GENERAL, ſomething that comprehends all, or extends to a whole Genus. See GENUS; ſee alſo UNIVERSAL.

Thus we ſay, a *General* Rule, *q. d.* an univerſal Rule, A *general* Loſs, *&c.* 'Tis diſputed, whether *Noah*'s Flood was *general*, or no. See DELUGE.

All the Sciences have ſome *general* Principles, or Maxims. See MAXIM. A *general* Court: *General* Councils are particularly called *Oecumenical*. See OECUMENICAL.

GENERAL *Iſſue*, in Law; ſee ISSUE.

General is particularly applied to divers Officers and Dignitaries.

States GENERAL,	ſee	STATES.
GENERAL *Council*,		OECUMENICAL.
GENERAL *Aſſembly*,		ASSEMBLY.
Vicar GENERAL, *&c.*		VICAR.

GENERAL *Officers*, in an Army, are thoſe who do not only command over a ſingle Company, or Regiment; but whoſe Office and Authority extends over a Body of ſeveral Regiments of Horſe, and Foot.

Such are *Lieutenant Generals*, *Major Generals*, *Generals* of the Horſe, of the Foot; *Paymaſter General*, *Commiſſary General*, *Chirurgeon General*, &c.

The Word is alſo now uſed in a more extenſive Senſe; and comprehends ſuch as may command, by virtue of their Rank, over ſeveral Bodies of Forces, tho' all of the ſame Kind; in which Senſe Brigadiers are *General Officers*; notwithſtanding that they are attach'd to one kind of Forces, either Infantry, or Cavalry, See BRIGADIER.

The Pay of a *Lieutenant General*, when in Service, is 4 *l. per* Day: Of a *Major General*, 2 *l.* Of a *Brigadier General*, 1 *l.* 10 *s.* Of a *Captain General*, 10 *l.* See LIEUTENANT *General*, MAJOR *General*, &c.

We have alſo Officers in the Law, in the Revenues, *&c.* diſtinguiſh'd by the Appellation of *General*: As, Attorney *General*, Solicitor *General*, &c. See ATTORNEY, and SOLICITOR.

Receiver *General*, Controller *General*, &c. See RECEIVER, and CONTROLLER.

GENERAL is alſo uſed in a *Monaſtic* Senſe, for the Chief of an Order; or of all the Houſes, or Congregations eſtabliſh'd under the ſame Rule. Thus we ſay, the *General* of the *Ciſtercians*, the *Franciſcans*, &c. See ORDER.

Fa. *Thomaſſin* derives the Origin of *Generals* of Orders, from the Privileges granted by the antient Patriarchs to the Monaſteries ſituate in their capital Cities. By ſuch means they were exempted from the Juriſdiction of the Biſhop, and immediately ſubjected to that of the Patriarch alone.

GENERAL is alſo uſed in the *Military* Art for a particular March, or Beat of Drum.

To beat the *General*, is to give Notice to the Infantry to march. See DRUM.

GENERAL *Terms*, or *Words*, are ſuch as expreſs, or denote *general* Ideas. See WORD.

Ideas become *general*, by ſeparating from them, the Circumſtances of Time, Place, or any other Ideas that may determine them to this or that particular Exiſtence. See IDEA.

By this way of Abſtraction they become capable of repreſenting more Individuals, than one; each of which having a Conformity to that abſtract Idea, is of that Sort. See ABSTRACTION, INDIVIDUAL, &c.

All Things, Mr. *Lock* obſerves, that exiſt, being Particulars, it might be expected, that Words ſhould be ſo too in their Signification: But we find it quite contrary; for moſt of the Words, that make all Languages, are *general* Terms.

This is the Effect of Reaſon and Neceſſity: For, 1° It is impoſſible that every particular Thing ſhould have a diſtinct, peculiar Name; becauſe it is impoſſible to have diſtinct Ideas of every particular Thing, to retain its Name with its peculiar Appropriation to that Idea. 2° It would be uſeleſs, unleſs all could be ſuppoſed to have theſe ſame Ideas in their Minds: For Names, applied to particular Things, whereof one alone has the Ideas in his Mind, could not be ſignificant or intelligible to another, who is not acquainted with all thoſe particular Things which had fallen under his Notice. 3° It would be of no great uſe for the Improvement of Knowledge; which, tho' founded in particular Things, enlarges itſelf by *general* Views, to which Things, reduced into Sorts under general Names, are properly ſubſervient.

In Things, where we have occaſion to conſider and diſcourſe of Individuals, and Particulars, we uſe proper Names: As in Perſons, Countries, Cities, Rivers, Mountains, *&c.* Thus wee ſee that Jockeys have particular Names for their Horſes, becauſe they have often occaſion to mention this or that Horſe particularly, when he is out of ſight.

The firſt Ideas Children get, are only particular, as of the Nurſe, or Mother; and the Names they give them, are confined to theſe Individuals: Afterwards, obſerving, that there are a great many other Things in the World that reſemble them in Shape, and other Qualities, they frame an Idea, which they find thoſe many Particulars do partake in; to that they give, with others, the Name, Man, for Example. In this they make nothing new, but only leave out of the complex Idea they had of *Peter*, *James*, *Mary*, &c. that which is peculiar to each, and retain only what is common to all. And thus they come to have a *general* Name, and a *general* Idea.

By the ſame Method they advance to more *general* Names and Notions: For, obſerving ſeveral Things that differ from their Idea of Man, and which cannot, therefore, be comprehended under that Name, to agree with Man in ſome certain Qualities; by retaining only thoſe Qualities, and uniting them into one Idea, they have another, more *general* Idea; to which, giving a Name, they make a Term of a more comprehenſive Extenſion.

Thus, by leaving out the Shape, and ſome other Properties ſignified by the Name, Man; and retaining only Body, with Life, Senſe, and ſpontaneous Motion; we form the Idea ſignified by the Name Animal. After the ſame manner, the Mind proceeds to Body, Subſtance, and at laſt to Being, Thing, and ſuch univerſal Terms, which ſtand for any Ideas whatſoever, See ENS, ESSE, &c.

Hence we ſee the whole Myſtery of Genus and Species, is nothing but abſtract Ideas, more or leſs comprehenſive, with Names annexed to them: This ſhews us the Reaſon, why in defining Words, we make uſe of the Genus; namely, to ſave the Labour of enumerating the ſeveral ſimple Ideas, which the next general Term ſtands for.

From what has been ſaid, it is plain, that *General* and Univerſal belong not to the real Exiſtence of Things; but are the Inventions of the Underſtanding, made by it for its own Uſe, and concerns only Signs, either Words, or Ideas. See UNIVERSAL.

General Words do not barely ſignify one particular Thing; for then they would not be *general* Terms; but proper Names: Neither do they ſignify a Plurality; for then Man and Men would ſignify the ſame thing; but what they ſignify, is a ſort of Things: And this they do, by being made a Sign of an abſtract Idea in the Mind, to which Idea, as Things exiſting are found to agree, ſo they come to be ranked under that Name, or to be of that ſort.

The Eſſences then of the Sorts, or Species of Things, are nothing but theſe abſtract Ideas. See ABSTRACT.

It is not denied here, that Nature makes Things alike; and ſo lays the Foundation of this ſorting and claſſing: But the Sorts or Species themſelves are the Workmanſhip of human Underſtanding; ſo that every diſtinct abſtract Idea, is a diſtinct Eſſence; and the Names that ſtand for ſuch diſtinct Ideas, are the Names of Things eſſentially different. Thus Oval, Circle, Rain and Snow are eſſentially different. See this further illuſtrated under ESSENCE, SUBSTANCE, *&c.*

GENERALISSIMO, call'd alſo *Captain* GENERAL, and ſimply, the GENERAL; is an Officer, who commands all the military Powers of the Nation; who gives Orders to all the other General Officers; and receives no Orders himſelf but from the King.

Monſ. *Balzac* obſerves, that the Cardinal *de Richelieu* firſt made this Word, of his own abſolute Authority, upon his going to command the *French* Army in *Italy*.

GENERATED, or GENITED, is uſed in Mathematicks, for whatever is produced, either in Arithmetick, by the Multiplication, Diviſion, or Extraction of Roots; or in Geometry, by the Invention of the Contents, Areas, and Sides; or of extreme and mean Proportionals, without arithmetical Addition, and Subſtraction.

GENERATING *Line*, or *Figure*, in Geometry, is that which by its Motion or Revolution produces any other Figure, Plane, or Solid. See GENESIS.

GENERATION, in Phyſicks, the Act of procreating, or producing a thing, which before was not: Or, as the Schoolmen define it, the total Change, or Converſion of a Body, into a new one, which retains no ſenſible Part or Mark of its former State. See BODY.

Thus, Fire is ſaid to be *generated*, when we perceive it to be, where before was only Wood, or other Fuel; or, when the Wood is ſo changed, as to retain no ſenſible Character of Wood: Thus alſo, A Chick is ſaid to be *generated*, when we perceive the Chick, where before was only an Egg; or the Egg is changed into the Form of the Chick.

In *Generation*, there is not properly any Production of new Parts, but only a new Modification or manner of Exiſtence of the old ones; by which *Generation* is diſtinguiſh'd from *Creation*. See CREATION.

It is diſtinguiſh'd from *Alteration*, in that the Subject, in this latter, remains apparently the ſame; and only the Accidents, or Affections are changed: As when the ſame Body is to day well, and to morrow ſick; or Braſs, which before was round, is now ſquare. See ALTERATION.

Laſtly, *Generation* ſtands oppoſed to *Corruption*, which is the utter Extinction of a former Thing: As, when that which before was Wood, or an Egg, is no longer the one or the other: Whence it appears, that the *Generation* of one Thing is the Corruption of another. See CORRUPTION.

The Peripateticks explain *Generation* by a Change or

Paſſage from a Privation, or Want of a ſubſtantial Form, to the having of ſuch a Form. See *Subſtantial* FORM.

The Moderns allow of no other Change in *Generation*, than what is *local*: According to them, 'tis only a Tranſpoſition, or new Arrangement of Parts; and thus, the ſame Matter ſhall ſucceſſively undergo an Infinity of *Generations*.

A Grain of *Wheat*, *e. gr.* is committed to the Ground; this imbibing the Humidity of the Soil, becomes turgid, and dilates to ſuch Degree, that it becomes a *Plant*, and, by a continual Acceſſion of Matter, ripens by degrees into an Ear; and at length into new *Seed*. This Seed, ground in the Mill, appears in form of *Flower*; which, mix'd up with Water, makes a *Paſte*; whereof, with the Addition of Yeſt, Fire *&c. Bread* is *generated*: And this Bread, broke with the Teeth, digeſted in the Stomach, and convey'd thro' the Canals of the Body, becomes *Fleſh*.

Now, in all this Series of *Generations*, the only thing effected, is a local Motion of the Parts of the Matter, and their ſettling again in a different Order; ſo that, in Reality, wherever there is a new Arrangement, or Compoſition of Elements, there is a new *Generation*; and therefore *Generation* is reduced to Motion. See ELEMENT, and MOTION.

GENERATION is more immediately underſtood of the Production of Animal and Vegetable Bodies, from Seed, or the Coition of others of different *Sexes*, but the ſame Genus, or *Kind*. See ANIMAL, and VEGETABLE; ſee alſo SEX, &c.

Some of the modern Naturaliſts maintain, after Monſ. *Perrault*, that there is not properly any new *Generation*: That God created all Things at firſt: And that what we call *Generation*, is only an Augmentation and Expanſion of the minute Parts of the Body of the Seed; ſo that the whole Species to be afterwards produced, were really all form'd in the firſt, and incloſed therein; to be brought forth and excloſed to view in a certain Time; and according to a certain Order and Oeconomy. See SEED.

Thus, Dr. *Garden*: 'It is moſt probable, that the Stamina of all the Plants and Animals that have been, or ever ſhall be in the World, have been form'd *ab origine Mundi*, by the Almighty Creator, within the firſt of each reſpective Kind. And he who conſiders the Nature of Viſion, that it does not give us the true Magnitude, but only the Proportion of Things; and that what ſeems to our naked Eye but a Point, may truly be made up of as many Parts as ſeem to be in the whole Univerſe, will not think this an abſurd or impoſſible Thing." *Mod. Theor. of Generat.*

The Manner, wherein the Seed of the Male Animal acts on that of the Female, to impregnate, and render it prolifick, has long been inquir'd after; and yet remains ſtill a Myſtery. Some, with *Ariſtotle*, hold the Male Semen to do the Office of a Coagulum; and the Female that of Milk: Which ſome later Authors have improved on, by ſuppoſing the Male Seed an Acid; and the Female an Alcali. Others, conſider the thicker Seed of the Male, as the Flower; and the thinner Seed of the Female, as Water, out of which two an animal Paſte is wrought, and baked by the Heat of the Womb. But the Moderns are generally agreed, that what Effect ſoever the Male Seed produces on the Female, 'tis by Motion and Mechanicks that it produces it.

GENERATION *of Animals*, or *Animal* GENERATION, is a Proceſs in the Oeconomy of Nature, very difficult to be traced. The Parts concurring hereto, are numerous; and their Functions moſtly diſcharg'd in the Dark.

The Antients diſtinguiſh'd two kinds of *Generation*: *Regular*, called *Univocal*; and *Anomalous*, called alſo *Equivocal*, or *Spontaneous*.

The firſt was effected by Parent Animals of the ſame kind; as that of Men, Birds, Beaſts, *&c.* The ſecond was ſuppoſed effected by Corruption, the Sun, *&c.* as that of Inſects, Frogs, *&c.* But this latter Kind is now generally exploded. See EQUIVOCAL, SPONTANEOUS, UNIVOCAL, &c.

There are two principal Theories, or Methods of accounting for the *Generation* of Animals: The one ſuppoſes the Embryo, or Fœtus to be originally in the *Seed* of the Male; the other, in the *Ovum*, or Egg of the Female.

The firſt ſuppoſes Animalcules in the Male Seed, to be the firſt Rudiments of the Fœtus; and that the Female only furniſhes a proper Nidus, and Nutriment to bring them forwards. See SEED, and ANIMALCULA.

The ſecond ſuppoſes the firſt Rudiments of the Animal to be in the Ova; and that the Male Seed only ſerves to warm, cheriſh and ripen the Ova, till they fall off out of the Ovary into the Womb. See EGG, OVARY, &c.

The firſt Syſtem is well illuſtrated by Dr. *Geo. Garden*: That Author, upon comparing the Obſervations, and Diſcoveries of *Harvey*, *Malpighi*, *De Graaf*, and *Leewenhoeck* together, concludes it moſt probable, "That all Animals are "*ex animalculo*: That theſe Animalcules are originally in "*Semine Marium*, and not in that of the Female; but "that they can never come forward, nor be form'd into A-"nimals, without the Ova in the Female."

The Iſt of theſe Points he argues from the three following Obſervations:

1° That ſomething has often been obſerved by *Malpighi*, in the Cicatricula of an Egg before Incubation, like the Rudiments of an Animal, in form of a Tadpole. See CICATRICULA.

2° From the ſudden Appearance and Diſplaying of all the Parts, after Incubation, it ſeems probable, that they are not then actually formed out of a Fluid; but that the Stamina of them have been formerly there exiſtent, and are now expanded—The firſt Part of the Chick, which is diſcover'd with the naked Eye, is the *Punctum Saliens*, and that not till three Days and Nights of Incubation are paſt; on the fifth Day the Rudiments of the Head and Body appear. This made Dr. *Harvey* conclude, that the Blood had a Being before any other Part of the Body, and that from it all the Organs of the Fœtus were both formed and nouriſh'd; but by *Malpighi*'s Obſervations it appears that the Parts are then only ſo far extended, as to be made viſible to the naked Eye; and that they were actually exiſtent before, and diſcernable by Glaſſes. After an Incubation of 30 Hours, we ſee the Head, the Eyes, and the Carina, with the Vertebræ, diſtinct, and the Heart. After 40 Hours, its Pulſe is viſible, and all the other Parts more diſtinct, which cannot be diſcerned by the naked Eye, before the Beginning of the fifth Day: From whence it ſeems very probable, that even the ſo early Diſcovery of thoſe Parts of the Fœtus by the Microſcope, is not the diſcerning of thoſe Parts newly form'd; but only more dilated and extended by receiving of Nutriment from the Colliquamentum; ſo that they ſeem all to have been actually exiſtent before the Incubation of the Hen. And what *Swammardam* has diſcover'd in the Tranſmutation of Inſects, gives no ſmall Light to this; ſince he makes appear, that in thoſe large Eruca's which feed upon Cabage, if they be taken about the Time they retire to be transformed into Aurelias, and plunged often in warm Water to make a Rupture of the outer Skin; you will diſcern, thro' the Tranſparency of their ſecond Membrane, all the Parts of the Butterfly, the Trunk, Wing, Feelers, *&c.* folded up: But, that after the Eruca is chang'd into an Aurelia, none of theſe Parts can be diſcerned; being ſo much drench'd with Moiſture; tho' they be there actually form'd. See FŒTUS, AURELIA, &c.

3° As to the Analogy between Plants and Animals: All Vegetables, we ſee, do proceed *ex Plantula*; the Seeds of Vegetables being no other but little Plants of the ſame kind, folded up in Coats and Membranes: Whence we may infer, that ſo curiouſly an organiz'd Creature, as an Animal, is not the ſudden Product of a Fluid, or Colliquamentum, but does much rather proceed from an Animalcule of the ſame kind, and has all its little Members folded up according to their ſeveral Joints and Plicatures, which are afterwards enlarged and diſtended, as we ſee in Plants.

The IId Point, which our late Diſcoveries have made probable, is, that theſe Animalcules are originally in the Seed of the Male, and not in the Female: For 1° There are obſerv'd innumerable Animalcula in *ſemine maſculino*, of all Animals. *Leewenhoeck* has made this ſo evident, that there ſeems little room to doubt thereof.

2° We obſerve the Rudiments of a Fœtus in Eggs which have been fœcundated by the Male; tho' no ſuch Thing is viſible, in thoſe not fœcundated. *Malpighi*, in his Obſervations, makes it very probable, that theſe Rudiments proceed originally from the Male, and not from the Female.

