent, from which we may fairly fufpect him of inaccuracy in other particulars.

As far as my obfervation has extended, the fmall facs of luminous fubtances are not found in any fpecics of lampyris, except the glow-rworm of this country. "Thunburg mentions that the lampyris japonica has two veficles on the tail, which afford light.

The organs for the production of light in the genus elater are fituated in the corcelet; thefe likewife confitt of a peculiar yellow fubitance, placed behind tranfparent parts of the fhell, which fuffer the natural colour of this fubliance to be feen through them in the day, and when illuminated, give paffage to the light.

On diffecting the organs of light in the elater nocilucus, I found that there is a foft yellow fubftance, of an oval figure, lodged in the concavity of the yellow fpots of the corcelet, which parts are particularly thin and tranfparent in this fpecies. This fubftance is fo remarkably clofe in its ftructure, that at firt view it appears like an inorganic mafs, but with a lens it is readily perceived to be compofed of a great number of very minute parts or lobules clofely preffed together. Around thefe oval maffes, the interflitial fubftance of the corcelet is arranged in a radiated manner, and the portion of the fhell that immediately covers the irradiated fubftance is in a certain degree tranfparent, but lefs fo than that which lies over the oval maffes; it is therefure probable, that the intertitial fubitance in this fituation may be endowed with the property of fhining. A fafciculus of the mufcles of the corcelet arifes in the interior of the oval maffes of the luminous fubftance, bat not apparently with any defign, as it contributes, with the adjacent fafciculi, to move the anterior feet.

In the elater ignitus, the maffes of luminous fubtance are extremely irregular in their figure : they are fituared nearly at the pofterior angles of the corcelet, and are more loofe in their texture than the oval maffes of the mocilucus, refembling rather, in compofition, the intertitial fublance which furrounds thefe maffes in that fpecies. The fhell of the corcelet is fomewhat thinner, and more tranfparent along both fides of the margin, than at other places, but it is not, as in the nociliucus, elevated, and peculiarly clear and thin immediately, over the feat of the luminous organ; confequently, the light emitted by the elater ignitus cannot be very brilliant.

I have not been able to procure any fpecimen of the elater phofphorea, but from the accounts of naturalifs, it appears to refemble in every refpect the elater nocilucus.

I have had an opportunity of examining, preferved in a moift way, two fpecies of fulyora, the candelaria and lanternaria. The light in this genus has been obferved to iffuc from the remarkable probofcis on the fore part of the head: This part has always been defcribed 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 lide of the root of the probofcis. This projection is covered internally by a membrane, between which and the horny part or fhell, there appears to be interpafed a pale reddifl coloured foft fubltance, that is arranged in the candelaria in broad lines or Atripes; but it is fo ibin, that I could not diftinetly examine its flructure, or abfodutely determine, whether it thould be confidered as a fub-
ftance

Aance intended to furnifh the light of thefe infects, or the pigment upon which the colour of the probofcis depends.

The globes of the antennx conflitute the organs of light in the paufus $\int$ pherocerus. Dr. Afzelius, who difcovered the luminous property in this fpecies, compares them to lanterns fpreading a dim phofphoric light. (Linn. Tranf. vol. iv.) The rarity of the infect put it out of my power to examine its ftructure, but from the form and fituation of its organs of light, it is molt probable they are conltructed like thofe of the fulgore.

It has been conjectured by Carradori and others, that the lannpyrides were enabled to moderate or extinguifl their light, by retracting the luminous fubltance under a membrane; but neither in them, nor any of the other luminous infects, have I found an apparatus of this fort. The fubitance furnifhing the light, is uniformly applied to correfponding tranfparent parts of the fhell of the infect from whence it is not moved; indeed a nembrane, if it did exift, would have but little effect in obfcuring the light, and never could ferve to extinguilh it. The regulation of the kind and degree of the luminous appearance, does not depend upon any vifible mechaniim, but, like the production of the light itfelf, is accomplifhed by forne inferutable change in the luminous matter, which in fome animals is a fimple operation of organic life, and in others is fubject 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 fupplied with either nerves or air tubes, than the other parts of the body. The power of emitting light likewife exifts in many creatures which want nerves, a circumitance ftrongly marking a difference between animal light and animal electricity. Phil. Tranf. 1810, part ii.

With the exception of the animals above-mentioned, the extibition of light depends upon the prefence of a fluid matter.

In the pholas dalylus, the luminous fluid is particularly evident, and in valt quantity.

The fhining of the fcolopendra electrica is obferved to be accompanied by the appearance of an effufion 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 thefe exhibit a phofphoric light for a few feconds afterwards. This fluid, however, it is impofible to difcover in the form of moifture, even upon the clearelt glafs, although examined immediately with the moft fcrupulous attention by a lens: it muft therefore be extremely attenuated.

The fame appearance has been obferved during the illumination of the nercis noctiluca by Fougerous de Bondaroy. 3 Iem. de l'Acad. des Sc. 1767 .