3° The Reſemblance between the Rudiments of the Fœtus in Ovo, both before and after Incubation, and the Animalcule, makes it very probable that they are one and the ſame. The ſame Shape and Figure, which M. *Leewenhoeck* gives us of the Animalcule, *Malpighi* gives of the Rudiments of the Fœtus, both before and after Incubation; yea, and even the Fœtus's of viviparous Animals appear ſo at firſt to the naked Eye; whence Dr. *Harvey* acknowledges, that all Animals, even the moſt perfect, are begotten of a Worm.

4° This gives a rational Account of many Fœtus's at one Birth, eſpecially that of the Counteſs of *Holland*: And how, at leaſt, a whole Cluſter of Eggs in a Hen are fœcundated by one Coition of the Male. See FŒTUS.

5° This gives a new Light, as it were, to the firſt Prophecy concerning the *Meſſiah*, that *the Seed of the Woman ſhall bruiſe the Head of the Serpent*; all the reſt of Mankind being thus moſt properly and truly the Seed of the Man.

6° The Analogy already mention'd, which we may rationally ſuppoſe between the manner of the Propagation of Plants and Animals, does likewiſe make this probable. Every Herb and Tree bears its Seed after its Kind; which Seed is nothing elſe but a little Plant of that Kind; which being thrown into the Earth, as into its Uterus, ſpreads forth its Roots, and receives thence its Nouriſhment; but has its Form within it ſelf: And we may rationally conjecture ſome

ſuch

ſuch Analogy in the Propagation of Animals. See VEGETATION.

The III^d Thing, which our Diſcoveries make probable, is, That Animals cannot be form'd of theſe Animalcula without the *Ova in Feminis*, which are neceſſary for ſupplying them with proper Nutriment; and this is evinced from the following Conſiderations.

1° It appears, that an Animalcule cannot come forward, if it do not fall into a proper Nidus: This we ſee in the Cicatricula in Eggs; and tho' a Million of them ſhould fall into one Egg, none of them would come forward, but what were in the Center of the Cicatricula; and perhaps the Nidus, neceſſary for their Formation, is ſo proportioned to their Bulk, that it can hardly contain more than one Animalcule; which may be the Reaſon why there are ſo few Monſters. This, we ſee, is abſolutely neceſſary in the Oviparous Kinds; and the only Difference which lies between them and the Viviparous, ſeems to be this, that in the latter the Ova are properly nothing but the Cicatricula, with its Colliquamentum, ſo that the Fœtus muſt ſpread forth its Roots into the Uterus, to receive its Nouriſhment; but the Egg in Oviparous Animals may be properly termed an Uterus, in relation to the Fœtus; as it contains not only the Cicatricula, with its Amnion and Colliquamentum, which is the immediate Nouriſhment of the Fœtus, but alſo the Materials which are to be converted into that Colliquamentum; ſo that the Fœtus ſpreads forth its Roots no farther than into the White and Yolk of the Egg, from whence it derives all its Nouriſhment. Now, that an Animalcule cannot come forward without ſome ſuch proper Nidus, will not be deny'd; for if there were nothing needful but their being thrown into the Uterus, we do not ſee why many hundreds of them ſhould not come forward at once, at leaſt while ſcatter'd in ſo large a Field.

2° That this Cicatricula is not originally *in Utero*, ſeems evident from the frequent Conceptions which have been found *extra Uterum*: Such as the Child which continued 26 Years in the Woman of *Tholouſe's* Belly: And the little Fœtus found in the Abdomen of Mad. *de St. Mere*, together with the Teſticle torn, and full of clotted Blood: Such alſo ſeem to be the Fœtus in the Abdomen of the Woman of *Copenhagen*, mention'd in the *Nouvelles des Lettres*, for *Sept.* 85. All the Members of which were eaſily to be felt thro' the Skin of the Belly, and which ſhe had carried in her Belly for four Years: And the ſeven Years Gravidation related by Dr. *Cole*. Now, granting once the Neceſſity of a proper Nidus for the Formation of an Animalcule into an Animal, theſe Obſervations make it probable, that the Teſtes are the Ovaria appropriated for this Uſe: For tho' the Animalcule's coming thither in ſuch Caſes, may ſeem to be extraordinary, and that uſually the Impregnation is in Utero; yet it may be collected from hence, that the Cicatricula or Ova to be impregnated, are in *Teſtibus fœmineis*; for if they were not ſo, the Accidental coming of Animalcules thither, could not make them come forward more than in any other Part of the Body; ſince they cannot be form'd and nouriſh'd without a proper Nidus.

3° It is acknowledg'd, that the Fœtus *in Utero*, for ſome conſiderable Time after Conception, has no Connexion with the Womb; that it ſits wholly looſe to it, and is perfectly a little round Egg, with the Fœtus in the midſt; which ſends forth its umbilical Veſſels by degrees, and at laſt lays hold on the Uterus. Now, from hence it ſeems evident, that the Cicatricula, which is the Fountain of the Animalcules Nouriſhment, does not ſprout from the Uterus, but has its Origin elſewhere; and falls in thither as into a fit Soil: from whence it may draw Nutriment for the Growth of the Fœtus; elſe it cannot be eaſily imagin'd how it ſhould not have an immediate Connexion with the Uterus, from the Time of Conception.

It is indeed difficult to conceive, how theſe Eggs ſhould be impregnated *per ſemen maris*, both becauſe there is no Connexion between the Fallopian Tubes, and the Ovary, for its Tranſmiſſion; and for that Dr. *Harvey* could never diſcover any thing of it *in Utero*: But as to the laſt, M. *Leewenhoeck* has cleared that Difficulty by the Diſcovery of innumerable Animalcula in the Tubæ, or Cornua Uteri, and thoſe living a conſiderable Time after Coition. And as to the former, we may either ſuppoſe that there is ſuch an Inflation of the Tubæ, at the Time of Coition, as makes them embrace the Ovaries; and ſuch an Approach of the Uterus and its Cornua, as that it may eaſily tranſmit the Seed into the Ovary: Or elſe, that the Ova are impregnated by the Animalcules after they deſcend into the Uterus, and not in the Ovary. The former ſeems probable for this Reaſon, that at leaſt a whole Cluſter of Eggs in a Hen will be fœcundated by one Tread of the Cock: Now this Fœcundation ſeems to be in the Vitellary, and not in the Uterus, as the Eggs paſs along from day to day: For it can hardly be ſuppoſed, that the Animalcules ſhould ſubſiſt ſo long, being ſcatter'd looſely in the Uterus, as to wait there, for many Days, for the Fœcundation of the Eggs as they paſs along. The latter Conjecture has this to ſtrengthen it: That the Animalcules are found to live a conſiderable Time in the Uterus, and that if they ſhould impregnate the Ova in the Ovary it ſelf, the Fœtus would encreaſe ſo faſt, that the Ova could not paſs thro' the Tubæ Uteri; but would either burſt the Ovary, or fall down into the Abdomen from the Orifices of the Tuba: And from hence probably proceed thoſe extrrordinary Conceptions in the Abdomen, out of the Uterus. See FALLOPIAN *Tube*.

Thus much is urged for the *Syſtem ab Animalculo*.

The Retainers to the *Syſtem of* Generation *ab Ovo*, contend that the Rudiments of the Fœtus are laid in the Ovary, and that the Female furniſhes the whole Matter of the Body; which they chiefly ſupport from the Conformation in Rabbits, Sheep, Cows, *&c.* where the Vagina of the Womb is ſo long, and ſinuous, that it is ſcarce poſſible the Male Seed ſhould ever arrive within the Body of the Uterus; eſpecially in Cows, whoſe Vagina is fill'd with a thick, viſcid Ichor, and the inner Orifice of the Womb exactly cloſed: Beſide that, the Thickneſs of the Membranes of the Ova ſhould ſeem inpenetrable to ſo craſs a Matter as the Male Seed. Add, that if Animalcula be found in the Male Seed, which, however, will admit of ſome Diſpute (that inteſtine Motion and Agitation of the groſſer Particles thereof, which give riſe to the Opinion being accountable for from the common Laws of warm Fluids) yet are the ſame obſerv'd in Vinegar, Pepper, Water, *&c.* Add, that it is highly improbable, thoſe Animalcules ſhould contain the Rudiments of a future Body; ſince their large Numbers would produce too plentiful an Offspring; inſomuch that it would be neceſſary for 9999 Parts of them to be in vain, and periſh: Which is contrary to the Oeconomy of Nature in other Things.

Analogy is likewiſe urged in favour of this Syſtem: Thus, all Plants are maintained to ariſe from Eggs; Seeds being no other than Eggs under another Denomination. All Oviparous Animals do unexceptionably ariſe from Eggs, which the Female caſts forth; and 'tis highly probable, that the Viviparous only differ from Oviparous, in that the Females lay and hatch their Eggs within themſelves. See VIVIPAROUS, and OVIPAROUS.

Againſt this Hypotheſis it is urged, that what are uſually called Ova, or Eggs, in Women, are no other than little Cells, or Bladders, full of a certain Liquor: And how can a Drop of Liquor paſs for an Egg? Add, that theſe imaginary Eggs have no proper Membrane belonging to them, nor any Covering but that of the Cell; which ſeems ſo inſeparable therefrom, that when they are diſcharged, it is hard to conceive how they ſhould take it with them. And beſide, how ſhould they make themſelves a Paſſage through the commom Membrane wherewith the Ovary is inveſted, which is of ſo cloſe a Texture, that it muſt ſeem abſolutely impenetrable by a round Body of ſo ſoft a Conſiſtence, as one of theſe Veſicles. Laſtly, Veſiculæ, in all reſpects perfectly like Ova, have been found in other Parts of the Body, where it is apparent they could not ſerve for any purpoſes of *Generation*. *Mem. del Acad. Royal des Scien, An.* 1708, 1709.

To this it is anſwer'd, that Ova or Veſiculæ have been actually found in Diſſections, detach'd and ſeparated from the Ovary, and the Ruptures in the Membrane of the Ovary, thro' which they had paſs'd, ſtill viſible. M. *Littre* even obſerved ſome of theſe ſeparated Ova ſpread with Blood Veſſels, like thoſe in the Yolks of Birds Eggs. Nay more, the ſame Author is poſitive, that he ſaw an Embryo in one of the Ova not yet ſeparated; could diſcern its Head, Mouth, Noſe, Trunk, and Funiculus Umbilicalis, whereby it adhered to the Membranes of the Ovary. See EMBRYO. But this will come to be further conſider'd under GENERATION *of Man*.

Sir *John Floyer* ſtarts a Difficulty, which ſeems to preſs equally againſt each Syſtem, taken ſingly: 'Tis fetch'd from Monſters: In a Mule, for inſtance, which is the Production of a Venereal Copula between an Aſs, and a Mare, the Bulk of the Body partakes of the Form of the Dam; and the Feet, Tail, and Ears of that of the Sire: Hence it is argued, that the Rudiments of the greater Part of the Fœtus are laid in the Ovum; and that the Inpregnation either conveys, or changes the Extremities. If the Male ſupplied the Animalcula, the Fœtus ſhould always be of the ſame Species as the Male: If the Female ſupply it, it ſhould be of her kind; whereas Monſters are of both. See MONSTER.

GENERATION *of Man*. As 'tis in human Subjects, that the gradual Proceſs of *Generation* has been principally inquired into; and the Structure, and Office of the Organs ſubſervient thereto, chiefly examined: What the lateſt Naturaliſts, and Anatomiſts have ſettled with regard thereto, is reſerved for this Head.

The *Parts of Generation*, then, are different in the different Sexes.

Thoſe, *proper to the Male*, are the *Penis*; the *Teſticles*; the *Veſiculæ Seminales*; the *Vaſa deferentia*; the *Paraſta-*

tæ;

tæ, and the *Vaſa præparantia*; which ſee deſcribed each under its proper Article, PENIS, TESTICLES, &c.

The *Parts of* Generation *proper to the Female*, are the *Pudendum*, the *Clitoris*, *Nymphæ*, *Hymen*, *Uterus*, *Fallopian Tubes*, and *Ovaries* or *Teſtes*. See PUDENDUM, CLITORIS, NYMPHÆ, HYMEN, UTERUS, FALLOPIAN *Tubes*, and OVARIES.

The Proceſs of *Generation*, ſo far as the Male contributes to it, is as follows: The Penis being erected by an Affuſion of Blood; as ſhewn under ERECTION; the Glans, at the ſame time tumified; and the nervous Papillæ in the Glans much rubbed, and highly excited in Coitu; an ejaculatory Contraction follows, by which the Seed is preſs'd out of the Seminal Veſicles, and expell'd with ſome Force. See PAPILLÆ, EJACULATION, &c.

The Proceſs of *Generation* on the part of the Female, is thus: The Clitoris being erected, after the like manner as the Penis in Man; and the neighbouring Parts all diſtended with Blood, they more adequately embrace the Penis in Coitu; and by their Intumeſcence preſs out a Liquor from the Glands about the Neck of the Womb, to facilitate the Paſſage of the Penis.

At the ſame time, the Fibres of the Womb contracting, open its Mouth (which at other times is extremely cloſe) for the Reception of the finer Part of the Seed.

Thus, the Seed, pregnant with Animalcules, is convey'd, with ſome Impetus, into the Uterus; where being retain'd by the convulſive Conſtriction of the inner Membrane thereof, and further heated and agitated therein; it is prepared to impregnate the Ovum.

During the Act of Coition, the Fallopian Tubes growing ſtiff, embrace the Ovaries with their ſtrong muſculous Edges, like Fingers; and compreſs them; till, their Mouths being dilated, and expanded by this Embrace, force the Egg, now ripen'd, into their Cavities, and gradually drive it forwards by their Vermicular Motion, till at laſt they protrude it into the Cavity of the Womb, to meet the Seed, ſome of the Animalculas whereof entering the dilated Pores of the glandulous Membrane of the Egg, are there retain'd, nouriſh'd, grow to its Navel, and ſuffocate the reſt of the leſs lively Animalcula. And thus is *Conception* perform'd. See CONCEPTION.

Others rather ſuppoſe the Seed convey'd from the Uterus thro' the Fallopian Tubes to the Ova; and thus take the Inpregnation to be firſt perform'd in the Ovaries; or even the Tubæ themſelves, the Ova and Seed meeting by the way.

Others, conſidering the Cloſeneſs of the Mouth of the Womb, and the Thickneſs of the Membranes of the Ovaries, judge it impoſſible for the Seed to paſs that way; and therefore ſuppoſe it taken up by the Veins, which open into the Cavity of the Vagina, or even Womb; where circulating, it ferments with the Maſs of Blood; and hence all the Symptoms which appear in Conception. At length it enters and impregnates the Egg by the ſmall Twigs of Arteries, which are upon its Membranes. This Fermentation ſwelling the Membranes of the Tubæ, they open their Cavity, and make room for the Ova, to paſs into the Womb.

The Egg inpregnated, and cloſe ſhut up in the Womb, ſwims in the Humors thereof; which growing more and more ſubtil, enter the patent Pores found on one Side the Ovum, diſtend, fill, and augment it; and there being ſtill further attenuated, nouriſh the Embryo; thicken and expand the Membranes of the Ovum, eſpecially in that Part by which it grew to the Ovary, and thus form the Rudiments of a *Placenta*. See PLACENTA.

The ſame Cauſes ſtill continuing, and the Pores both of the Placenta, and the Membranes being enlarged; the Egg begins to fill the Capacity of the Womb; and at length its Stem or Calyx grows to the concave Surface thereof: And thus is the Navel-ſtring, or Funiculus form'd. See *Funiculus* UMBILICALIS, &c. See alſo FŒTUS.

This Syſtem is founded on the Suppoſition of the *Animalcula* in the Male Seed.

They who ſet them aſide as unconcern'd in *Generation*, account for it thus: The Seed, containing volatile, oily, and ſaline Parts, as appears from its fetid Smell, oleaginous Subſtance, &c. being lodg'd in the Womb, and there further digeſted and exalted; grows yet more volatile, fetid, pungent, and ſtimulating; and thus, adding to the Heat occaſioned by Coition, vellicates the nervous Fibres of that Part, and occaſions a Fermentation, and gentle Inflammation; and by that means an extraordinary Flux of Humors to that, and the adjacent Parts.

By this means the Tubæ become rigid, and fit to graſp the Ovaries, which are alſo heated by the Effluvia of the Semen, and the Warmth of the Parts ſurrounding. Upon this, a greater Flux into the Ovaries; till at length, the Ova, ſome of them at leaſt, by ſuch greater Supply of Nouriſhment, increaſe in Bulk; and as thoſe graſp'd by the Edges of the Tubæ, will be kept warmeſt, and the greateſt Flux be made thereto, they will ſooneſt be ripen'd, fall off, and be received by the Tubæ, and convey'd to the Womb: Where, growing, after the manner of the Seeds of Plants, the Placenta at length takes hold of, and adheres to the Uterus; from which time the Embryo begins to be nouriſh'd after a different manner. See GESTATION; ſee alſo NUTRITION, CIRCULATION, &c.

GENERATION *of Inſects*; ſee INSECT.

GENERATION *of Plants* bears an admirable Analogy to that of Animals: See the Proceſs deliver'd at length under the Article *Generation of* PLANTS.

The *Parts of* Generation *of Plants*, are the *Flowers*; and particularly the *Stamina*, *Apices*, *Farina fœcundans*, and *Piſtils* thereof. See FLOWER; ſee alſo STAMINA, FARINA, and PISTIL.

GENERATION *of Muſhrooms*, ſee MUSHROOM.

GENERATION *of Minerals*, or *Foſſils*, ſee MINERAL, and FOSSIL.

GENERATION *of Stones*, ſee STONE; ſee alſo SPAR, TROCHITES, and CRYSTAL.

GENERATION *of Shells*, ſee SHELL.

GENERATION, in Theology. The Father is ſaid to have produc'd his *Word*, or *Son*, from all Eternity, by way of *Generation*; on which occaſion the Word *Generation* raiſes a peculiar Idea: That Proceſſion, which is really effected in the way of Underſtanding, is called *Generation*, by reaſon the *Word*, in virtue thereof, becomes like to him from whom he takes his Original; or as St. *Paul* expreſſes it, the Figure, or Image of his Subſtance, *i. e.* of his Being and Nature. See TRINITY, PERSON, PROCESSION, &c.

And hence it is, that the Second Perſon in the Trinity is called the *Son*. See SON, &c.

GENERATION is alſo us'd, tho' ſomewhat improperly, for *Genealogy*; or the Series of Children, iſſued from the ſame Stock: Thus, the Goſpel of St. *Matthew* commences with *the Book of the* Generation *of Jeſus Chriſt*, &c.

The later, and more accurate Tranſlators, inſtead of *Generation*, uſe the Word *Genealogy*. See GENEALOGY.

GENERATION is alſo us'd to ſignify a People, Race, or Nation; eſpecially in the literal Tranſlations of the Scripture: Where the Word generally occurs, wherever the *Latin* has *Generatio*; and the *Greek*, γένεα, or γένεσις.

Thus, *A wicked and perverſe* Generation *ſeeketh a Sign*, &c. *One* Generation *paſſes away, and another cometh*, &c.

GENERATION is alſo us'd in the Senſe of an Age, or the ordinary Period of Man's Life.

Thus, we ſay, To the third and fourth *Generation*: In this Senſe, Hiſtorians uſually reckon a *Generation* the Space of thirty Years, or there abouts. See SECULUM.

Herodotus makes three *Generations* in an hundred Years; which Computation appears from the later Authors of political Arithmetic, to be pretty *juſt*. See ANNUITY, and POLITICAL *Arithmetick*.

GENEROSA, Gentlewoman; ſee GENTLEMAN.

Generoſa is a good Addition; and if a Gentlewoman be named *Spinſter*, in any original Writ, Appeal, or Indictment, ſhe may abate and quaſh the ſame. 2 *Inſt. fol.* 668.

GENESIS, the firſt Book of Holy Scripture, or the Bible; containing the Hiſtory of the Creation; and the Lives of the firſt Patriarchs. See BIBLE, and SCRIPTURE.

The Book of *Geneſis* makes the Head of the *Pentateuch*. See PENTATEUCH.

Its Author is *Moſes*: It contains the Relation of 2367 Years; *viz.* from the Beginning of the World, to the Death of *Joſeph*.

The *Jews* are forbid to read the Beginning of *Geneſis*, and the Beginning of *Ezekiel*, before 30 Years of Age.

The *Hebrews* call this Book *Bereſith*, in regard it begins with that Word, which in their Language ſignifies *in principio*, in the Beginning. 'Twas the *Greeks* gave it the Name *Geneſis*, Γένεσις, *q. d.* Production, Generation; by reaſon it begins with the Hiſtory of the Production, or *Generation* of all Beings.—

Cedrenus makes mention of an Apocryphal Book, entitled *little Geneſis*, *Geneſis parva*, containing ſeveral Incidents, not in the other: Some of which he has preſerv'd; particularly, that *Cain* was buried under the Ruins of a Houſe: That an Angel taught *Abraham* the *Hebrew* Tongue: That *Maſtiphal*, Prince of the Devils, adviſed God to order *Adam* to ſacrifice his Son, for a Trial of his Obedience: That the Children were only caſt into the *Nile* for ten Months, &c.

GENESIS, in Geometry, the Formation of a Line, Plane, or Solid, by the Motion, or Flux of a Point, Line, or Surface. See LINE, and SURFACE; ſee alſo POINT, and FLUXION.

The *Geneſis*, or Formation, *e. gr.* of a Globe, or Sphere, is conceived by ſuppoſing a Semi-circle to revolve upon a Right Line, drawn from one Extreme thereof to the other; call'd its *Axis*, or the Axis of Circumvolution: The Motion, or Revolution of that Semi-circle, is the *Geneſis* of the Sphere, &c. See AXIS; ſee alſo SPHERE, GLOBE, &c.

In the *Geneſis* of Figures, &c. the Line, or Surface that moves, is called the *Deſcribent*; and the Line around which, or according to which the Revolution, or Motion is made, the *Dirigent*. See DESCRIBENT, and DIRIGENT.

GENET, in the Manage, &c. a ſmall ſized, well proportioned *Spaniſh* Horſe.

Some alſo give the Term *Geneta* to well made *Italian* Horſes.

To *ride a la Genette*, is to ride in the *Spaniſh* Faſhion; *i. e.* with the Stirrups ſo ſhort, that the Spurs bear upon the Flanks of the Horſe. This is deem'd a Piece of Gallantry in *Spain*, but not among us.

GENETHLIACI, in Aſtrology, Perſons who erect Horoſcopes; or foretel what ſhall befal Men, by means of the Stars which preſided at their Nativity. See HOROSCOPE, and NATIVITY.

The Antients call'd them *Chaldæi*, and by the general Name *Mathematici*: Accordingly, the ſeveral Civil, and Canon Laws, which we find made againſt the Mathematicians, only reſpect the *Genethliaci*, or Aſtrologers.

They were expell'd *Rome* by a formal Decree of the Senate; and yet found ſo much Protection from the Credulity of the People, that they remain'd therein unmoleſted.

Hence an antient Author ſpeaks of them as *Hominum genus quod in civitate noſtra ſemper & vetabitur, & retinebitur*. See ASTROLOGY.

Antipater, and *Achinapolus* have ſhewn that *Genethliology* ſhould rather be founded on the Time of Conception, than that of the Birth. *Vitruvius*.

The Word is form'd of the *Greek* γενέθλη, Origin, Generation.

GENETHLIACUM, GENETHLIAC *Poem*, GENETHLIACUM *Carmen*, is a Compoſition in Verſe, on the Birth of ſome Prince, or other Illuſtrious Perſon; wherein the Poet promiſes him great Honours, Advantages, Succeſſes, Victories, &c. by a kind of Propheſy or Prediction.

Such is the *Eclogue* of *Virgil* to *Pollio*, beginning,

Sicelides Muſæ paulo majora canamus.

There are alſo *Genethliac Speeches*, or *Orations*; made to celebrate a Perſon's Birth-day.

GENEVA, a popular Name for a diſtill'd Water; procur'd from the Seeds, or Berries of the Juniper Tree; which the *French* call *Genevrier*, and the Berry *Genevre*: Whence the *Engliſh* Appellation *Geneva*.—See WATER, and JUNIPER.

GENEVIEVE, St. GENEVIEVE, or St. GENEVIEFVE. The *Fathers* or *Religious* of St. *Genevieve*, is a Congregation of Regular Canons of the Order of St. *Auguſtin*; eſtabliſh'd in *France*.

The Congregation of St. *Genevieve* is a Reform of the *Auguſtin* Canons, begun by St. *Charles Faure*, in the Abby of St. *Vincent de Senlis*, whereof he was a Member, in the Year 1618. See AUGUSTINES.

The Reform ſoon ſpread into other Houſes; particularly that of *Notre Dame d'Eu*, and the Abby of St. *Genevieve* at *Paris*, chiefly by the Intereſt of the Cardinal *de la Rochefoucaud*, who was choſe Abbot thereof in 1619; and in 1621 propoſed the Reform to the Religious of his Abby.

In the Year 1634 the Abby was made elective; and a General Chapter, compoſed of the Superiors of 15 Houſes who had now receiv'd the Reform, choſe F. *Faure* Co-adjutor of the Abby of St. *Genevieve*, and General of the whole Congregation. Such were its Beginnings.

It has ſince increas'd very much, and now conſiſts of above an hundred Monaſteries; in ſome whereof the Religious are employ'd in the Adminiſtration of the Pariſhes, and Hoſpitals; and in others, in the Celebration of Divine Service, and the Inſtruction of Eccleſiaſticks in Seminaries for the purpoſe.

The Congregation takes its Name from the Abby of St. *Genevieve*, which is the Chief of the Order; and whoſe Abbot is the General thereof. The Abby it ſelf took its Name from St. *Genevieve*, the Patroneſs of the City of *Paris*; who died in the Year 512. Five Years after her Death, *Clouis* erected the Church of St. *Genevieve*, under the Name and Invocation of St. *Peter*; where her Relicks are ſtill preſerv'd; her Shrine viſited, and her Image carried with great Proceſſions and Ceremonies, upon extraordinary Occaſions, as when ſome great Favour is to be intreated of Heaven.

GENIAL, GENIALIS, an Epithet, applied by the Antients to certain Deities, whom they ſuppos'd to preſide over the Affair of *Generation*. See GOD.

Among the *Genial* Gods, *Dii Geneales*, ſays *Feſtus*, were Water, Earth, Fire, and Air, which the Greeks call'd *Elements*.

The twelve Signs were alſo rank'd in the Number; as alſo the Sun and Moon.

They were thus called *a Gerendo*, from Bearing: Or, according to the Correction of *Scaliger* and *Voſſius*, *a genendo*, to yean, produce.—

Yet *Feſtus* ſays, they were alſo call'd *Gerules*, or *Gerulos*; which ſeems to require the former Reading. M. *Dacier*, in a Note, ſhews that *gerere* has the Senſe of φορτίζειν.—

GENICULI, in Botany, the Knots, which appear on Herbs: Whence Botaniſts call thoſe mark'd therewith *Geniculate Plants*. See PLANT.

GENIOGLOSSI, in Anatomy, a Pair of Muſcles, proceeding inwardly from the Fore-part of the lower Jaw, under another called *Geniohyoides*; and which, enlarging themſelves, are faſten'd into the Baſis of the Tongue. See TONGUE.

They ſerve to pull the Tongue forward; and to thruſt it out of the Mouth; being thus called from γένυς, *Mentum*, the Chin, and γλῶσσα, *Lingua*, the Tongue.

GENIOHYOIDÆUS, in Anatomy, a Muſcle of the Os Hyoides, which, with its Partner, is ſhort, thick, and fleſhy; ariſing from the internal Parts of the lower Jaw-bone, called the Chin; and dilating themſelves, are ſoon leſſen'd again, and inſerted into the ſuperior Part of the Fore-bone of the Os Hyoides. See MUSCLE.

Theſe pull upwards and forwards the Os Hyoides, and aſſiſt the Geniogloſſi in thruſting the Tongue out of the Mouth. See HYOIDES.

They take their Name from γένυς, *Mentum*, the Chin, and ὑοειδὲς, Hyoides.

GENITAL, GENITALIS, in Medicine, ſomething that relates to Generation. Thus we ſay, the *Genital* Parts, *q. d.* the Parts imploy'd in the Affair of Generation. See PARTS and GENERATION.

The *Genital* Gods, *Dii Genitales*, are ſometimes uſed in the antient *Roman* Poets for thoſe we otherwiſe call *Indigetes*. See INDIGETES.

Auſonius, in the Argument of the fourth Book of the *Eneid*, takes the Word in a different manner: The *Dii Genitales*, he obſerves, were not ſuch as were born of human Parents, were not thus called *quaſi geniti ex hominibus*; but rather becauſe they themſelves had begot human Children.

GENITALIA, or GENITORIES, in Anatomy, a Name ſometimes given the Teſtes, or Teſticles of Man; on account of their Office in Generation. See TESTICLE.

GENITES, or GENITEI, among the *Hebrews*, were thoſe who deſcended from *Abraham*, without any Mixture of foreign Blood.

The *Greeks* diſtinguiſh'd by the Name of *Genites* ſuch of the *Jews*, as were iſſued from Parents, who, during the *Babyloniſh* Captivity, had not allied with any Gentile Family.

The Word is form'd of the *Greek* γενέτες.—

GENITIVE, the ſecond Caſe of the Declenſion of Nouns. See CASE.

The Relation of one thing conſider'd as belonging in ſome manner to another, has occaſion'd a new Termination of Nouns, call'd the *Genitive* Caſe. See NOUN.

In *Engliſh*, the *Genitive* Caſe is made by prefixing the Particle *of*; in *French*, *de*, or *du*, &c. though, in Strictneſs, there are no Caſes at all in either of thoſe Languages, inaſmuch as they do not expreſs the different Relations of Things by different Terminations, but by additional Prepoſitions.

In the *Latin*, this Relation is expreſs'd in divers manners: Thus we ſay, *Caput Hominis*, the Head of a Man; *Color Roſæ*, the Colour of a Roſe; *Opus Dei*, the Work of God, &c.

As the *Genitive* Caſe ſerves to expreſs very different, and even oppoſite Relations, there ſometimes ariſes an Ambiguity therefrom: Thus in the Phraſe *Vulnus Achillis*, the Wound of *Achillis*, the *Genitive Achillis* may either ſignify the Relation of Subject, in which Senſe it is taken paſſively for the Wound *Achilles* has receiv'd; or the Relation of a Cauſe, in which Senſe it is taken actively for the Wound *Achilles* has given: Thus in that Paſſage of St. *Paul*, *Certus ſum quod neque mors, neque vita*, &c. *nos poterit ſeparare a charitate Dei in Chriſto*, &c. The *Genitive DEI*, has been taken by Interpreters in two different Senſes; ſome giving it the Relation of Object, and underſtanding the Paſſage of the Love which the Elect bear to God in Jeſus Chriſt, whereas others give it the Relation of Subject, and explain it of the Love which God bears the Elect in Jeſus Chriſt.

In the *Hebrew* Tongue, the *Genitive* Caſe is marked after a manner very different from that of the *Greek*, and *Latin*; for whereas in thoſe Languages the Noun Govern'd is varied; in *Hebrew* they change the Noun Governing.

GENITURA, or GENITURE, a Name ſome Authors give to the Seed; both that of the Male, and Female. See SEED.

GENIUS, a good, or evil Spirit; or a Dæmon, whom the Antients ſuppos'd ſet over each Perſon, to direct his Birth, accompany him in Life, and to be his Guard. See DÆMON.—

Among the *Romans*, *Feſtus* obſerves, the Name *Genius* was given to the God who had the Power of doing all things, *Deum qui vim obtineret rerum omnium gerendarum*; which *Voſſius*, *de Idolol.* rather chuſes to read *genendarum*, who has the Power of producing all Things; by reaſon *Cenſorinus* frequently uſes *genere* for *gignere*.

Accordingly, St. *Auguſtin de Civitat. Dei*, relates, from *Varro*, that the *Genius* was a God who had the Power of generating all things; and preſided over them when produced.

Feſtus adds, that *Aufuſtius* ſpake of the *Genius* as the Son of God, and the Father of Men, who gave them Life; others, however, repreſented the *Genius* as the peculiar or tutelary God of each Place: And 'tis certain, this laſt is the moſt uſual Meaning of the Word.

They had their *Genii* of Nations, of Cities, of Provinces, *&c.* Nothing is more common than the following Inſcription on Medals, *GENIUS* POPULI ROM. the *Genius* of the *Roman* People: Or, *GENIO* POP. ROM. *to the* Genius *of the* Roman *People.*—

In this Senſe, *Genius* and *Lar* were the ſame thing; as, in effect, *Cenſorinus* and *Apuleius* affirm they were. See LARES, and PENATES.

The *Platoniſts*, and other Eaſtern Philoſophers, ſuppoſed the *Genii* to inhabit the vaſt Region, or Extent of Air, between Earth and Heaven. They were a ſort of intermediate Powers, who did the Office of Mediators between Gods and Men. They were the Interpreters, and Agents of the Gods; communicated the Wills of the Deities to Men; and the Prayers, and Vows of Men, to the Gods. As it was unbecoming the Majeſty of the Gods to enter into ſuch trifling Concerns; this became the Lot of the *Genii*, whoſe Nature was a Mean between the two; who derived Immortality from the one, and Paſſions from the other; and who had a Body framed of an aerial Matter.

Moſt of the Philoſophers, however, held that the *Genii* were born, and died; and *Plutarch* attributes the ceaſing of Oracles partly to the Death of the *Genii*. See ORACLE.

The Heathens who conſider'd the *Genii* as the Guardian Spirits of particular Perſons, believed that they rejoyc'd, and were afflicted at all the good, and ill Fortune that befel their Wards. They never, or very rarely appear'd to them; and then only in favour of ſome Perſon of extraordinary Virtue or Dignity.

They likewiſe held a great Difference between the *Genii* of different Men; and that ſome were much more powerful than others; on which Principle it was, that a Wizzard in *Appian* bids *Anthony* keep at a diſtance from *Octavius*, by reaſon *Anthony*'s *Genius* was inferior to, and ſtood in Awe of that of *Octavius*.

There were alſo *Evil Genii*, who took a pleaſure in perſecuting Men, and bringing them evil Tidings: Such was that in *Paterculus*, &c. which appear'd to *Brutus* the Night before the Battle of *Philippi*. Theſe were alſo call'd *Larvæ*, and *Lemures*. See LARVÆ, and LEMURES.

GENIUS is more frequently us'd for the Force or Faculty of the Soul, conſider'd as it thinks, or judges.

Thus we ſay, A happy *Genius*, a ſuperior *Genius*, an elevated *Genius*, a narrow confin'd *Genius*, &c. In the like Senſe we ſay, A Work of *Genius*; a Want of *Genius*, &c.

GENIUS is alſo us'd in a more reſtrain'd Senſe for a natural Talent, or Diſpoſition to one Thing more than another. In this Senſe we ſay, A *Genius* for Verſe; for the Sciences, *&c.*

GENS D'ARMES, ſee GEND'ARMES.

GENTIAN, a Medicinal Root, the Product of a Plant of the ſame Name; which the Antients, to render it the more conſiderable, denominated from *Gentius*, King of *Illyria*, who is ſuppos'd to have been the firſt that diſcover'd the admirable Virtues thereof.

The Root *Gentian* is of a yelloviſh Colour, and intolerably bitter; is ſometimes as thick as the Arm, but more commonly divided into Branches no bigger than the Thumb: Its Stem is ſeveral Feet high, being very ſmooth and poliſh'd, tho' divided by Knots from Space to Space, out of which ariſe the Leaves, which reſemble thoſe of *Plantain*. Its Flowers, which likewiſe accompany the Knots, are yellow; and its Seed, flat, round, ſmooth, and light.