The animal difcovered by Riville fhed a blue liquor, which illuminated the water for a diftance of two or three Hines. Mem. Etrang, de l'Acad des Sc. tom. iii.

Spallanzani relates, that the madufa which he examined, cormmunieated the property of Shining to water, milk, and other suids, on being rubbed or fqueezed in them. Spallanzani's T'ravels in the Two Sicilies, vol. iv.

The luminous fluid is in fome intances confined to parsicular parts of the body, and in others is diffufed throughout the whole fubltance of the animal.

In the fcolopendra electrisu, it appears to refide immediately under the integuments. In the lynceus difcovered by Riyille, it is contained in the ovary. Mr. Macartney believes that every part of the body of the medufa is furnifhed with this fluid, as there is no part that is not feen illuminated Vul. XX.
under different circumflances, but Spallanzani affirms that it is only found in the large tentacula, the edges of the umbella, and the purfe or central mafs; which he prosed, he fays, by detaching thefe parts fuccelfively, when they thone vividly, while the rett of the body neither gave light nor comntunicated any luminous appearance to water. Memoria fopra le medufe fosforiche. Mem. della Soc. Ital. tom. vii.
Spallanyani difcovered a mucous luminous fuid in the plumule of the pennatula phopphorea. Men della soc. Ital. tom. ii.

The phenomenon of animal light has been attempted to be explained in different ways. By many perfons it was formerly afcribed to a putrefactive procefs, but fince the modern theories of combuttion became known, it has been generally believed to depend upon an actual inflammation of the luminous fubtance, fimilar to the flow combution of phofphorus. Others have accounted for the luminous effect, by fuppofing the matter of light to be accumulated, and rendered latent ender particular circumflances, and afterwards evelved in a fenfible form.

The opinion of the light of living animals being the confem quence of purrefaction, is evidently abfurd, aod contradietory to all obfervation on the fubject. It has been proved by the experiments of Dr. Hulme and others, that even the luminous appearances of dead animals are exhibited ouly during the firlt Itages of the diffolution of the body, and that no light is emitted after putrefaction has really cormmenced.

Spallanzani, who was the moft trenuous advocate for the phasphorefcent nature of animal light, fated that glowworms fhone more brilliantly when put into oxygen gas; that their light gradually difappeared in hydrogen or in azotic gas, and was inftantly extinguithed in fixed air; that it was alfo lott by cold, and revived by the application of a warm temperature. He conjectured that the luminous matter of thefe infects was compofed of hydrogen and carbonated hydrogen gas.
Fortter relates, in the Lichtenberg Magazine for 178 3. that on putting a lampyris Jplendidula into oxygen gas, it gave as much light as four of the fame fecies in common air.
Carradori has made fome experiments upon the lucciol, (lampyris italica) which led him to deny its phofphorefcence. He found that the luminous portion of the belly of the infect fhone in vacuum, in oil, in water, and different liquids. and under different circumftances, where it was excluded from all commanication with oxygen gas. He accounts for the refult of Fortter's experiment, by fuppofing, that the worm thone mare vividly, becaufe it was more animated in oxygen gras than in common air.
Carraduri adopts on this fubject, the doctrine of Brugna. telli, and afcribes the luminous appearances of animals to the condenfation and extrication of light in particular organs, which had previoully exitted in combination with the fubitance of their bodies, fie fuppofes the light to be originally derived from the food, or the atmofpheric 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 furm. Annal di Chimica. tom, xiii. 1797.

The following experiments, which were lately made upon this fubject by Mr. Macartney, would lead to different con. clufions than thofe of the preceding authors.

Experiment 1.-A glose-suorm was put into a glafs of water, in which it lived nearly two hours, and continued to emit light as ufual, until it died, when the luminous appearance entirely ceafed.

Experiment
F.geriment 2.-The luminous futance 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 bellics of living glow-worms, and fhone uninterruptedly for feveral hours in the atmofphere, and after their light became extinct, it was revived by being moiltened with water; fome of thefe were put into water in the firtt inflance, in whinch they continued to fhine unremittingly for forty -cight hours.

Experiment 4.-The luminous fubitance of a giverworm was expofed to a degree of heat which would have been fufficient to inflame phofphorus, without increaling 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 Hame of a cande.

Experiment 5-A delicate thermometer was introduced amongit fome livings glow-worms, during the time they gave out much light: the temperature of the room being $69^{\prime \prime}$, the inftrument rufe to $75,76^{\circ}$, and $77^{\circ}$, according to circumblances, as the warinth was refected from the hand, or difipated by the worm cravling over cold fubftances. 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 ftrongly, the lumineus rings appeared to communicate the fenfation of warmeth to the hand; but this was probably a decertion, as the actual degree of heat was not fufficient for fuch an effect. It fhould however be mentioned, that in 'Templar's obfervations on the glow-worm, he faid his feelings deceived him, if he did not experience fome heat from the fhining of the infect. Phil. Tranf. $\mathrm{N}^{\circ} 72$.