This Root is held excellent againſt Poiſons, and even againſt the Plague. It ſtands at the Head of the Stomachicks, warming and ſtrengthning the Stomach, and helping Digeſtion. It is ſudorifick, and us'd with Succeſs in intermitting Fevers, whence ſome call it the *European Quinaquina*; and is alſo an Ingredient in Treacle. Externally, it is uſed for Wounds.

The Plant affects moiſt Places, and is found commonly enough in ſome Parts of *England*, *Burgundy*, the *Alps*, and *Pyrenæans*: The Root is to be choſe dry, new, of a moderate Thickneſs, free from Earth, and furniſh'd with five little Branches or Fibres; and, if poſſible, that which is dry'd by the Air, which is diſtinguiſhable by the Colour, it being blackiſh within Side, when dry'd in the Oven, and of a golden Yellow, when in the Air.

GENTILE, GENTILIS, a *Pagan*, or Perſon who adores Idols. See IDOL, PAGAN, &c.

This Name the *Jews* gave to all who were not of their Religion; as the Chriſtians give that of *Infidel*. St. *Paul* is called the *Doctor*, or *Apoſtle of the Gentiles*, which Appellation he firſt gave himſelf. *Rom.* xi. 13. *As I am the Apoſtle of the* Gentiles, *I magnify mine Office.*

The Calling of the *Gentiles* to Chriſtianity, had been predicted in the Old Teſtament, as it was accompliſh'd in the New. See *Pſal.* ii. 8. xix. 48. *Iſ.* ii. 2. lxvi. 18. *Joel* ii. 29. *Matth.* viii. 11. xii. 17. *Acts* xi. 40. xiii. 47, 48. xxviii. 8. *Rom.* i. 5. iii. 29. xi. 12, 13, 25. *Eph.* ii. 11. *Revel.* xi. 2. xxii. 2.

In the *Roman* Law, and Hiſtory, the Name *Gentile*, *Gentilis*, ſometimes expreſſes thoſe whom the *Romans* otherwiſe called *Barbarians*; whether they were Allies of *Rome*, or not: In this Senſe the Word occurs in *Ammianus*, *Auſonius*, and the *Notitia Imperii*.

The ſame People us'd the Word *Gentilis* in a more peculiar Senſe, for all Strangers, or Foreigners, not ſubject to their Empire; as we ſee in the *Theodoſian* Code, in the Title *De Nuptiis Gentilium*, where the Word *Gentiles* ſtands oppoſed to *Provinciales*, or the Inhabitants of the Provinces of the Empire.

The Word is likewiſe us'd in the *Greek*; but was not introduced either into that, or the *Latin* Tongue, till after Chriſtianity was eſtabliſh'd; it being taken from Scripture.

The *Hebrews* apply the Name גוים, *Gentes*, to all the other People of the Earth, who were not *Iſraelites*, or *Hebrews*. Some will have it, that the *Gentiles* were thus called in Contradiſtinction to the *Jews*, and *Chriſtians*, by reaſon theſe latter have a poſitive Law to obſerve in Matters of Religion, whereas the *Gentiles* have only the natural Law; hence they are called *Gentiles*, *quia ſunt uti geniti fuerunt*.

GENTLEMAN, a Perſon of noble Birth, or deſcended of an antient Family, which has long bore Arms. See NOBLE, and ARMS.

In Strictneſs, *Chamberlain* obſerves, a *Gentleman* is one whoſe Anceſtors have been Freemen, and have owed Obedience to none but their Prince: So that in Propriety of Speech, no Man is a *Gentleman* who is not born ſo.

But, in *England*, the King, being the Fountain of Honour, can make a *Gentleman* by Charter, or by beſtowing an honourable Employment on him.—*Guillim* is even of Opinion, that if a *Gentleman* be bound Apprentice to a Merchant, or other Trade, he does not loſe his Degree of *Gentility*.

By the Cuſtom of *England*, Nobility is either *greater*, or *leſs*: The greater contains all from Barons upwards, incluſive: The leſſer, all from Baronets downwards, conſiſting of Baronets, Knights, Eſquires, and *Gentlemen*. See NOBILITY; ſee alſo KNIGHT, &c.

The Word is form'd of the French *Gentilhomme*, or rather of *Gentil*, fine, faſhionable, or becoming; and the *Saxon*, *Man*, *q. d. honeſtus*, or *honeſto loco natus*.

The ſame Signification has the Italian *Gentil huomini*, and the Spaniſh *Hidalgo*, or *Hijo d'Algo*, that is, the Son of a Perſon of Note.

Among us, the Term is applicable to all above Yeomen; ſo that Noblemen may be properly called *Gentlemen*. See YEOMAN.

If we go further back, we ſhall find *Gentleman* originally derived from the Latin *Gentilis homo*, which was uſed among the *Romans* for a Race of noble Perſons of the ſame Name, born of free or ingenuous Parents, and whoſe Anceſtors had never been Slaves, or put to death by Law.

Thus, *Cicero*, in his *Topicks*; Gentiles *ſunt*, *qui inter ſe eodem ſunt nomine ab Ingenuis oriundi*, *quorum majorum nemo ſervitutem ſervivit*, *qui capite non ſunt diminuti*, &c.

Some hold, that it was formed from *Gentile*, *i. e.* Pagan, and that the antient *Franks*, who conquer'd *Gaul* which was then converted to Chriſtianity, were called *Gentiles* by the Natives, as being yet Heathens.

Others relate, that towards the Declenſion of the *Roman* Empire, as recorded by *Ammianus Marcellinus*, there were two Companies of Brave Soldiers, the one called *Gentilium*, and the other *Scutariorum*; and that it was hence we derived the Names *Gentleman*, and *Eſquire*. See ESQUIRE.

This Sentiment is confirmed by *Paſquier*, who ſuppoſes the Appellations *Gentils* and *Ecuyers* to have been tranſmitted to us from the *Roman* Soldiery; it being to the *Gentiles* and *Scutarii*, who were the braveſt of the Soldiery, that the principal Benefices and Portions of Lands were aſſigned. See BENEFICE.

The *Gauls* obſerving, that during the Empire of the *Romans*, the *Scutarii* and *Gentiles* had the beſt Tenements,

or

or Appointments of all the Soldiers on the Frontiers of the Provinces, became inſenſibly accuſtomed to apply the ſame Names *Gentilhommes*, and *Ecuyers*, to ſuch as they found their Kings gave the beſt Proviſions or Appointments to. *Paſq. Rech. L. II. C.* 15.

In our Statutes, *Gentilis homo* was adjudg'd a good Addition for a *Gentleman.* 27 *Edw.* 3. The Addition of Knights is very antient, but that of Eſquire or *Gentleman*, rare, before 1 *Hen.* 5. See ADDITION.

GENTLEMEN *of the Chapel*, are Officers, whoſe Duty and Attendance is in the Royal Chapel; being in Number 32: Twelve whereof are Prieſts, and the other twenty called *Clerks of the Chapel*, who aſſiſt in the Performance of Divine Service. See CHAPEL.

One of the firſt twelve is choſen for Confeſſor of the Houſhold, whoſe Office it is to read Prayers every Morning to the Houſhold Servants; to viſit the Sick; examine, and prepare Communicants, and adminiſter the Sacraments.

Another, well verſed in Muſick, is choſen firſt Organiſt; who is Maſter of the Children to inſtruct them in Muſick, and what is neceſſary for the Service of the Chapel: A ſecond is likewiſe an Organiſt: A third a Lutaniſt; and a fourth a Violiſt.

There are likewiſe three *Vergers*, ſo called from the Silver Rods they uſually carry in their Hands, being a Serjeant, Yeoman, and Groom of the Veſtry: The firſt attends the Dean, and Sub-Dean, finds Surplices, and other Neceſſaries for the Chapel: The ſecond has the whole Care of the Chapel, keeps the Pews, and ſeats the Nobility and Gentry: The Groom has his Attendance within the Chapel Door, and looks after it.

GENUFLEXION, the Act of bowing, or bending the Knee; or rather, of kneeling down. See KNEELING.

The Jeſuit *Roſweyd*, in his Onomaſticon, ſhews that *Genuflexion*, or Kneeling, was a very antient Cuſtom in the Church; and even under the Old Teſtament Diſpenſation: And that this Practice was obſerv'd throughout all the Year, excepting on Sundays, and during the time from Eaſter to Whitſuntide, when kneeling was forbid by the Council of *Nice*.

Others have ſhewn, that the Cuſtom of not kneeling on Sundays had obtain'd from the Time of the Apoſtles; as appears from St. *Irenæus* and *Tertullian*: And the *Æthiopic* Church, ſcrupulouſly attach'd to the antient Ceremonies, ſtill retains that of not kneeling at Divine Service. The *Ruſſians* eſteem it an indecent Poſture, to worſhip God on the Knees. Add, that the *Jews* uſually pray'd ſtanding.

Roſweyd gives the Reaſons of the Prohibition of *Genuflexion* on Sundays, &c. from St. *Baſil*, *Anaſtaſius*, St. *Juſtin*, &c.

Baronius is of opinion that *Genuflexion* was not eſtabliſh'd before the Year of Chriſt 58, from that Paſſage in *Acts*, chap. xx. 36. where St. *Paul* is expreſly mention'd to kneel down at Prayer; but *Saurin* ſhews that nothing can be thence concluded.

The ſame Father remarks, that the primitive Chriſtians carried the Practice of *Genuflexion* ſo far, that ſome of them had wore Cavities in the Floor where they pray'd: And St. *Jerom* relates of St. *James*, that he had contracted a Hardneſs of his Knees, equal to that of Camels.

GENUS, *Kind*, in Logicks, and Metaphyſicks, is that which has Species under it: Or, it is the Origin, and Radix of divers Species, join'd together by ſome Affinity or common Relation betwen them. See SPECIES.

Or, *Genus* is a Nature, or Idea, ſo common and univerſal, that it extends to other general Ideas, and includes them under it. See GENERAL.

Thus, *Animal* is ſaid to be a *Genus*, in reſpect of *Man*, and *Brute*; in regard Man and Brute agree in the common Nature and Character of Animal: So, a *right lined Figure of four Sides*, is a *Genus*, in reſpect of a *Parallelogram*, and a *Trapezium*; and ſo likewiſe is *Subſtance*, in reſpect of *Subſtance extended*, which is a *Body*; and *thinking Subſtance*, which is *Mind*. See SPECIES.

In the general, *Genus* may be ſaid to be a Claſs of a greater Extent than *Species*; and which is not convertible therewith. For though we may ſay, that *all Body is Subſtance*; yet it cannot be ſaid *all Subſtance is Body*.

Add, that whatever may be ſaid of the *Genus*, may likewiſe be ſaid of the Species under it; *e. gr.* whatever is ſaid of *Ens*, Being, will equally hold of Body.

The Schoolmen define the *Genus Logicum* to be an Univerſal which is predicable of ſeveral Things of different Species; and divide it into two kinds: The one, *ſummum*, which is the higheſt or moſt general; and has nothing above it to reſpect as a *Genus*: The other *ſubaltern*, which they likewiſe call *Medium*.

The *Genus ſummum* is that which holds the uppermoſt Place in its Claſs, or Predicament; or it is that which may be divided into ſeveral Species, each whereof is a *Genus* in reſpect of other Species plac'd below it. See PREDICAMENT.

Thus in the Predicament of things ſubſiſting of themſelves, *Subſtance* has the Place and Effect of *Genus ſummum*, and is predicated of all the Things contain'd in that Claſs; for both *Plato*, and *Man*, and *Animal*, and even *Spirit*, are properly call'd Subſtance.

Accordingly there are ſo many *ſumma genera*, as there are Claſſes of Predicaments or Categories. See CATEGORY.

A *Subaltern Genus* is that which being a Medium between the higheſt *Genus*, and the loweſt Species; is ſometimes conſider'd as a *Genus*, and ſometimes as a Species.

Thus Bird, when compar'd with Animal, is a Species; when to a Crow, an Eagle, or the like, a *Genus*.

Genus, again, is divided into *Remotum*, remote, where, between it and its Species, there is another *Genus*; and *Proximum*, or next, where the Species is immediately under it; as Man, under Animal.

A good Definition, ſay the Schoolmen, conſiſts of *Genus*, and Difference. See DEFINITION, and DIFFERENCE.

GENUS is alſo us'd for a Character or Manner, applicable to every thing of a certain Nature: In which Senſe it ſerves to make capital Diviſions in divers Sciences; as Muſick, Rhetorick, Botany, Anatomy, &c. See ART, and SCIENCE.

GENUS, GENDER, in Botany, a Syſtem, or Aſſemblage of ſeveral Plants, agreeing in ſome one common Character, in reſpect of the Structure of certain Parts; whereby they are diſtinguiſh'd from all other Plants. See PLANT.

The Diſtribution of Plants into *Genera*, and Species, is abſolutely neceſſary to eaſe the Memory, and prevent its being oppreſs'd, and overburthen'd with an Infinity of different Names.

The Knowledge of a *Genus*, comprehends, in a kind of Miniature, that of all the Plants belonging thereto; each being denominated from ſome Circumſtance, common to the whole Kind, to ſave the Embarraſs of ſo many particular Names.

Something like this, even the common People do, eſpecially in the inſtance of *Ranunculas*; but in moſt other Plants the Difficulty is infinitely greater, as 'tis hard to find any thing in common among them, whereon to found their *Genus*.

Hence Botaniſts differ as to the Manner of regulating theſe *Genera*, and the Characters whereon they are to be eſtabliſh'd: Mr. *Ray*'s Diſtribution, ſee under the Article PLANT.

One of the lateſt, and beſt Writers, Monſ. *Tournefort*, after a long and accurate Diſcuſſion, has choſe in Imitation of *Geſner*, and *Columna*, to regulate them by the Flowers, and Fruit conſider'd together; ſo that all Plants, which bear a Reſemblance in thoſe two reſpects, are of the ſame *Genus*: After which the reſpective Differences as to Root, Stem, or Leaves, make the different Species, or Sub-diviſions. See SPECIES.

Mr. *Ray* made ſome Objections to this Diſtribution; which grew into a conſiderable Controverſy between the two Authors. The Queſtion was, Whether the Flowers and Fruits were ſufficient to eſtabliſh *Genera*, and to determine whether a Plant was of this *Genus*, or that?

The ſame M. *Tournefort* introduces another higher kind of *Genus*, or Claſs, which is only regulated by the Flowers: He obſerves, that he has never hitherto met with above fourteen different Figures of Flowers; which, therefore, are all that are to be retain'd in the Memory; ſo that a Perſon who has a Plant in Flower, whoſe Name he does not know, will immediately ſee what Claſs it belongs to in the *Elements of Botany*: The Fruit appearing ſome Days afterwards, determines its *Genus*, in the ſame Book; and the other Parts give its Species.

It is a wonderful Eaſe to the Memory, to have only fourteen Figures of Flowers to retain, and by means hereof to be inabled to deſcend to 673 *Genera*, which comprehend 8846 Species of Plants; which is the Number of thoſe yet known by Land and Sea.

GENUS, in Muſick, by the Antients called *Genus Melodiæ*, is a certain manner of ſubdividing the Principles of Melody, *i. e.* the conſonant Intervals, into their concinnous Parts. See INTERVAL, CONCORD, and CONCINNOUS.

The Moderns, conſidering the Octave, as the moſt perfect Interval, and that whereon all the other Concords depend in the preſent Theory of Muſick; the Diviſion of that Interval is conſider'd as containing the true Diviſion of the whole Scale. See OCTAVE, and SCALE.

But the Antients went to work ſomewhat differently: The Diateſſaron, or Fourth, was the leaſt Interval which they admitted as Concord; and therefore they ſought firſt how that might be moſt concinnouſly divided; from which they conſtituted the Diapente, or Fifth; and Diapaſon, or Octave.

The Diateſſaron being thus, as it were, the Root or Foundation of the Scale; what they call the *Genera*, Kinds, aroſe from its various Diviſions; and hence they defined the *Genus modulandi*, the manner of dividing the Tetrachord, and

diſpoſing

diſpoſing its four Sounds as to Succeſſion. See TETRACHORD.

The *Genera* of Muſick were three, *viz.* the *Enharmonick*, *Chromatick*, and *Diatonick:* The two laſt whereof were variouſly ſubdivided; and even the firſt, though 'tis commonly reckon'd to be without any Species, yet different Authors have propos'd different Diviſions under that Name, tho' without giving particular Names to the Species as was done to the other two. See SPECIES.

For the Character, &c. *of the ſeveral* Genera, *ſee* ENHARMONICK, CHROMATICK, and DIATONICK.

The Parts, or Diviſions of the Diateſſaron they call'd the *Diaſtems* of the ſeveral *Genera*, upon which their Differences depend; and which in the Enharmonick are particularly call'd the *Dieſis*, and *Ditonum*; in the Chromatic, the *Hemitonium*, and *Triemitonium*; and in the Diatonic, the *Hemitonium*, or *Limma*, and the *Tonus*.

But under theſe general Names, which diſtinguiſh the *Genera*, there are other different Intervals, or Ratio's which conſtitute the *Colores Generum*, or Species of Enharmonic, Chromatic, and Diatonic. Add, that what is a Diaſtem in one *Genus*, is a Syſtem in another. See DIASTEM, SYSTEM, CHROAI; ſee alſo DIAGRAMMA.

GENUS, in Rhetorick. Authors diſtinguiſh the Art of Rhetorick, as alſo Orations, or Diſcourſes produced thereby, into three *Genera*, or Kinds, *Demonſtrative*, *Deliberative*, and *Judiciary*.

To the *Demonſtrative* Kind belong *Panegyricks*, *Genethliacons*, *Epithalamiums*, *Funeral* Harangues, &c. See each under its Head, PANEGYRIC, EPITHALAMIUM, *&c.*

To the *Deliberative* Kind belong *Perſuaſions*, *Diſſuaſions*, *Commendations*, &c. See PERSUASION, *&c.*

To the *Judiciary* Kind belong *Defences*, and *Accuſations*. See RHETORIC, ORATION, *&c.*

GENUS, in Algebra. The antient Algebraiſts diſtributed that Art into two *Genera*, or Kinds; the *Logiſtic*, and *Specious*. See LOGISTIC, and SPECIOUS.