Experiment 6.- To afcertain how far the evolution of heat, during the fhining of glocw-cworins, 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 inumediately, it was, raifed by them one or two degrees; but after thefe parts.were dead, although they continued to emit light, they produced no effect whatever upon the initrument.

Experiment 7 .--Some bemipherical medufe were put into a fpoon, containing a fmall quantity of fea-water, and held over a burning candle. As foon as the water became heated, the medufe appeared like illuminated wheels; the fpots at the margin and centre alone emitting light ; in which manner they fhoie vividly and permanently for about twenty feconds, when they fhrunk and died, after which they were no longer luminous.

Experiment S .-Some of the fame fpecios were put into Spirits: a trong and uuremitting light was inftantly given out, which iffued from the central and marginal parts, as in the preceding expcriment, and continued until they died.

Experinn: nt 9.-Some of the fintillating and bemi/pherical Species of mectuja, contained in a fmall glafs jar, were introduced into the receiver of an air-pump, and the air being eshauited, they fhone as ufual when flaken: if any difference could be perceived, the light was more eafily excited, and continued lo:grer in vicuum.

Experiment 10.-A medufa bemippherica was placed in a friall glafs dith, contaiuing a quantity of water, merely fufficient to allow the animal to preferve its figure: being infulated, it was eleetrified, and fparks drawn from it, which frad not the tliyhteft effect. The experiment was repeated Feveral times with different individuals, but without exciting the animals to throw out light.

E-verinant in.-Some benijpherical medufe were placed in contatt with the two ends of an interrupted chain, and
flight clectric fhocks paffed through them.' During the very moment of their receiving the flock, no lighe was vifible; but impmediately afterwards the medufa fhone like illuminated wheels, which appearance remained for fome feconds. Upon the clofeft infpection with a magnifying glafs, no contractile motion could be perceived to accompany the exhibition of the light. The application of electricity, in this inftance, feems to have acted merely as a ttrong mechanic fhock.

It feems proved by the foregoing experiments, that fo far from the luminous fubfance being of a phofphorefcent nature, it fometimes fhews the ftrongeft and moft conftant light, when excluded from oxygen gas; that it, in no circumflances, undergoes any procefs like combultion, but is actually incapable of being inflamed; that the increafe of heat, during the flhining of glow-worms, is an accompaniment, and not an effect of the phenomenon, and depends upon the excited ftate of the infect; and, laitly, that beat and electricity increafe the exhibition of light, mevely liyg operating like other flimuli upon the vital properties of the animal. Phil. Tranf. I8ıo, part ii.

In addition to thefe opinions, we may mention that profeffor Davy has found that the light of the glorv rworm is not rendered more brilliant in oxygen, or in oxygenated muriatic gas, than in common air ; and that it is not fenfibly diminifhed in hydrogen gas.

We may further add, that Spallanzani's experiments of diffufing the laminous liquor of the medufa in water, milk, and other fluids, are in direct contradiction of his own theory, as is alfo the extinction of the light of thefe 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 refpire, as fuppofed by Carradori, the phenomenon fhould be increafed or diminifhed; according to the quantity of food or air that the creatures confume. But we do not find this to be the cafe; for in thofe lituations where they are fometimes found to be moft luminous; they are deprived, in a great meafure, of thefe affumed fources of their light.

In fact, the luminous exhibitions of living animals are not only indcpendent of all foreign light, but are frequently deftroyed by the latter. The fhining of the medufe was always found by Mr. Macartney to ceafe upon the rifing 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 fome time in the dark: all the luminous infects likewife fecrete themfelves as much as poffible during the day-time, and go abroad only at night. It is. true that the fcolopendra elegrica will not dhine, unlefs it has been previoufly expofed to folar light ; but it is to be obferved that it fhone as brilliantly and as frequently, after being kept a fhort time in a light fituation, as when left uncovered the whole day. The circumintance of the foolopendra requiring expofure previous to its giving out light; is very unaccountable, as the infect, when left to itfelf, always feeks as much as poffible concealment during the day: indeed it is the opinion of fome naturalifts, that it is killed by the light of the fun.