GENUS, in Anatomy. The *Genus nervoſum*, or *nervous kind*, call'd alſo the *nervous Syſtem*, is an Expreſſion, pretty frequent among Authors; ſignifying the Nerves, conſider'd as an Aſſemblage or Syſtem of ſimilar Parts, diſtributed throughout the Body. See NERVE, and SIMILAR *Part*.

Tobacco contains a deal of ſharp, cauſtic Salt, proper to cauſe Irritations in the nervous Kind: Vinegar, taken in too great Quantity, incommodes the nervous Kind.

GEOCENTRIC, in Aſtronomy, is applied to a Planet, or its Orbit, to denote it concentric with the Earth; or, as having the Earth for its Centre, or the ſame Centre with the Earth.

Thus we ſay, that all the Planets are not *geocentric*. See PLANET.

GEOCENTRIC *Place* of a Planet, is the Place wherein it appears to us, from the Earth; ſuppoſing the Eye there fix'd: Or, it is a Point in the Ecliptick, to which a Planet, ſeen from the Earth, is referr'd. See PLACE, and HELIOCENTRIC.

GEOCENTRIC *Latitude* of a Planet, is its Latitude ſeen from the Earth; or the Inclination of a Line connecting the Planet and the Earth, to the Plane of the Earth's (or true) Ecliptick.

Otherwiſe, it is the Angle, which the aforeſaid Line (connecting the Planet, and the Earth) makes with the Line which is drawn perpendicular to the Plane of the Ecliptick. See LATITUDE.

Thus, in *Tab. Aſtronomy, Fig.* 40. the Angle ☿ *T e* is the Meaſure of that Planet's *Geocentric* Latitude, when the Earth is in *T*, and the Angle *e T* ☿, the Meaſure of it when the Earth is in *t*. See LATITUDE.

GEODÆSIA, that Part of Geometry, which contains the Doctrine, or Art of meaſuring Surfaces; and finding the Contents of all kinds of plain Figures. See SURFACE; ſee alſo MEASURING.

It is uſually called *Surveying*, when employ'd in meaſuring of Lands, Grounds, Roads, Countries, Provinces, *&c.* See SURVEYING.

The Word is *Greek*, γεωδαισία, form'd of γῆ, *terra*, Earth, and δαίω, *divido*, I divide.—

GEOGRAPHICAL *Mile*, is the Minute, or ſixtieth Part of a Degree of a great Circle. See MILE, and DEGREE.

GEOGRAPHICAL *Table*, ſee MAP.

GEOGRAPHY, the Doctrine or Knowledge of the *Earth*, both as in it ſelf, and as to its Affections; or a Deſcription of the Terreſtrial Globe, and particularly of the known inhabitable Part thereof, with all its Parts.

The Word is form'd of the *Greek* γῆ, *terra*, Earth, and γράφω, *ſcribo*, I write.

Geography makes a Branch of Mathematicks, of the mix'd kind; in that it conſiders the Earth, and its Affections, as depending on Quantity, and conſequently meaſurable, *viz.* its Figure, Place, Magnitude, Motion, cœleſtial Appearances, *&c* with the ſeveral Circles imagin'd on its Surface. See MATHEMATICKS.

Geography is diſtinguiſh'd from *Coſmography*, as a Part from the Whole: This latter conſidering the whole viſible World, both Heaven, and Earth. See COSMOGRAPHY.

From *Topography*, and *Chorography*, it is diſtinguiſh'd as the whole from a Part. See TOPOGRAPHY, and CHOROGRAPHY.

Golnitzius conſiders *Geography* as either *Exterior*, or *Interior:* But *Varenius* more juſtly divides it into *General*, and *Special*; or, *Univerſal*, and *Particular*.

General, or *Univerſal* GEOGRAPHY is that which conſiders the Earth in General, without any Regard to particular Countries; or the Affections, common to the whole Globe, as its Figure, Magnitude, Motion, Land, Sea, *&c.* See GLOBE.

Special, or *Particular* GEOGRAPHY, is that which conſiders the Conſtitution of the ſeveral *Regions*, or *Countries*; their Bounds, Figure, *&c.* with the *Mountains*, *Foreſts*, *Mines*, *Waters*, *Plants*, *Animals*, &c. therein: As alſo their *Climates*, *Seaſons*, *Heat*, *Weather*, *Diſtance from the Equator*, &c. And their *Inhabitants*, *Arts*, *Foods*, *Commodities*, *Cuſtoms*, *Language*, *Religion*, *Policy*, *Cities*, &c.

Geography is very antient; at leaſt the Special Part thereof: For the antient Writers ſcarce went beyond the Deſcription of Countries.

It was a Cuſtom among the *Romans*, after they had conquer'd and ſubdued any Province, to have a Map, or painted Repreſentation thereof carried in Triumph, and expoſed to the View of the Spectators. See MAP.

Hiſtorians relate that the *Roman* Senate, about a hundred Years before Chriſt, ſent Geographers into divers Parts, to make an accurate Survey and Menſuration of the whole Globe; but they ſcarce ever ſaw the twentieth Part thereof.

Before them, *Neco*, King of *Egypt*, order'd the *Phœnicians* to make a Survey of the whole Coaſt of *Africa*, which they accompliſh'd in three Years: *Darius* procured the *Ethiopic* Sea, and the Mouth of the *Indus* to be examin'd: And *Pliny* relates, that *Alexander*, in his Expedition into *Aſia*, took two Geographers, *Diognetus*, and *Beto*, to meaſure and deſcribe the Roads; and that from their Itineraries the Writers of the following Ages took many Particulars. Indeed, this may be obſerved, that whereas moſt other Arts are Sufferers by War, *Geography* and Fortification alone are improved thereby.

The Art, however, muſt need have been exceedingly defective; as a great Part of the Globe was then unknown; particularly all *America*, the *Northern* Parts of *Europe*, and *Aſia*; with the *Terra Auſtralis*, and *Magellanica:* And as they were ignorant of the Earth's being capable of being ſail'd round, of the Torrid Zone's being habitable, *&c.*

The principal Writings on this Art, among the Antients, are *Ptolomy*'s eight Books: Among the Moderns, *Johannes de ſacro Boſco*, *De Sphæra*, with *Clavius*'s *Comment*; *Riccioli*'s *Geographia*, and *Hydrographia Reformata*; *Weigelius*'s *Speculum Terræ*; *De Chales*'s *Geography*, in his *Mundus Mathematicus*; and above all, *Varenius*'s *Geographia Generalis*, with *Jurin*'s Additions: To which may be added *Liebknecht*'s *Elementa Geographiæ Generalis*; *Sturmius*'s *Compendium Geographicum*; and *Wolfius*'s *Geographia*, in his *Elementa Matheſeos.*—

GEOMANCY, GEOMANTIA, a kind of Divination, perform'd by means of a Number of little Points, or Dots, made on Paper, at random; and conſidering the various Lines and Figures, which thoſe Points preſent; and thence forming a Judgment of Futurity and deciding any Queſtion propoſed. See DIVINATION.

The Word is form'd of the *Greek* γῆ, *terra*, Earth; and μαντεία, Divination; it being the antient Cuſtom to caſt little Pebbles on the Ground, and thence to form their Conjectures; inſtead of the Points now made uſe of.

Polydore Virgil defines *Geomancy* a kind of Divination perform'd by means of Clefts or Chinks made in the Ground; and takes the *Perſian* Magi to have been the Inventors thereof. *De Invent. Rer. L.* 1. *c.* 23.

GEOMETRY, the Science, or Doctrine of Extention, or extended things; that is, Lines, Surfaces, and Solids. See LINE, SURFACE, and SOLID.

The Word is form'd of the *Greek* γῆ, *terra*, Earth, and μετρεῖν, *metiri*, to meaſure; it being the Neceſſity of meaſuring the Earth, and the Parts and Places thereof that gave the firſt occaſion to the Invention of the Principles and Rules of this Art, which has ſince been extended and applied to numerous other Things; inſomuch that *Geometry* with Arithmetick, are now the general Foundation of all Mathematicks. See MATHEMATICKS.

Geometry is commonly divided into four Parts, or Branches, *Planimetry*, *Altimetry*, *Longimetry*, and *Stereometry*. See each under its proper Article, PLANIMETRY, ALTIMETRY, LONGIMETRY, and STEREOMETRY.

Geometry, again, is diſtinguiſh'd into *Theoretical*, or *Speculative*, and *Practical*.

The firſt contemplates the Property of Continuity; and demonſtrates the Truths of General Propoſitions, call'd *Theorems*. See THEOREM.

The

TAB. GEOGRAPHY & HYDROGRAPHY.

Fig. 2. Map.

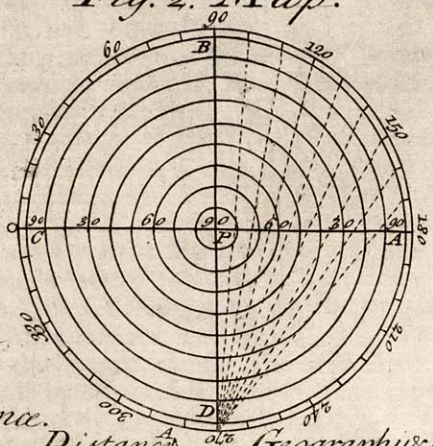


Fig. 3. Map.

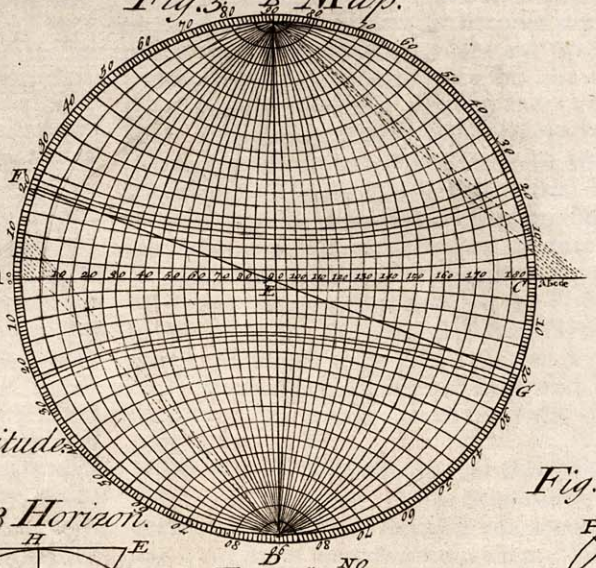


Fig. 4. Map.

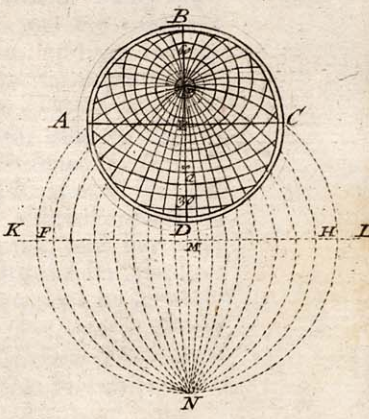


Fig. 4. Distance.

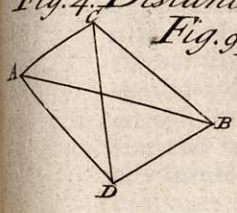


Fig. 9. Distance & Altitude.

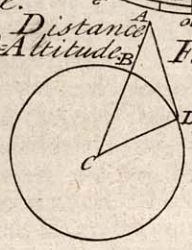


Fig. 5. Geography & Latitude.

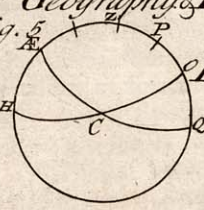


Fig. 8. Horizon.

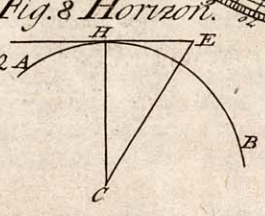


Fig. 6. Tides.

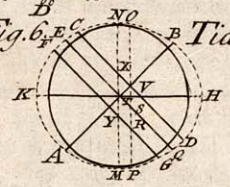
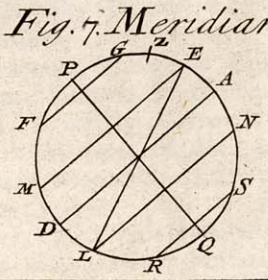


Fig. 7. Meridian.



NAVIGATION.

Fig. 1. Compass.

Fig. 2. Azimuth Compass.

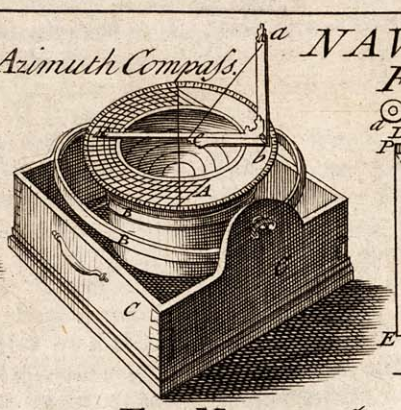


Fig. 3. Sailing.

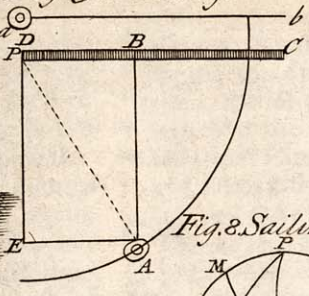


Fig. 5. Sailing.

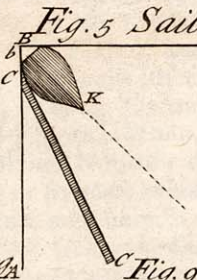


Fig. 4. Sailing.

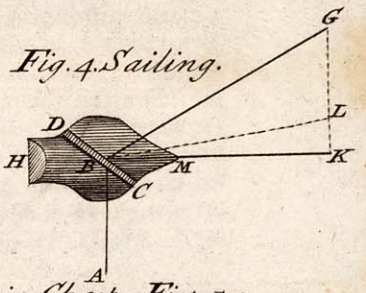


Fig. 6. Backstaff.

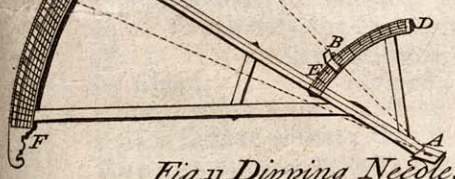


Fig. 11. Dipping Needle.

Fig. 11. Mercators

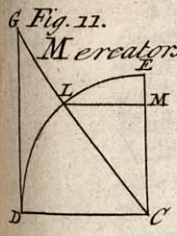


Fig. 7. Mercators Chart & Sailing.

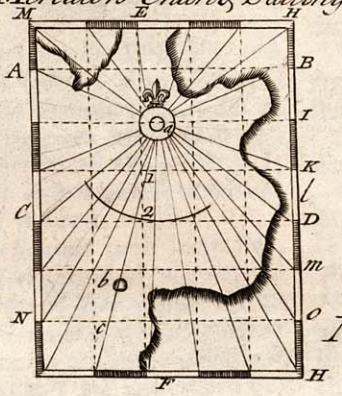


Fig. 8. Sailing.

Fig. 9. Plain Chart.

Fig. 10. Plain Chart

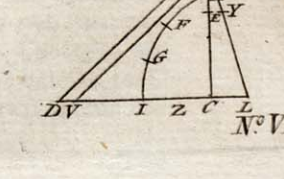


Fig. 14. Forestaff.

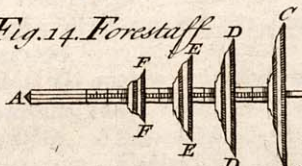


Fig. 15. Current.

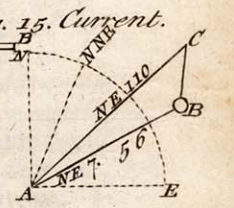


Fig. 16. Variation

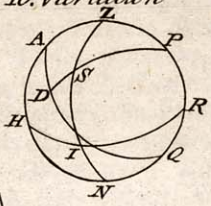


Fig. 13. Nocturnal.

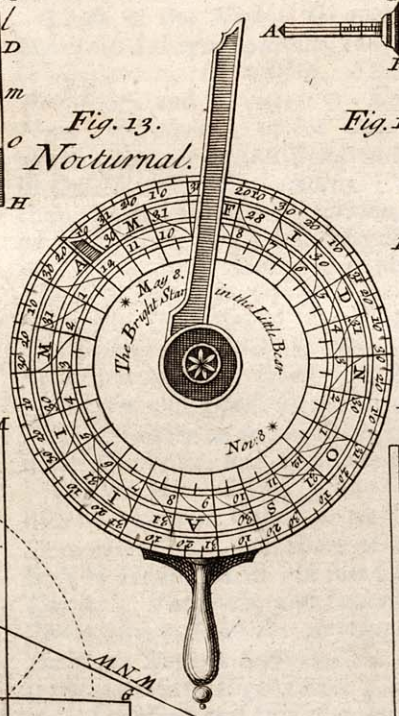


Fig. 17. Traverse

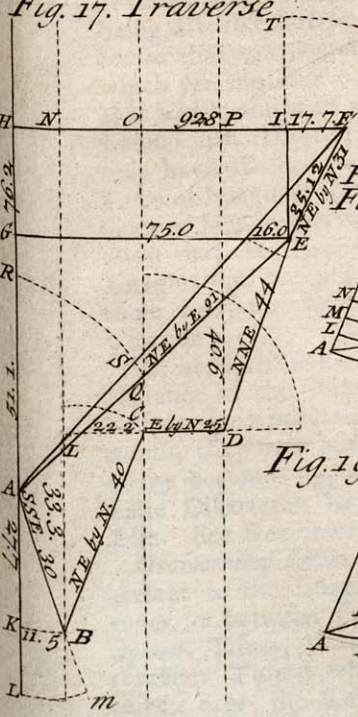


Fig. 17. Traverse

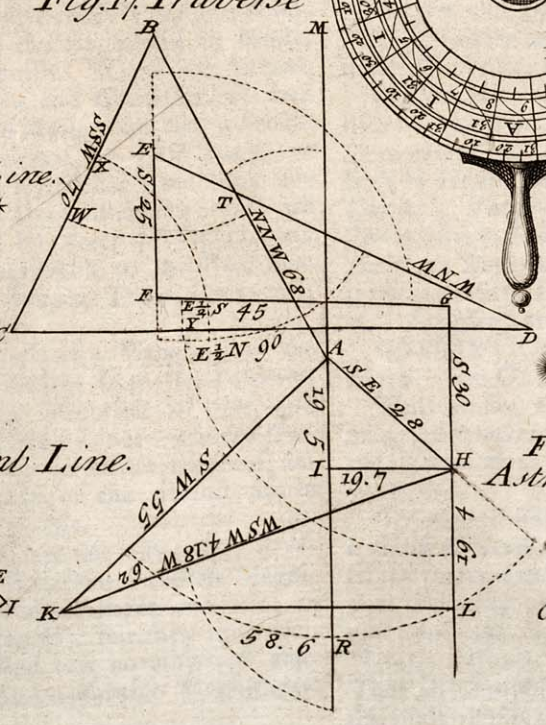
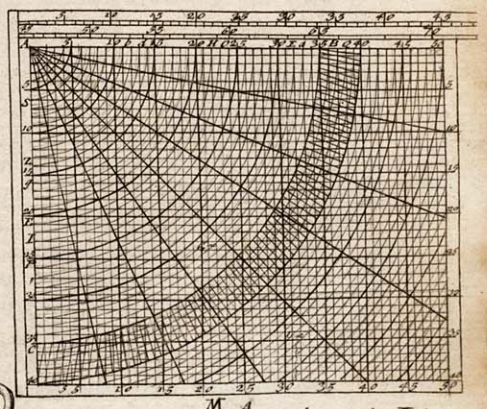


Fig. 18. Sinecal Quadrant.