We fhall terminate this article with the following conclisfions, drawn by Mr. Macartney from his own obfervations, 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 fimpleft organization, the greater number of which are inhabitants of the fea. The lumino:s property is not cenftant, but in general exiths only at certain periods, and in particular ftates of the anima.'s budy. The power of thew-

## LIGHT.

ing light refides in a pecuiliar fubftance or 䏠d, which is fometimes fituated in a particular organ, and at others diffufed throughout the animal's body. The light is difierently regulated, when the luminous matter exits in the living body, and when it is abftracted from it. In the frrt cafe, it is intermitting, or alternated with periods of darknefs; is commonly produced or increafed by a mufcular effort; and is fometimes abfolutely dependent upon the will of the animal. In the fecond cafe, the luminous appearance is ufually permanent until it becomes extinct, after which it may be reitored directly by friction, concuffion, and the application of warmth; which laft caufes operate on the luminous matter (while in the living body) only indirectly, by exciting the animal. The luminous matter, in all f:tuations, fo far from poffeffing phofphoric properties, is incombultible, and lofes the quality of emitting light, by being dried, or much heated. The exhibition of light, howeser long it may be continued, caufes no diminution of the bulk of the luminous matter. It does not require the prefence of pure air, and is not extinguifhed by other gafes.

The luminous appearance of living animals is not exhaulted by long continuance, or frequent repetitions, nor accumulated by expofure to natural light: it is, therefore, not dependent upon any foreign foarce, but inheres as a property, in a peculiarly organized animal fubftance or fluid, and is regulated by the fame laws which govern all the other functions of living beings.

The light of the fea is always produced by living animals, and mott frequently by the prefence of the medufiz fintillans. When great numbers of this fpecies approach the furface, they fometimes coalefce together, and caufe that fnowy or milky appearance of the fea, which is fo alarming to navigators. Thefe animals, when congregated on the furface of the water, can produce a flah of light, fomewhat like an electric corrufcation. When the luminous medufa are very numerous, as frequently happens in coulined bays, they form a confiderable portion of the mafs of the fea, at which times they render the water heavier, and more maufeous to the tafte : it is therefore advifeable to always ftrain feaswater before it is drunk.

The luminous property does not appear to have any connection with the economy of the animals that poffers it, except in the flying infects, which by that means difcover each other at night, for the purpofe of fexual congrefs.

In the plates for illultrating the prefent fubject in this dictionary, the reader will only lind figures of thole luminous animals which are not generally contained in books on natural hiltory, or which are neceflary fur the explanation of lately difcovered facts.
Fig. I. is the nereis noailuca, difcovered by Vianelli, of the natural fize.

Fiz. 2. Shews the fame animal greatly magnified: " $a$ is the hend, furnifhed with two flort antcuna and a horn-like procefs; $l, b$, the two eves; $c, c, c$, fome of the lateral twifted proceffes proceeding from the fegments of the body; $d, d, d$, fome of the other lateral proceffes that contain the tufts.

Fig. 3. is the cruflaceous infed, difcovered by Riville: $a$ is the tranfparent fhell, through which the internal parts of the animal are vitible; $b$, the lac containing the inteltines; $c$, one of the four-jointed fetaceous antenne; $d$, the two feet armed with hooks; $\varepsilon$, the foot which terminates in claws; $f$, the ova, which Riville miftook for globules containing a luminous oily fluid.

Fig. 40 exhibits the cancer fulgens, difcovered by fir Jofeph Banks. It is given of the hatural fize.

Fig. 5. reprefents the linuthes nocilucus, difoovered by captasn Horburg, greatly magnified.

Fig. 6. is the madrufit pellucens, difcovered by fir Jofeph Banks, fhewn lefs than the natural fize.

Fit. 7. is the fijrefoma cutlanticum, lataly difcovered and defcribed by Peron.

Fizg. 8. fhews the medufit lucida, defcribed by Mr. Macartney, of the largelt lize he nee with.
Fig. 9. is the deroe fulgens, difcovered by Mr. Macartney. It is reprefented of the ufual fize, and in the clongated form the creature affumes when in the act of fwimming. On the pofterior part are feen the ciliated ribs, which conflitute its infruments of locomotiun.

Fig. 10. Thews the medyfis faintillans, difcovered by Mr. Macartney, as it appears the naked eye.

Fig. In. is the fame hughly magmified, by which the opaque parts upon the fide and in the centre of the animal are made apparent.

Fig. 12. is the animalcule, difcovered by Mr. Forter, of the fize it appears to the naked eye.
Fig. 13. exhibits a microfoopic view of the fame animalcule.

Fig. 14: is an enlarged view of the inferior furface of the abdomen in the lampyris lucida, after the integuments had been remored, as delineated by Mr. Macartney : $a, a, a$, reprefent the three maffes of luminous fuleftance, which are applied to the three latt rings of the abdomen ; $b, b, b$, the arrangement of the cellular or intertitital fubltance 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 expofe the facs of luminous matter in fitu on the latt ring of the belly: $a$ indicates the fac of one fide; the inteftine is feen to lie between them.
Fig. 16. is one of the light facs of the glozu-zoorm, taken out and prodigiounly magnified, in order to fhew its flructure, as defcribed by Mr. Macartney: a the external part of the fac, which is compofed of the interweaving of a fpiral fibre; $l$, the luminous fublidace feen at one end, when the fac has been ruptured to expofe its contents.

Fig. 17. is the elator nocitilucus, with the fhell of the corcelet remored on one dide, by which the organ of light, defcribed by Mr. Macartney, is uncovered; a, the yeilow tranfparent fpot of the corcelet ; $b$, the oval mafs of luminous fubflance furrounded by an irradiation of the interftitial fubitance; $c$, the ends of the mufcies which are on the infide of the corcelet.

Fig. I8. Thews the luminous apparatus of the elater nogilucus, confiderably magnified: a, the radiated appearance of the interltitial fubitance around the oval mals of luminous fubfance : this mafs is feen to confit of a number of fmalier parts; $b$ fhews the arrangement of the interflitial fubftance, when it paffes down between the mufles; $c$, the ends of the mufcles of the back: $d$, the fhell of the corcelet.

Fis. 19. is the elaficr igrizus: $a$ indicates the yellow part of the corcelet; $b$ fhews the fmall mafs of luminous fubftance in this fpecies, the fhell being removed.

Lighe is alfo ufed to lignify the difpofition 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.

Ligilt, in Agriculture and Gardoning. Experience has Thewnits infinite fervice to the growth of vegetables, cortributing exceedingly to facilitate their vegetation, and in5 E. 2
creafe

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ereafe their perfection and duration; as it is obvious molt plants are conliderably more profperous, and attain their perfection in a free expofure, fully open to the light and air, than in flady places the fane is obferved of fruits. Thofe 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 richnefs of flavour, than fuch as grow in the flase: thefe reafons flould therefore determine us to cultivate moit of the principal plants and fruits in fituations open as much as poffible to the full light and influcnee of the fun; though upon particular occations, and in the heat of funmer, fhady places may be necoffary for fome forts of plants, though not where thaded and darkened by foreading trees, Scc, but a border open above to the full light, and only fhaded from the immediate rays of the fun. For the general crops, a perfectly open, funny, bight fituation, free from the fhade of fpreading trees, is always the molt proper.

And its utility is very evident, from plants growing in garden-frames, green-houfes, \&c. in winter; when, in time of fevere weather, covers or hutters have been continued long over the glafles, fo as to exclude the rays of lighr, 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 admiffion of light, the whole plant in many forts gradually dwindles and perifhes. Great attention is of courfe requilite in this cafe, when, from the feverity of the weather, the ufe of other covers befides the glaffes is neceffary, to take every opportunity of a favourable day, or even an hour or two of a day, to admit the light as fully as poffible. The fame is alfo the cafe with plants in early hot-beds, fuch as cucumbers, melons, \&cc. which, early in the year, require a covering of mats over the glaftes every night; as when thefe additional covers are applicd too foon in the afternoon, and continued late in the morning, fo as to keep the plants long in darknefs, it is highly difadvantageous to their growth, caufing them to grow weak, pale, and fickly.

As light is, therefore, fo beneficial to plants in general, it fhould be increafed as much as pofiible to thofe in frames, green-houfes, ftoves, \&c. In thefe fituations it may be ufeful to paint the infide of all fuch departments white, to reflect the rays of light as much as poffible, and particularly in the nights, and in the day tinne, when the feverity of the feafon requires covers or fhutters to be placed over the glafles or other conveniences where plants are kept.

The author of Phytologia remarks, that the contef for light, as well as for air, which is fo vifible in the growth of vegetables, thews the former to be of great confequence to their exitence, as well as the latter. Thus many flowers follow the fun during the courfe of the day, by the nutation of the italks, not by the rotation of them, as obferved in the fun-Hower by Dr. Hales; and the leaves of all plants endeavour to turn their upper fupface to the light, which is their refpiratory organ, or lungs. The great ufe of all plants turning the upper furfaces of their leaves to the light is thus, he thinks, intelligible; the water peripired from thofe furfaces is, he conceives, hyper-oxygenated; and, as it efcapes from the fharp edges of the months of the perfining veffels, when acted upon by the fun's light, gives out oxygen : whichoxygen, thus liberated from the perfipired water, and added to that of the common atmofphere, prefents to the refpiratory terminations of the pulmonary arteries on the upper furfaces of leaves an atmofphere more replete with vital air. This neceffity of light to the refpiration of vegetables
is fo great, that there is reafon to believe that many plants de not refpire during the night, but exift in a torpid ftate, like the winter fleeping infects. Thus the mimofa, fenfitive-plant, and many others, clofe the upper furfaces of their oppofite 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 refpiratory organs, are clofed during the night, and thus unexpofed both to light and air. It is, however, obferved, that the fungi, which are termed vegetables; becaufe they are fixed to the earth, or to the flones, trees, or timber, where they are found, can exitt 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 efculent mufhrooms, which are cultivated beneath beds of thraw. 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 neceffary to vegetation. In this climate they both feem, in general, to be injurious only by their delect, and feldom by their excefs. But as light acts as a ftimulus on the more irritative or fenfitive parts of plants, which appears by the expanfion of many flowers, and of fome leaves, when the fun flines on them; and by the nutation of the whole flower, as of the fun-flower (helianthus), and by the bending of the furmmits of all plants confined in houfes towards the light; there may be difeafes owing to the excefs of this Atimulus, which have not been attended to ; to prevent which the flowers of tragopogon falfafi, and of other plants, clofe about noon. Other unoblerved difeafes may be owing to a defect of the ttimulus of light ; as a mimofa, fenfitive plant, which had been s.onfined in a dark room, did not open its foliage, though late in the day, till many minutes after it was expoled to the light. The excefs of light has not, however, been obferved to be attended by vegetable difeafes in thefe more northern latitudes fo much as in ethers.