Rhumb Line. Fig. 19. *

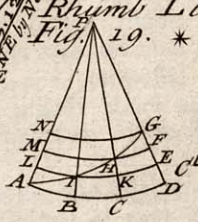


Fig. 19. Rhumb Line.

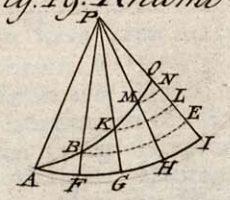


Fig. 22 Astrolabe

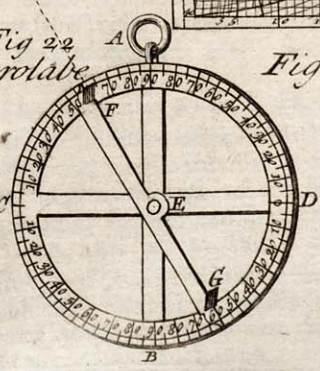


Fig. 20. Rhumb Line.

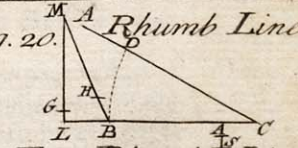
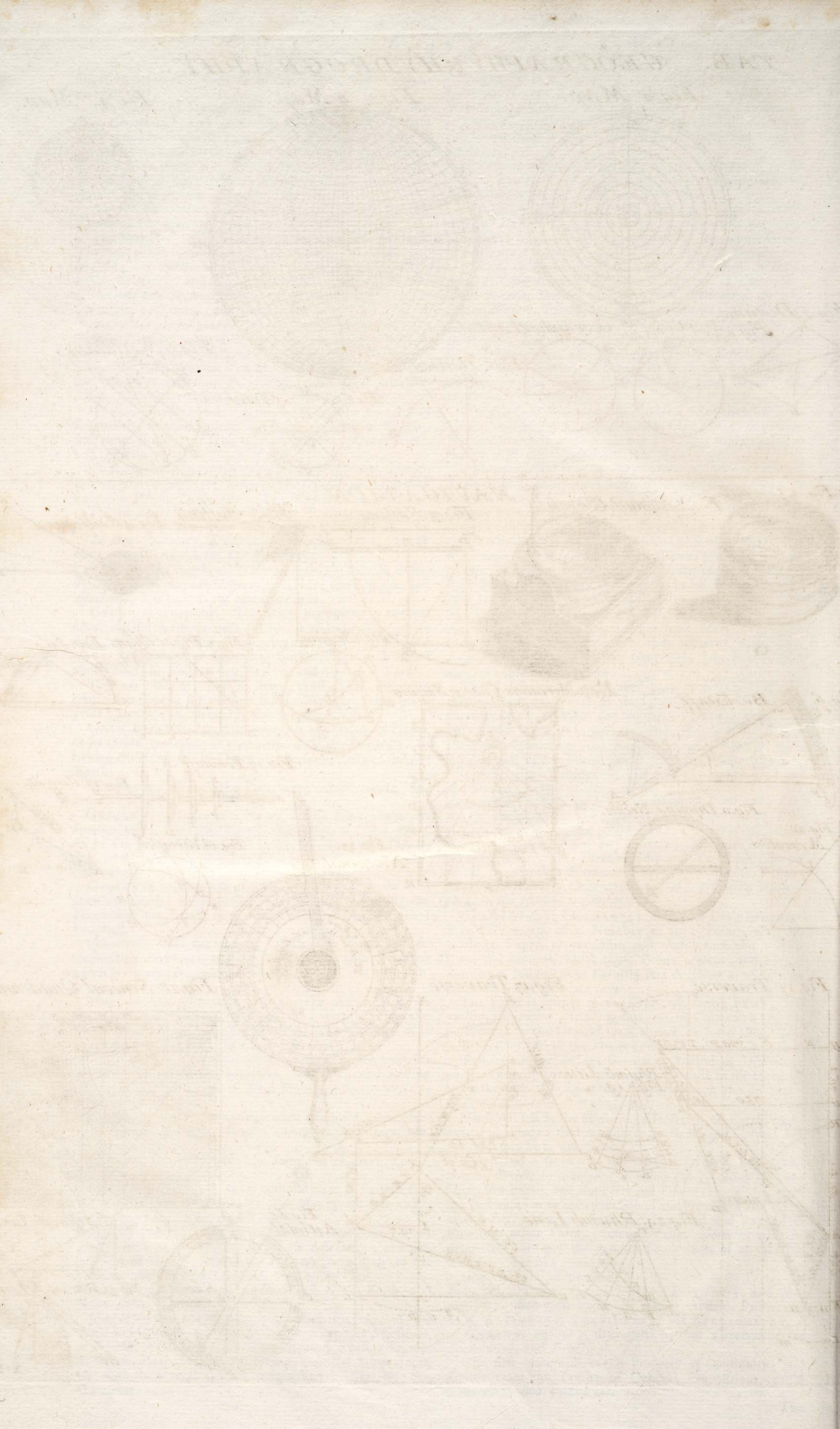


Fig. 21. Rhumb Line



The second applies those Speculations and Theorems to particular Uses in the Solution of Problems. See PROBLEM.

Speculative Geometry, again, may be distinguish'd into *Elementary*, and the *Sublimer*.

Elementary, or *Common* GEOMETRY, is that employed in the consideration of Right Lines, and plain Surfaces, and Solids generated therefrom. See PLAIN, &c.

The *Higher*, or *Sublimer* GEOMETRY is that employ'd in the consideration of Curve Lines, Conic Sections, and Bodies form'd thereof. See CURVE, &c.

Herodotus, *lib. II.* and *Strabo*, *lib. XVII.* assert the *Egyptians* to have been the first Inventors of *Geometry*; and the annual Inundations of the *Nile* to have been the Occasion: For that River bearing away all the Bounds and Landmarks of Mens Estates, and covering the whole Face of the Country, the People, say they, were obliged to distinguish their Lands by the consideration of their Figure, and Quantity; and thus by Experience and Habit, form'd themselves a Method, or Art, which was the Origin of *Geometry*.—A farther Contemplation of the Draughts or Figures of Fields thus laid down and plotted in Proportion, might naturally enough lead them to the Discovery of some of their excellent and wonderful Properties; which Speculation continually improving, the Art became gradually improved, as it continues to do to this Day. *Josephus*, however, seems to attribute the Invention to the *Hebrews*: And others among the Antients make *Mercury* the Inventor. *Polid. Virgil. de Invent. Rer. L. I. C.* 18.

The Province of *Geometry* is almost infinite: Few of our Ideas, but may be represented to the Imagination by Lines, upon which they straight become of *Geometrical* Consideration; it being *Geometry* alone that makes Comparisons, and finds the Relations, of Lines. See LINE.

Astronomy, Music, Mechanicks, and, in a Word, all the Sciences which consider Things susceptible of more, and less; *i. e.* all the precise and accurate Sciences, may be refer'd to *Geometry*: For all Speculative Truths only consisting in the Relations of Things, and in the Relations between those Relations, they may be all referred to Lines. Consequences may be drawn from them; and these Consequences, again, being render'd sensible by Lines, they become permanent Objects, constantly exposed to a rigorous Attention and Examination: And thus we have infinite Opportunities both of enquiring into their Certainty, and pursuing them further. See ART, and SCIENCE.

The Reason, for instance, why we know so distinctly, and mark so precisely, the Concords call'd Octave, Fifth, Fourth, &c. is, that we have learnt to express Sounds by Lines, *i. e.* by Chords accurately divided; and that we know that the Chord, which sounds Octave, is double of that which it makes Octave withal; that the Fifth is in the sesquialterate Ratio, or as three to two; and so of the rest.

The Ear it self cannot judge of Sounds with such Precision; its Judgments are too faint, vague, and variable to form a Science. The finest, best tuned Ear, cannot distinguish many of the Differences of Sounds; whence many Musicians deny any such Differences; as making their Sense their Judge. Some, for instance, admit no Difference between an Octave and Three Ditones: And others, none between the greater and lesser Tone; so that the Comma, which is the real Difference, is insensible to them; and much more the Schisma, which is only half the Comma.

'Tis only by Reason, then, that we learn, that the Length of Chord which makes the Difference between certain Sounds, being divisible into several Parts, there may be a great Number of different Sounds contained therein, useful in Music, which yet the Ear cannot distinguish. Whence it follows, that had it not been for Arithmetic and *Geometry*, we had had no such thing as regular, fix'd Music; and that we could only have succeeded in that Science by good Luck, or Force of Imagination, *i. e.* Music would not have been any Science founded on inconteſtable Demonstrations: Tho' we allow that the Tunes composed by Force of Genius and Imagination, are usually more agreeable to the Ear, than those composed by Rule. See SOUND, TUNE, GRAVITY, CONCORD, &c.

So, in Mechanicks, the Heaviness of a Weight, and the Distance of the Centre of that Weight from the Fulcrum, or Point it is sustained by, being susceptible of *plus*, and *minus*, they may both be express'd by Lines; whence *Geometry* becomes applicable hereto; in virtue whereof, infinite Discoveries have been made, of the utmost use in Life. See BALANCE, STILYARD, &c.

Geometrical Lines and Figures, are not only proper to represent to the Imagination the Relations between Magnitudes, or between Things susceptible of more and less; as Spaces, Times, Weights, Motions, &c. but they may even represent Things which the Mind can no otherwise conceive; *e. gr.* the Relations of incomensurable Magnitudes. See INCOMMENSURABLE.

We do not, however, pretend, that all Subjects Men may have occasion to inquire into, can be express'd by Lines. There are many not reducible to any such Rule: Thus, the Knowlege of an infinitely powerful, infinitely just GOD, on whom all Things depend, and who would have all his Creatures execute his Orders to become capable of being happy, is the Principle of all Morality, from which a thousand undeniable Consequences may be drawn, and yet neither the Principle, nor the Consequences can be express'd by Lines, or Figures. *Mallebranche Recherche de la Verite, T. II.*

Indeed, the antient *Egyptians*, we read, used to express all their Philosophical, and Theological Notions by *Geometrical* Lines. In their Researches into the Reason of Things, they observ'd, that GOD, and Nature affect Perpendiculars, Parallels, Circles, Triangles, Squares, and harmonical Proportions; which engaged the Priests and Philosophers to represent the Divine and Natural Operations by such Figures: In which they were followed by *Pythagoras*, *Plato*, &c. Whence that Saying of *Boethius*, *Nullum Divinorum Scientiam ἀγεωμέτρητον attingere posse*. See PLATONIC, PYTHAGOREAN, &c.

But it must be observ'd, that this Use of *Geometry* among the Antients was not strictly Scientifical, as among us; but rather Symbolical: They did not argue, or deduce Things and Properties unknown from them; but represented or delineated Things that were known. In effect, they were not used as Means or Instruments of discovering, but Images or Characters, to preserve, or communicate the Discoveries made. See SYMBOL, and HIEROGLYPHIC.

" The *Egyptians*, (*Gale* observes) used Geometrical Fi-
" gures, not only to express the Generations, Mutations,
" and Destructions of Bodies; but the Manner, Attributes,
" &c. of the Spirit of the Universe, who diffusing himself
" from the Centre of his Unity, thro' infinite concentric
" Circles, pervades all Bodies, and fills all Space. But of
" all other Figures they most affected the Circle, and Tri-
" angle; the first, as being the most perfect, simple, capa-
" cious, &c. of all Figures: Whence *Hermes* borrowed it to
" represent the Divine Nature; defining GOD to be an in-
" tellectual Circle or Sphere, whose Centre is every where,
" and Circumference no where." See *Kirch. Oedip. Ægyptiac.* and *Gale Phil. General. Lib. I. c. II.*

The Antient *Geometry* was confined to very narrow Bounds, in comparison of the Modern. It only extended to Right Lines and Curves of the first Order, or Conic Sections; whereas into the modern *Geometry* new Lines of infinitely more and higher Orders are introduced. See CURVE.

The Writers, who have cultivated and improved *Geometry*, may be distinguish'd into *Elementary*, *Practical*, and those of the *sublimer Geometry*.

The principal Writers of *Elements*, see enumerated under the Article ELEMENTS.

Those of the *Higher Geometry* are *Archimedes*, in his Books *de Sphæra*, *Cylindro*, and *Circuli Dimensione*; as also *de Spiralibus*, *Conoidibus*, *Sphæroidibus*, *de Quadratura Parabolæ*; and *Arenarius*: *Kepler*, in his *Stereometria Nova*; *Cavalerius*, in his *Geometria Indivisibilium*; and *Torricellius*, *de Solidis Sphæralibus*; *Pappus Alexandrinus*, in *Collectionibus Mathematicis*; *Paulus Guldinus*, in his Mechanicks and Staticks; *Barrow*, in his *Lectiones Geometricæ*; *Huygens*, *de Circuli Magnitudine*; *Bullialdus*, *de Lineis Spiralibus*; *Schooten*, in his *Exercitationes Mathematicæ*; *de Billy*, *de Proportione Harmonica*; *Lalovera*, *de Cycloide*; *Fer. Ernest. Com. ab Herbenstein*, in *Diatome Circulorum*; *Viviani*, in *Exercit. Mathemat. de Formatione*, and *Mensura Fornicum*; *Bap. Palma*, in *Geomet. Exercitation.* and *Apoll. Pergæus*, *de Sectione Rationis*.

The Writers on the *Sections of the Cone*, and *Sphere*; see under CONICKS, and SPHERICKS.

For *Practical Geometry*, the fullest and compleatest Treatises are those of *Mallet*, written in *French*; but without the Demonstrations: And those of *Schwenter*, and *Cantzlerus*, both in *High-Dutch*.—In this Class are likewise to be rank'd *Clavius*'s, *Tacquet*'s, and *Ozanam*'s *Practical Geometries*; *De la Hire*'s *Ecole des Arpenteurs*; *Reinholdus*'s *Geodesia*; *Hartman Beyer*'s *Stereometria*; *Voigtel*'s *Geometria Subterranea*, all in *High-Dutch*; *Hulsius*, *Gallileus*, *Goldmannus*, *Scheffelt*, and *Ozanam*, on the *Sector*.—

GEOMETRICAL, something that has a relation to *Geometry*. See GEOMETRY.

Thus we say, a *Geometrical* Method, a *Geometrical* Genius, a *Geometrical* Strictness, a *Geometrical* Construction, and *Geometrical* Demonstration, &c. See DEMONSTRATION, &c.

Geometry it self leads us into Errors: After once reducing a thing to *Geometrical* Consideration, and finding that it answers pretty exactly, we pursue the View, are pleas'd with the Certainty and Agreeableness of the Demonstrations; and apply the Geometry further and further, till we outrun Nature. Hence it is, that all Machines do not succeed: That all Compositions of Music, wherein the Concords are the most rigidly observ'd, are not agreeable: That the most exact Astronomical Computations do not always foretel the precise Time and Quantity of an Eclipse.

The Reason is, that Nature is not abstracted; Mechanical Levers and Wheels are not *Geometrical* Lines and Circles, as they are supposed to be: Our Taste for Tunes is not the same in all Men; nor at all times in the same Man: And as to Astronomy, there is no perfect Regularity in the Motions of the Planets; their Orbits do not seem reducible to any fix'd known Law, &c.

The Errors, therefore, we fall into in Astronomy, Music, Mechanicks, and the other Sciences to which Geometry is applied, do not properly arise from Geometry, which is an infallible Science; but from the false Misapplication of it. *Mallebranch, Recherche de la Ver.*

Geométrical *Line*, or *Curve*, call'd also *Algebraic Line*, or *Curve*, is that wherein the Relation of the Abscisses to the Semi-ordinates may be express'd by an Algebraick Equation. See *Algebraic* Curve.

Thus, suppose in a Circle, *Tab. Geometry, Fig.* 51. AB=*a* A P=*x* P M=*y*; then will P B=*a*—*x*, and consequently, since P M^2 = A P P B; $y^2 = ax - x^2$.— Again, suppose in *Fig.* 52. P C=*x*, A C=*a* P M=*y*; then will MC^2=PM^2, that is $a^2 - x^2 = y^2$. See Equation.

Geometrical Lines are distinguish'd into Classes, Orders, or Genders, according to the Number of the Dimensions of the Equation that expresses the Relation between the Ordinates and the Abscissæ; or which amounts to the same, according to the Number of Points in which they may be cut by a Right Line.