Light, in the Manegre. A horfe is faid 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 fwift nor active: for in this laft expreffion we confider only the flape and make of a horfe, without regard to his qualities.

Light upon the band; a horfe is faid to be fuch, that has a good tractable mouth; and does not relt too heavy upon the bit.
A coach-horfe is faid to be light, when he firs nimbly, and dreads the whip; or wher he has a light trot.

Licire-bellied. A horfe is thus called that commonly has flat, narrow, contracted fides, which make the flank tura up like that of a grey-bound.

## Light-band. See Hand.

Ligut, in Painting, refers only to thofe 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 obferver.

With regard to that art, light may be confidered in two ditinct points of view; ziz. as to the natural and the artifio cial 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 pofitive rule; and from which no variation can be allowed. The latter is ideal, and requires only to be probable or poffible. It relates to the quantity of light employed to illuutrate the character of a fuhjeck, and depends entirely upon the tafte of the artilt ; who, by the ufe of ideal fladows and fictitious lights, may effect a diminution or augmentation to

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any proportion he pleafes: Thele, ongether with light and dark colours, form the batis of chiaro-广curo; one of the grand fundamental principles of painting, of which we have already treated under the article Cxameonscume.

As light, when acting upon fubltantial forms, is always accompanied by fhadow, and as they are neceffary adjuncts to each other, we fhall here unite them, and treat of them together. It is by the contralt of each to the other, that the effect of either is produced by colours ; and however paradoxical it may appear, it is neverthelefs true, that light in the art of painting is not more neceflary to produce fadow, than hade is for the production of light. The colours which give the appearance of the former, obtain that efect only, when furrounded with darker ones, which conftitute fhade; without the latter, they would appear nothing more than an uninterefting mafs of one plain tone, without any degree of the quality which is termed luminous; but contrafted by their oppofites in tone, they become brilliant; and when form is fuperadded, obtain the character of lizht. The fame, though in the contrary degree, is the effect of dark hues, which, without the contrait of lighter ones, produce only a heavy, dull, vomeaning mafs, that merits not the appellation of fhade, till oppofed by other tones, and rounded into form by the affiltance of light.

The management of light and thade is the mott important of the practical parts of the art ; fince, without the true arrangement of them, vain mult be every effort of the painter to produce a juft refemblance of thofe things which nature offers to our view, and which are the immediate objects of his ftudy. Outline is but as the fection of a body; and colour, a fimple, unvaried colour added to it, would ftill in no-wife increafe its value as the reprefentative of a fubflancé; but let light and thade be fuperadded, and duly difpofed, and what was a flat furface 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 feparate fources, with diftinet qualities, both as to power and colour. Such, for inflance, are the moon's reflecting power; that of the atmofphere when the fun is hid; and likewife the illumination proceeding from a window into a room. 'The effects produced by each of thefe differ fo widely from thofe of the two former, that we may fairly fay there are five gencral fources of light, at lealt, applicable to the purpofes of painting. Of that proceeding direct from the fun in full blaze, it can only be obferved, that, except for landfcape, its ufe is confmed in the art ; being too poverful, and producing thadows too harfh, for the more interelting and agreeable fubjects of fancy or hiftory. The fofter illumi. nation reflecked from thole parts of the atmolphere oppofed to the fun, is ufually and reafonably preferred; or that which the heavens yield when the fource of its light is hid in clouds, though not when it is too much lolt in the gloom of tempelt ; for then the lights and fhadows become too inditinct and confufed. The open light of the air has another character dittinct from the two juft mentioned: which is, when the fun is but faintly obfeured by thick clouds, through which its rays penetrate with diminifhed luftre, b:tt ftill in direct lines. In this cale the light, though direct and caufing fhadows the fame in form as when its fource is unobferved, is yet but weak and foft; and the fhadows it produces being effected by the general light of the atmofphere, are teader in their outline and tone. When the reffected light procceding from the northern parts of the atmofphere is ad.
mitted through a window into a room, it aftumes a mid-way charafter. For while the light is weaker, and confequently fofter than fun-fhine; the fladows, owing to the fmallnefs of the aperture, become diftinct bus not hark; and their diltinctnefs 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 flyy, it partakes of it in every direction, and wherefore lias little or no fhadow; for there will be few parts whese fome rays of light will not, under fuch circumitances, find admiflion.

When the light proceeds direct from the fun, it is ufual, though not itrictly correct, to conlider its rays as parallel, and corfequently no enlargement or diminution takes place in lencthened thadows. But, in reality, its dittance, which diminithes its fize apparently, added to the effect of peripective, produces a real variation in fhadows of objeets whofe 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 cafe, the shadow of a fufpended ball would diminifh to a point ; as that of the earth does from the light of the fun: and in the latter it would lilate as it was extended, and projećt a fhadow at a certain dittance, large in proportion to the comparative fmallnefs of the luminous tiody'; as of the flame of a candle, for inltance. 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 havint fome reflections falling into its thades, and confequently yiclding fome vifible effect of the forms on which they fell. But by fire and candle-light, owing to the confmed iffue of their rays, forms hid in the fhadows they project are often totally lult: neverthelef, thefe thadows are not blacknef, but darknefs, of a colour whofe hue depends upon that of the larger mafs of furrounding bodies. Under many circumitanecs they receive rellections, and lave a confequent degree of colour in the bodies that lie within their range.

There are two caufes which operate to weaken and even deitroy the force of refiected light. 'IThe one is the diftance at which the reflecting object is fituated from the luminary ; the other, the difkance of the fame from the obferver. When thrfe two circumbtances combine, the effect of light and fhade is very weak.

To comprehend the principle upon which the illumination and confequent hadows of objects are produced, and to imitate them the molt effectually, the painter mutt recollect, that light, whencefoever it iffues, proceeds rectilineally from its fource to the furface which intercepts it ; and is reflected in the fame way, at an equal angle wirh the plane of that furface, but in an inverfe direction. In the language of optics, the ancle of refleztion is equal to the angle of incidence. This is the fimple but general rule, which is infallibly to guide the artitt through all the difficulties of hight and thade in painting: whether arifing from direct or reAlected illumination, this one principle holds equally good in all; but the lines which it forms in the fhadows, ere lubject to the variations produced by perfpective on all folid bodies whereon light can act.

The moft important application of this rule the artift will find to be, in fixing upon the precile point where he fhould difpofe of his moft brilliant hues; or what are technically tcrmed his high lighss; which are, in reality, thofe parts of

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his oligets, where, if the furface be a polifhed one, the image of the iuminary is reflected; and is of courfe that one which, to the eye of an obferser, is most illuminated. Thefe reliections will always be found to take place only on that point from whence a line drawn to the luminary, and another to the cye of the artit, form angles equal to each other with the plane of the furface of the illuminated object. For thuagh it may not in reality be the precife fpot where the greateft number of rajs of light are intercepted by that body, yet it is effectually fo to him whofe eye can only receive thofe which are thrown off in reflection towards him. It may be obferved as a confequence of this rule, that the extreme cdge of a rounded body can fa:cely ever be its brightelt part ; it will, as it recedes from the obferver, lofe to him its luttre, and melt into the ground orobject 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 obferver; or fomewhat beyond that, to nearly $\times 35$ degrees.

It is fearcely neceffary bere to \{peak of the refraction of light from its original courfe, when paffing through various fubilances, as glais or water; except to deprecate paying any attention to it in a picture where any effential form is broken in upon by it ; or choofing fuch fubjects, where deviation from general rules ferve rather to confound than to fatisfy the common underilanding of mankind. Thefe copying the pofitive truth would create confufion, it is molt juat, at leatt molt ureful, to vary from it: as in painting the portrait of a man with fpectacles on. What artilt in his fenfes, and who had a true perception of the real object of ant, would think of painting exaetly that which prefents itfelf to lis view, a pofitive deformity, eyes mifplaced, and of monitrous form ; for fach they are when feen through the glaffes. Such procedure would totally defeat the objeet of portraiture ; for it would be hardly poffible to make a lakenefs of the perfon, with fuch a variation from the pofitive form of his face.