Thus, a *Line of the first Order* will be only a Right Line: Those of the *second*, or *Quadratick Order*, will be the *Circle*, and the *Conick Sections*; and those of the *third*, or *Cubick Order*, will be the *Cubical* and *Nelian Parabolas*, the *Cissoid* of the Antients, &c. See Circle, Conic *Section*, Parabola, Cissoid, &c.

But a Curve of the first Gender (because a Right Line can't be reckon'd among the Curves) is the same with a Line of the second Order; and a Curve of the second Gender, the same with a Line of the third Order; and a Line of an infinitesimal Order is that, which a Right Line may cut in infinite Points; as the Spiral, Cycloid, the Quadratrix, and every Line generated by the infinite Revolutions of a Radius. See Line.

However, it is not the Equation, but the Description, that makes the Curve a *Geometrical* one: The Circle is a *Geometrical* Line, not because it may be expressed by an Equation, but because its Description is a Postulate: And it is not the Simplicity of the Equation, but the Easiness of the Description, which is to determine the Choice of the Lines for the Construction of a Problem. The Equation, that expresses a Parabola, is more simple than that which expresses a Circle; and yet the Circle, by reason of its more simple Construction, is admitted before it.

The Circle, and the Conick Sections, if you regard the Dimension of the Equations, are of the same Order; and yet the Circle is not numbered with them in the Construction of Problems, but by reason of its simple Description is depress'd to a lower Order, *viz.* that of a Right Line; so that it is not improper to express that by a Circle, which may be express'd by a Right Line: But it is a Fault to construct that by the Conic Sections, which may be constructed by a Circle.

Either, therefore the Law must be taken from the Dimensions of Equations, as observed in a Circle, and so the Distinction be taken away between plane and solid Problems: Or the Law must be allow'd not to be strictly observed in Lines of superior Kinds; but that some, by reason of their more simple Description, may be preferr'd to others of the same Order, and be numbered with Lines of inferior Orders.

In Constructions that are equally *Geometrical*, the most simple are always to be preferr'd: This Law is so universal as to be without Exception. But Algebraick Expressions add nothing to the Simplicity of the Construction; the bare Description of the Lines here are only to be consider'd; and these alone were consider'd by those Geometricians, who joined a Circle with a Right Line. And as these are easy or hard, the Construction becomes easy, or hard: And therefore it is foreign to the Nature of the Thing, from any thing else to establish Laws about Constructions. See Construction.

Either, therefore with the Antients, we must exclude all Lines besides the Circle, and perhaps the Conic Sections, out of Geometry; or admit all according to the Simplicity of the Description: If the Trochoid were admitted into Geometry, we might, by its means, divide an Angle in any given Ratio: Would you therefore blame those, who would make use of this Line to divide an Angle in the Ratio of one Number to another, and contend that this Line was not defin'd by an Equation, but that you must make use of such Lines as are defin'd by Equations? See Transcendental.

If, when an Angle were to be divided, for instance, into 1001 Parts, we should be oblig'd to bring a Curve defin'd by an Equation of above an hundred Dimensions to do the Business; which no body could describe, much less understand; and should prefer this to the Trochoid, which is a Line well known, and described easily by the Motion of a Wheel, or Circle. Who would not see the Absurdity?

Either therefore the Trochoid is not to be admitted at all in Geometry, or else in the Construction of Problems, it is to be preferr'd to all Lines of a more difficult Description: And the Reason is the same for other Curves.

Hence, the Trisections of an Angle by a Conchoid, which *Archimedes* in his Lemma's, and *Pappus* in his Collections have preferr'd to the Invention of all others in this Case, must be allow'd good, since we must either exclude all Lines, beside the Circle, and Right Line, out of Geometry, or admit them according to the Simplicity of their Descriptions; in which Case, the Conchoid yields to none, except the Circle.

Equations are Expressions of arithmetical Computation, and properly have no Place in Geometry, except as far as Quantities truly Geometrical (that is, Lines, Surfaces, Solids, and Proportions) may be said, to be some equal to others: Multiplications, Divisions, and such sort of Computations are newly received into Geometry, and that apparently contrary to the first Design of this Science; for whoever considers the Construction of Problems by a Right Line, and a Circle found by the first Geometricians, will easily perceive, that Geometry was invented, that we might expeditiously avoid by drawing Lines the Tediousness of Computation.

It should seem therefore, that the two Sciences ought not to be confounded: The Antients so industriously distinguish'd them, that they never introduced arithmetical Terms into Geometry; and the Moderns by confounding both, have lost a deal of that Simplicity, in which the Elegancy of Geometry principally consists. Upon the whole, that is arithmetically more simple which is determined by more simple Equations; but that is geometrically more simple which is determined by the more simple drawing of Lines; and in Geometry, that ought to be reckon'd best, which is geometrically most simple.

Geometrical *Plane*, see Plane.

Geometrical *Solution* of a Problem, is when the Problem is directly solved, according to the strict Principles and Rules of Geometry; and by Lines that are truly *Geometrical*. See Problem, and Solution.

In this Sense we say, *Geometrical* Solution, in Contradistinction to a *Mechanical*, or *Instrumental Solution*, where the Problem is only solved by Rules and Compasses. See Mechanical.

The same Term we likewise use in opposition to all indirect, and inadequate Solutions, as by infinite Series's, &c. See Series.

We have no *Geometrical* Way, of finding the Quadrature of the Circle; the Duplicature of the Cube, or finding of two mean Proportionals: Mechanical ways, and others, by infinite Series's, we have. See Quadrature, Duplicature, and Proportional.

The Antients, *Pappus* informs us, in vain endeavour'd at the Trisection of an Angle, and the finding out of two mean Proportionals by a Right Line, and a Circle. Afterwards they began to consider the Properties of several other Lines, as the Conchoid, the Cissoid, and the Conic Sections, and by some of these endeavour'd to solve those Problems. At length, having more throughly examined the Matter, and the Conic Sections being received into Geometry, they distinguish'd *Geometrical* Problems into three Kinds, *viz.*

1° Into *Plane* ones, which deriving their Original from Lines on a Plane, may be solved by a Right Line, and a Circle. See Plane.

2° *Solid* ones, which were solved by Lines deriving their Original from the Consideration of a Solid, that is, of a Cone. See Solid.

3° *Linear* ones, to the Solution of which were required Lines more compounded. See Linear.

According to this Distinction, we are not to solve solid Problems by other Lines than the Conic Sections; especially if no other Lines but Right ones, a Circle, and the Conic Sections must be received into Geometry.

But the Moderns advancing much farther, have received into Geometry all Lines that can be express'd by Equations; and have distinguish'd according to the Dimensions of the Equations, those Lines into Kinds; and have made it a Law, not to construct a Problem by a Line of a Superior kind, that may be constructed by one of an inferior one. See Geometrical *Line*.

Geometrical *Proportion*, call'd also absolutely and simply, *Proportion*; is a Similitude or Identity of Ratio's. See Ratio.

Thus, if A be to B, as C to D, they are in *Geometrical* Proportion: So 8, 4, 30 and 15 are *Geometrical* Proportionals. See Proportion.

Geome-

TAB. GEOMETRY.

1 Line
2 Elliptick Compasses
3 Proportional Compasses
4 Proportional Compasses
5 Gnomon
6 Chord
7 & Circle
8 Lune
9 Multiplication
10 Multiplication
5 Complement
12 Secant
13 Sector
14 Sector
15 Sector
16 Prism
17 Division
18 Vertical Angle
19 Vertex, Base &c.
Rhomboides
21 Evolute
20 Evolute
23 Segment of a circle
23 Diacaustic
24 Diagonal
25 Diagonal
25 Catenaria
26 Diagonal
27 Diameter
29 Circle
29 Circumscribing
31 Circumscribing
32 Solidity
33 Dirigent
34 Sphere
35 Divisibility
36 Parallels
37 Parallel
38 Paralleliopiped
39 Spiral
40 Spiral
41 Parallellogram & Triangle
42 Square
43 Contact
44 Subcontrary Position
45 Pelicoides
46 Opposite Angles
47 Pentagon
48 Oval
49 Cube
50 Tangent
51 Curve
52 Curve
53 Curve
54 Curve
56 Cylinder
55 Cycloid
57 Perpendicular
58 Epicycloid
59 Tetraedron
60 Rectangle
61 Rectangle
62 Proportional
63 Proportional
64 Extreme Proportion
65 Reduction
66 Reduction
67 Reduction

Fig. 64. Reduction
Fig. 68. Triangle.
Fig. 69. Triangle
Fig 70 Triangle
Fig. 71. Triangle
Fig. 72. Triangle
Fig. 73 Triangle
Fig. 74 Triangle
Fig. 75. Triangle
Fig. 76. Triangle
Fig 77 Triangle
Fig 78 Triangle
Fig. 78 Pyramid
Fig. 79. Pyramid.
Fig. 80. Quality
Fig. 81. Regular body
Fig. 82. Retrogradation of Curves
Fig. 83. Rhombus
Fig. 84. Hexagon
Fig. 86 Acute Angle
Fig. 87. Similar Arch
Fig 88 Altitude
Fig 89 Altitude
Fig 91 Angle
Fig 92 Angle
Fig 93 Angle
Fig. 97 Angle
Fig 94 Angle
Fig. 95. Angle
Fig. 96. Angle
Fig. 97. Angle

Nº. IX.

Fletcher. Sculp.

GEOMETRICAL *Progreſſion* is a Series of Quantities, in continued *Geometrical* Proportion, *i. e.* increaſing or decreaſing in the ſame Ratio. See RATIO.

Thus, *e. gr.* 1, 2, 4, 8, 16, 32, 64, and 128 : And 729, 243, 81, 27, 9, 3, 1, are *Geometrical Progreſſions*. See *Geometrical* PROGRESSION.

GEOMETRICAL *Locus*, or *Place*, called alſo ſimply *Locus*, is a Line whereby an indeterminate Problem is conſtructed. See LOCUS.

GEOMETRICAL *Conſtruction* of an Equation, is the contriving and drawing of Lines and Figures, whereby to demonſtrate the Equation, Theorem, or Canon to be geometrically true. See CONSTRUCTION *of Equations*.

GEOMETRICAL *Oſculum*, ſee EVOLUTA, and OSCULUM.

GEOMETRICAL *Scale*, ſee DIAGONAL *Scale*.

GEOMETRICAL *Table*, ſee PLAIN *Table*.

GEOMETRICAL *Pace*, is a Meaſure conſiſting of five Feet. See PACE, and FOOT.

GEOMETRICALLY *Proportionals*, are Quantities in continual Proportion; or which proceed in the ſame conſtant Ratio; as 6, 12, 24, 48, 96, 192, &c. See PROPORTIONALS.

They are thus called, in Contradiſtinction to equidifferent Quantities; which are called, tho' ſomewhat improperly, *Arithmetically Proportionals*. See *Arithmetically* PROPORTIONAL.

GEOPONIC, ſomething relating to *Agriculture*.—Thus *Cato*, *Varro*, *Columella*, *Palladius*, and *Pliny* are ſometimes called *Geoponic* Writers. See GEORGIC.

St. GEORGE, a Name whereby ſeveral Orders, both Military and Religious, are denominated. It has its Riſe from a Saint, famous throughout all the Eaſt; and called by the *Greeks* Μεγαλομάρτυς, *q. d. Great Martyr*.

On ſome Medals of the Emperors *John*, and *Manuel Commenii*, we have the Figure of St. *George* arm'd, holding a Sword, or Javelin in one Hand, and in the other, a Buckler, with this Inſcription, an O, and therein a little A, and P ΓΕ—ΓΙΟC, making Ο ΑΓΙΟΣ ΓΕΟΡΓΙΟΣ, *O Holy George*. O

He is generally repreſented on Horſeback, as being ſuppoſed to have frequently engaged in Combats in that manner.

He is adored throughout *Armenia*, *Muſcovy*, and all the Countries which adhere to the *Greek* Rite: From the *Greek*, his Worſhip has long ago been received into the *Latin* Church; and *England* and *Portugal* have both choſe him for their Patron Saint. See PATRON.

St. GEORGE is particularly uſed for an *Engliſh* Order of Knights; more uſually now called the *Order of the Garter*. See *Order of the* GARTER.

Our King *Edward* VI. out of a Spirit of Reformation, made ſome Alterations in the Ceremonial, Laws, and Habit of the Order, that the *Romiſh* Saint might have leſs Share therein. 'Twas he firſt commanded that the Order ſhould no longer be called the *Order of* St. *George*, but that of the Garter.

Knights of St. GEORGE. There have been various Orders under this Denomination, moſt of which are now extinct; particularly, one founded by the Emperor *Frideric* III. in the Year 1470, to guard the Frontiers of *Bohemia* and *Hungary* againſt the *Turks*.—Another, called St. *George* of *Alfalma*, founded by the Kings of *Arragon*.—Another in *Auſtria* and *Carinthia*.—And another in the Republic of *Genoa*, ſtill ſubſiſting, &c.

Religious of the Order of *St.* GEORGE. Of theſe there are divers Orders, and Congregations; particularly Canons Regular of St. *George in Alga*, at *Venice*, eſtabliſh'd by two Noble *Venetians*, in the Year 1404.—Another Congregation of the ſame Inſtitute in *Sicily*, &c.

GEORGICK; ſomething that relates to the Culture or Tilling of the Ground. See AGRICULTURE.

The *Georgicks* of *Virgil*, are the 4 Books compoſed by that Poet on the Subject of Agriculture.

The Word is borrowed from the Latin *Georgicus*; and that of the *Greek* γεωργικὸς, of γῆ, *terra*, Earth, and ἐργάζομαι, *opero*, I work, labour; of ἔργον, *opus*, Work.—

GEOSCOPY, a kind of Knowledge of the Nature, and Qualities of the Earth, or Soil, gain'd by viewing and conſidering it. See SOIL.

Geoſcopy is only conjectural; but its Conjectures are very well grounded.

The Word is form'd of the *Greek* γῆ, Earth, and σκόπεω, I ſee, view.

GERESOL, in Muſic, one of the Cleſs. See CLEF.

GERFALCON, or GYRFALCON, a Bird of Prey, of a Size between a Vultur and an Hawk; and of the greateſt Strength next the Eagle. See FALCON, and HAWK.

GERMAN. A *Brother German* is a Brother both by the Father's and Mother's ſide; in Contradiſtinction to *Uterine Brothers*, &c. who are only ſo, by the Mother's ſide. See BROTHER.

So, likewiſe, *Couſins German* are thoſe in the firſt, or neareſt Degree; being the Children of Brothers or Siſters-*German*. See COUSIN, &c.

Among the *Romans* we have no Inſtance of Marriage between Couſins *German*, before the Time of the Emperor *Claudius*; when, they were very frequent. See MARRIAGE.

Theodoſius prohibited them under very ſevere Penalties, even Fine, and Proſcription. See CONSANGUINITY.

GERMAN *Language*, ſee TEUTONIC, and LANGUAGE.

GERMAN *Empire*, &c. ſee EMPIRE, &c.

GERMANICUS, an antient Title of Honour, given to ſeveral Emperors, on account of the Victories obtain'd by them over the *Germans*, or in *Germany*.

Gallian bears this Title on Medals; and the Argument for its being on occaſion of a Victory in *Germany*, is, that on the Reverſe we find the Words, VICTORIA GERMANICA. VICTORIA GER. VICTORIA. G. M. that is, *Germanica maxima*.

Claudius Gothicus bore the ſame Title, *Germanicus*, and accordingly on the Reverſe of his Medals we find *Victoria Germanica*; as on others of his Medals we read, *Victoria Gothica*.

GERMEN, or GERM, or GEM, that Part of a Seed which germinates, *i. e.* ſprouts or ſhoots out the firſt, for the Production of a new Plant. See SEED.

Botaniſts call it the *Plume*, ſee PLUME; ſee alſo PLANT, and SEED; ſee alſo GERMINATION.

GERMINATION, the Act of *Germinating*; that is, of a Plant's ſprouting, or ſhooting in the Ground. See PLANT, and GERMEN.

Some uſe the Word in a more extenſive Senſe; ſo as likewiſe to include the ſhooting of Leaves, Bloſſoms, Branches, Flowers, Fruits, and Seeds. See SEED, LEAF, FLOWER, BRANCH, &c.

The Modern Philoſophers have been very attentive to the *Germinations* of Plants, as well of the Formation of the Chick in the Egg. See PLANT.

The Progreſs of *Germination* has been very accurately obſerv'd by the Curious *Malpighi*, in the Seed of a Gourd. The Day after it was committed to the Ground, he found the Outer-coat or Integument a little tumid, and in its Tip there appear'd a ſmall Gap or Aperture, thro' which the Plume or Gem was ſeen.

The ſecond Day, the outward Coat, or Secundine was much ſofter, the inner torn and corrupted, the Plume, or Plantule ſomewhat longer and more tumid, and the Beginning of the Roots ſhew'd themſelves.

The third Day, the outer Secundine was become duſky, and the Leaves of the Plantule inflated, and the Root or Radicle had made itſelf a Paſſage thro' the Secundines, near the former Aperture; the Plume, or Stem, as alſo the Seed Leaves being now grown much bigger.

On the ſixth Day, more of the Seed Leaves had broke thro' the Secundines, and were found thicker and harder; the Root having now emitted a great Number of Fibres, and the Stem grown a Finger's Length.

The following Days, the Roots ſtill ſhot further, other Roots ariſing from them, and others from theſe; and the Stem, in its Progreſs, grew hollow, or fiſtulous, and the Seed Leaves broader and greener.

About the twenty firſt Day, the Plant ſeemed compleat; from which time the Seed Leaves began to droop, and at length died away. See PLANT.

GERON, GERONTES, in Antiquity, a kind of Magiſtracy in antient *Greece*.

The *Gerontes* were at *Sparta*, what the *Areopagites* were at *Athens*. See AREOPAGITE.

The *Gerontes* were inſtituted by *Lycurgus*: Their Number, according to ſome, was twenty eight; and according to others, thirty two. They govern'd in Conjunction with the King, whoſe Authority they were intended to ballance, and to watch over the Intereſts of the People.

None were to be admitted into this Office under ſixty Years of Age, and they held it for Life.

They were ſucceeded by the *Ephori*. See EPHORI.

The Word is formed of the *Greek* γέρον, which ſignifies old Man.