The direction in which the light falls upon the objects introduced into a picture, and which we propofed at the beginning of this article as one of the points of view in which to canfider the fubject, is of very great importance on many accounts, and calls for the molt attentive confideration of the artift before he begins to colour has picture, and even in the compolition of his forms. If, without previous attention to this, he proceeds to execute his compolition, and complete the developement of his ideas, he would be fortunate if he did not find in his progrefs, that the neceffity he was under of making fladows to bring out his forms, very frequently deftroyed his general flapes, which previoufly appeared well when in lines only. A due attention to this, in the firt inftance, would frequently fuggelt ideas of forms, and affitt him in lilling his canvas agreeably, and in exprefsing the charakter of his fubjects appropriately. It is, however, utterly impolible to give precife rules upon this fubject in hiftorical paintings, as it depends fo entirely upon the nature of the fubjects, and the local fituations of the actors introduced. One general rule only may be given, viz, that the difpofition of the figures fhould be fuch, with regard to the fource of light, as to produce ample maffes of light and fladow: either of the ore or the other predominant, accordingly as the fubject is grave or gay. If the fubject be of one fingle figure, then it is requifite (and more eafly 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 unpleafiant flapes. For great grace may be added to
figures by light and nade when agrecably difpofed; and on the contrary, an unfortunate difpofal of them may dininifh the cffect, if not totally deftroy the moft beautifully drawn figure imaginable.
In portraiture, fometbing more precife may be faid upon this fubject. Its object is to convey a refemblance of a perfon in the mott agrceable manner, generally fpeaking; yet therein much muft renain which the rules cannot attach to, particularly where the object is to convey character ftronity, and not merely to render the picture agreeablc. In the latter cafe, if a perfon be fo 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 expofed to it, the purpofe will be anfwered. A ftill more acute angle will give greater relievo, but the effect will not be fo pleafing. Whether the face fhould be turned directly facing the light, or fo as to receive it partially, mult 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 Itrongly, to the difregard of pofitive 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 famp which nature has laid upon the face to be painted.

The angle of 45 deg . or thereabouts, is alfo the belt for the general illumination of a picture while the artift 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 leatt in his own way, and fee the whole of it together moft effectually; but this is an object of leffer moment; a good artilt need not wait to have his picture precifely in the very beft fituation, to enable him to perform his tafk with pleafure or effect. Indeed he cannot always have it fo, particularly when engaged in adorning walls and ceilings, \&c.

With regard to the fecond divifion of our fubject, 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 mult principaliy refer our readers to what has been faid under the articles Clair-obscure, and Effect, in Painting ; more particularly the latter, where we have fhewn that various mafters have adopted as various quantities, and thade them all agreeable. The fubject, the place, and the time, mult govern this point, and the talte of the artilt muft lead him to decide the matter for himfelf; his only guide is, the moft natural, and at the fame time the molt effective, illuftration of his fubject.

Another point for confideration, is the tone of colour which fhould be given to the light. Of this, alfo, we have treated under the words Effect, in Paining, and Harmony in the fame art, and need only itate here, that whatever hue is adopted, the fame fhould range through the whole picture, except when two kinds of light are introduced, as day-light and candle-light. In that cafe the former will be of a cold colour; and in fituations where fladows from the candle fall over parts illumined by the day, thofe parts, if the object be white, will appear of a light blue, as may be feen when candies are lighted and placed on a table-cloth, where rays of twilight can reach. The warm coldur 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 vèry nearly alike in hue, and makes green appear bine, and purple nearly fo. This renders it a difificult matter to paint by candle-light for a day-light exhioition. The artift mult

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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 efcape him. Rubens has very frequently fucceeded in the admixture of lights, and in one picture particularly, his beautiful work of " St . Roch interceding for the unhappy Sufferers from the Plague." And Titian has rendered molt beautifully the effect of three lights, viz. thofe 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 characteriftically maintained.

Light, in Sea Language, is ufed in contradiftinction to laden. A thip is accordingly called light, ei her when fhe has no cargo, or when fhe is not fufficiently ballafted.

Light is alfo ufed for the luminous body that emits it. There are various kinds of lights; general lights, as the air ; particular lights, as a fire, a candle, and even the fun.

Lignts, in Architelure, denote doors, windows, and other places, through which the air and light have a paflage.

In the Pantheon, all the light comes from on high; it has no lights but in the dome.

Ligurs, in Garlening, a term applied to the moveable glazed faftes which cover garden and other frames; and which, according to the number of lights, or feparate move-" able glaffes, are denominated one-light, two lizht, and threelight frames; thefe being the moft general different fizes of this fort of frame. See Fiame and Garden-Frame.

Ligits, Feafl of. See Dedication.
Ligits, Stopping, of a boufe, is a nuifance; but ftopping a profpect is not, being only matter of delight, not of neceffity. If a man has a vacant piece of ground, and builds thereupon a houfe, with good lights, which he fells or lets to another; and afterwards builds upon ground contiguous, or lets the fame to another perfon, who builds thercupon to the nuifance of the lights of the firft houfe; the leffee of the firfl houfe may have an action of the cafe againft fuch builder, \&c. And thoush formerly they were to be lights of an ancient meffuage, that is now altered.
Light-borfe, an ancient term in our Englifh cuftoms, fig. nifying an ordinary cavalier, or horfeman lightly armed, and fo as to enter a corps or regiment; in oppofition to the men at arms, who were heavily accoutred, and armed at all points. See Cavalry and Hogse.


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[^0]:    This refervoir, although it is fully fitted for giving a re-

[^1]:    Vol. XX.

[^2]:    Vol. XX.

[^3]:    Concertos, fymphonies, and overtures.
    Concertos, with folo parts for particular inftruments. Quintets.
    Quatuors.