Whence alſo the Words GERONTIC, ſomething belonging to an old Man; and GERONTICON, a famous Book among the Modern *Greeks*, containing the Lives of the antient Monks.

The Senate of *Gerontes* was called *Geruſia*, that is Aſſembly or Council of old Men.

GERUND, in Grammar, a Tenſe, or Time of the Infinitive Mood; like to the Participle, but indeclinable. See MOOD, and INFINITIVE.

The *Gerund* expreſſes not only the Time, but alſo the Manner of an Action; as, He fell *in running Poſt*.

It differs from the Participle, in that it expreſſes the Time which the Participle does not. See PARTICIPLE.

And from the Tenſe properly ſo called, in that it expreſſes the Manner which the Tenſe does not. See TENSE.

The

The Grammarians are very much imbarrass'd to settle the Nature and Character of the *Gerunds*: 'Tis certain, they are no Verbs, nor distinct Moods of Verbs, in regard they do not mark any Judgment, or Affirmation of the Mind, which is the Nature of a Verb.—And beside, they have Cases, which Verbs have not. See VERB.

Some therefore will have them to be Adjectives passive, whose Substantive is the Infinitive of the Verb: On this footing they denominate them Verbal Nouns, or Names formed of Verbs and retaining the ordinary Regimen thereof. See NOUN.

Thus, say they, *tempus est legendi libros*, or *librorum*, is as much as to say, *tempus est τὸ legere libros, vel librorum.* But others stand up against this Decision.

The Word is form'd of the Latin *Gerundivus*, and that from the Verb *gerere*, to bear.

GESSES, in the Furniture belonging to an Hawk. See JESSES.

GESTATION, the Time of a Woman's going with Child; or the Interval between Conception, and Delivery. See DELIVERY; see also FŒTUS, and CONCEPTION.

GESTATION is also a Term in the antient Medicine, used for a sort of Exercise. See EXERCISE.

Asclepiades first brought Frictions, and *Gestation* into Practice.—The Design of *Gestation* was to recover Strength after a Feaver, *&c.* was gone.

It consisted in making the Patient walk, or ride in a Chariot, or in a Boat; or even in rocking him in his Bed, if he could not indure a more violent Agitation.

GESTICULATION, the Act of making indecent or unsuitable Gestures, or in too great Number. See GESTURE.

Gesticulation is a grievous Fault in an Orator.

GESTURE, a Motion of the Body, intended to signify some Idea, or Passion of the Mind.

Quintilian defines *Gesture, totius corporis motus & conformatio. Gestures* are a kind of Natural Language which supplies the Use of Speech in those naturally dumb. The *Mimes* and *Pantomimes* were great Proficients in the Style of *Gesture*. See MIME, and PANTOMIME.

Gesture consists principally in the Actions of the Hands, and Face. See ACTION, and PRONUNCIATION.

GIAGH, or JEHAGH, a Cycle of twelve Years, in use among the *Turks* and *Cathayans*. See CYCLE.

Each Year of the *Giagh* bears the Name of some Animal: The first, that of a Mouse; the second, that of a Bullock; the third, of a Lynx, or Leopard; the fourth, of a Hare; the fifth, of a Crocodile; the sixth, of a Serpent; the seventh, of a Horse; the eighth, of a Sheep; the ninth, of a Monkey; the tenth, of a Hen; the eleventh, of a Dog; and the twelfth, of a Hog.

They also divide the Day into twelve Parts, which they call *Giagh's*; and distinguish them by the Names of the same Animals.

Each *Giagh* contains two of our Hours, and is divided into eight *Keh*, as many there are Quarters of Hours in our Day.

GIANT, or GYANT, a Man of extraordinary, enormous Stature and Bulk. See STATURE.

The Reality of *Giants*, and of Nations of *Giants*, is much controverted among the Learned. Travellers, Historians, and Relations both sacred and profane furnish various Instances thereof; a great Part of which, Naturalists and Antiquaries set aside.

Those among the Antients who speak of *Giants*, as Historians, and affirm there were such Things, are *Cæsar, de Bello Gallico, L. I. Tacitus, de Morib. Germanor. & Annal. L. II. Florus, L. III. c.* 3. St. *Augustin de Civit. Dei L. XV. c.* 9. and *Saxo Grammaticus*, at the End of his Preface: And among the Moderns, *Hieron. Magius, Miscellan. de Gigantibus; Chassagnonus, de Gigantibus; Kircher Mund. Subterran. L. VIII. S. II. c.* 4. and so many others; that *Stephanius* in his Notes on *Saxo Grammaticus*, affirms nothing can be more extravagant than to deny, or allegorize the Authorities we have thereof.—

Mr. *Derham* observes that though we read of *Giants* before the Flood, *Gen.* vi. 4. and more plainly after it, *Numb.* xiii. 33; yet 'tis highly probable, the Size of Man has always been the same from the Creation; for as to the *Nephilim, Gen.* vi. the Antients vary about them; some taking them for Monsters of Impiety, Atheism, Rapine, Tyranny: And as to those *Num.* xiii. which were evidently spoke of as Men of a *Gigantic* Size, 'tis probable the Fears of the Spies might add thereto.

But be this as it will, 'tis manifest that in both these Places *Giants* are spoken off as Rarities and Wonders of the Age, not of the common Stature: And such Instances we have had in all Ages; excepting some fabulous Relations; such as we take to be that of *Theutobocchus*, who is said to be dug up Anno 1613, and to have been higher than the Trophies, and 26 Foot long: And no better we suppose the *Giants* to have been, which *Ol. Magnus* gives an Account of in his 5th Book, such as *Harthen* and *Starchater* among the Men; and among the Women, *Reperta est* (saith he) *Puella—in capite vulnerata, mortua induta chlamyde purpurea, longitudinis cubitorum* 50, *latitudinis inter humeros quatuor.* Ol. Mag. *Hist. L.* 5. *c.* 2.

But, as for the more credible Relations of *Goliath* (whose Height was six Cubits, and a Span, 1 *Sam.* xvii. 4. which, according to Bishop *Cumberland*, is somewhat above eleven Feet *English*); of *Maximinus* the Emperor (who was nine Foot high), and others in *Augustus* and other Reigns, of about the same Hight: To which might be added the Dimensions of a Skeleton, dug up lately in the Palace of a *Roman* Camp near St. *Albans* by an Urn inscribed *Marcus Antoninus*; of which an Account is given by Mr. *Cheseldon*, who judg'd by the Dimensions of the Bones, that the Person was eight Foot high. *Philos. Transact* N° 333. For these antique Examples and Relations, we say, they may be match'd, nay outdone, with modern Examples; of which we have divers in *J. Ludolph. Comment. in Hist. Æthiop. L.* 1. *c.* 2. §. 22. *Magus, Conringius*, D. *Hackewill*, and others; which last relates from *Nannez*, of Porters and Archers belonging to the Emperor of *China*, of Fifteen Foot high; and others from *Purchas*, of ten and twelve Foot high, and more. See the Learned Author's *Apolog. p.* 208.

GIBBOUS, in Medicine, is used to denote a Person bunch'd or hump-back'd. See VERTEBRA.

That Part of the Liver out of which the Vena Cava arises, is also called the *gibbous* Part. See LIVER.

GIBBOUS is also used in reference to the enlightened Parts of the Moon, while she is moving from Full to the first Quarter, and from the last Quarter to Full again; for all that time the dark Part appears horned, and falcated, and the light one bunch'd out, Convex, or *Gibbous*. See PHASES, and MOON.

GIBELINS, GIBELLINS, or GIBELLING, a famous Faction in *Italy*, opposite to the *Guelphs*. See GUELPH.

The *Guelphs*, and *Gibellins* ravaged, and laid waste *Italy* for a long Series of Years; so that the History of the Country, for the space of two Centuries, is only a Detail of their mutual Violences, and mortal Wars.

We have but a very obscure Accunt, of their Origin, and the Reason of their Names: The Generality of Authors affirm, that they arose about the Year 1240, upon the Emperor *Frideric* the Second's being excommunicated by Pope *Gregory* the Ninth.

That Prince, say they, making a Tour among the Cities of *Italy*, gave the Name *Gibelins* to such as he found well affected to him; and that of *Guelphs* to those who adhered to the Pope.

But as to the Reason, and Signification of those Words, there is a deep Silence: *Gibelin* might possibly be form'd of *Ghebieder, Imperator*; whence *guabiedolijken, imperiose.* Of *Ghebiedelin*, the *Italians* might make, by Corruption, *Gibelin*; so that *Gibelins*, in this Light, should be the same with Imperialists, or such as follow'd the Emperor's Party.

By the way, some Writers maintain, that the two Factions arose ten Years before; tho' still under the same Pope, and Emperor.

Other Historians relate, that *Conrad* III^d marching into *Italy*, in the Year 1139, against the *Neapolitans, Roger*, Count of *Naples* and *Sicily*, in order to defend his States, called to his Assistance *Guelph*, Duke of *Bavaria*; and that one Day when the two Armies were ready to join Battle, the *Bavarians* cried out in *High-Dutch, Hie Guelph*; or as others say in *Flemish, Hier Guelph*, that is, *Here Guelph:* And that the Imperialists answer'd, on their Side, with the Words *Hie*, or *Hier, Gibelin, here Gibelin*; calling the Emperor by the Name of the Place where he had been bred.

Hornius refers the Names to the War in 1140, between *Henry* the Proud, Duke of *Bavaria*, and *Saxony*; and *Conrad* the Third, Duke of *Suabia:* The two Princes being preparing to engage near the Town of *Winsberg*, the *Bavarians* began to cry out, *Guelph*, which was the Name of Duke *Henry*'s Brother, and the Partisans of the Emperor, *Weiblingen*, the Name of the Place where that Prince was born and bred in the Dutchy of *Wirtenberg*, whose Surname he bore: From which *Weiblingen*, the *Italians* at length form'd *Gibelin.*

This Account is confirm'd by *Martin Crusius: Initium* Gibelinæ *(Weibelinæ a Patria Conradi Regis)* & Welfiæ *concertationis. Conrad* being of *Weiblingen*, that Word, says *Crusius*, gave rise to *Gibellingue*, and that to *Gibelling, Gibelins, Gibellini.*

Platina, on the other Hand, assures us, that the Name *Gibelins* arose from that of a *German* at *Pistoya*; whose Brother, named *Guelph*, gave likewise his Name to the opposite Faction; the two Brethren, it seems, bearing an irreconcilable Hatred.

Others maintain, that the Emperor gave the Appellation *Gibelins* to those of his Party, from the *German* Word *Gipfel*, signifying Ridge, or Top; by reason the Empire rested on them, as the Rafters of a House lean on the Ridge, which joins them a-top.

Kraus,

Kraus, a learned Canon of *Strasbourg*, in the Lives of the Emperor of the Houſe of *Brunſwick*, is of the ſecond Sentiment above related: In a Battle, ſays he, between *Welff*, or *Guelff*, and *Friderick*, the Army of the firſt crying out, *Hie Welff! Hie, Welff!* the ſecond commanded his, to cry out *Hie, Gibeling! Hie, Gibeling*, the Name of his Birth Place; and the *French* and *Lombards* aſking the Signification of thoſe Words, they were anſwer'd, that by *Welff* was meant the Pope's Party; and by *Gibeling*, the Emperor's.

Yet others contend, that the Word *Gibelin* is only a ſoftning of the Word *Gibertin*, or *Guibertin*; and that it aroſe from *Guibert*, an Anti-Pope, ſet up by the Emperor *Henry* III^d, in the Year 1080, *Acta Sanct. Propyl. Maii, p.* 198.

Maimbourg, in his *Hiſt. de la Decad. de l'Emp.* advances another Opinion: The two Factions, and their Names, ſays he, aroſe from a Quarrel between two Antient and Illuſtrious Houſes, on the Confines of *Germany*, that of the *Henry's* of *Gibeling*, and that of the *Guelfes* of *Adorf*: Which Account appears the moſt probable of them all.

GIBET, a Machine, in manner of a Gallows, whereon notorious Criminals after Execution, are hung in Irons, or Chains; as Spectacles, *in terrorem*. See GALLOWS.

The Word in French, *Gibet*, properly denotes what we call *Gallows*: It is ſuppoſed to come originally from the Arabic *Gibel*, Mount, Elevation of Ground; by reaſon they are uſually made on Hills, or Eminences.

GIBLETS, the Offalls or Entrails of a Gooſe; including the Heart, and Liver, with the Feet, Gizzard, *&c.*

The Word is ſuppos'd to be form'd of *Goblets*, from the French *Gobeau*, mouth-full.

Giblets make a conſiderable Article in Cookery: They boil *Giblets*, ſtew *Giblets*, make Ragoos of *Giblets*, *Giblet* Pies, *&c.*

GIGANTIC, ſee GIANT.

F. *Bouhours* relates, that one of the Artifices of the *Indian Bramans* conſiſts in perſuading the ſimple People, that the Gods eat like us; and, that they may bring them Store of Victuals, they repreſent thoſe Gods of a *Gigantic* Size, and above all, give them a huge Tun Belly.

GIGANTOMACHIA, the Battle of the Giants againſt the fabulous Gods of the antient Heathens.

Several of the Poets have compoſed *Gigantomachia's*: That of *Scarron* is the fineſt of all his Pieces.

The Word is *Greek*, γιγαντομαχία, form'd of γίγας, γίγαντος, Giant, and μάχη, Combat, of μάχομαι, *pugno*, I fight.

GIGG, GIGUE, or JIG, in Muſic and Dancing, a gay, briſk, ſprightly Compoſition, and yet in full Meaſure, as well as the *Allemand*, which is more ſerious. See DANCE.

Menage takes the Word to ariſe from the Italian *Giga*, a muſical Inſtrument mentioned by *Dante*.

GILBERTINES, an Order of Religious, thus call'd from St. *Gilbert*, of *Simpringham*, in the County of *Lincoln*, who founded the ſame, about the Year 1148.

Antiently, none were received into it but married People: The Monks obſerved the Rule of St. *Auguſtin*; and were accounted Canons; and the Nuns that of St. *Benedict*.

The Founder erected a double Monaſtery, or rather, two different ones, contiguous to each other, the one for Men, the other for Women, but parted by a very high Wall.

The Order, afterwards, conſiſted of ten ſuch Monaſteries: All which were ſuppreſs'd at the general Diſſolution of Monaſtic Orders under King *Henry* VIII.

GILD, or GUILD, originally ſignify's a Fraternity, or Company; form'd from the *Saxon Gildan*, to pay, becauſe every Man was *gildare*, *i. e.* to pay ſomething towards the Charge and Support of the Company. See COMPANY, and FRATERNITY.

Thence comes our *Guild-hall*, *q. d.* the Hall of the Society or Fraternity, where they meet and make Orders and Laws among themſelves. See GUILD-*Hall*.

The Original of *Gilds* is thus related: It being a Law amongſt the *Saxons*, that every Freeman of fourteen Years old ſhould find Sureties to keep the Peace, or be committed; certain Neighbours entred into an Aſſociation, and became bound for each other, either to produce him who committed an Offence, or to make Satisfaction to the injur'd Party: This, that they might the better do, they rais'd a Sum of Money among themſelves, which they put into a common Stock; and when one of their Pledges had committed an Offence, and was fled, then the other nine made Satisfaction out of this Stock, by Payment of Money, according to the Offence. See FRANK-*Pledge*.

Becauſe this Aſſociation conſiſted of ten Families, it was called a *Decennary*: And from hence came our Fraternities. See DECENNA.

But, as to the direct Time when theſe *Gilds* had their Origin in *England*, there is nothing of Certainty to be found; ſince they were in uſe long before any formal Licence was granted to them for ſuch Meetings.

Edward the third, in the fourteenth Year of his Reign, granted Licence to the Men of *Coventry*, to erect a Merchants *Gild* and Fraternity, of Brethren and Siſters, with a Maſter, or Warden; and that they might make Chantries, beſtow Alms, do other Works of Piety, and conſtitute Ordinances touching the ſame, *&c.*

So *Henry* the fourth, in his Reign, granted a Licence to found a *Gild* of the *Holy Croſs*, at *Stratford* upon *Avon*.

In the Royal Boroughs of *Scotland*, a *Gild* is ſtill uſed for a Company of Merchants, who are Freemen of the Borough. See BOROUGH.

Every Royal Borough has a *Dean of Gild*, who is the next Magiſtrate below the Bailiff. He judges of Controverſies among Men concerning Trade; diſputes between Inhabitants touching Buildings, Lights, Water-courſes, and other Nuſance; calls Courts, at which his Brethren of the *Gild* are bound to attend; manages the common Stock of the *Gild*, and amerces and collects Fines.

GILD, or GELD, according to *Cambden*, does alſo ſignify a Tribute, or Tax; and the Statutes of 27 *Edw.* 3. Stat. 2. cap. 13; and 11 *Hen.* 7. cap. 9. uſe *Gildable* in the ſame Senſe with *Taxable*. See GELD.

GILD, according to *Crompton*, does alſo ſignify an Amercement: As in *Footgeld*, which he interpretes a Preſtation within the Foreſt, in theſe Words,—To be quit of all manner of *Gild*, is to be diſcharged of all manner of Preſtations to be made for gathering Sheafs of Corn, Lamb, and Wool, to the uſe of Foreſters.

GILD, or GELD, is alſo uſed among our antient Writers for a Compenſation, or Mulct for a Fault committed.—— *Quicquid in amore in alterum furatum habent in duos* Geldos *componere faciat*.

Hence, *Weregeld*, is the Price of a Man; *Orpgeld*, is the Price of Cattle; *Angild*, the ſingle Value of a thing; *Twigeld*, the double Value. See WERGILD, *&c.*

There are likewiſe many Words, which end with *Geld*, and that ſhew the ſeveral kinds of Payments; as *Danegeld*, *Vadegeld*, *Seregeld*, *Hornegeld*, *Sotgeld*, *Penigeld*, &c. See DANEGELD, &c.

GILD, or GUILT *Rents*, are Rents payable to the Crown by any *Gild*, or Fraternity; or ſuch Rents as formerly belonged to Religious *Gilds*, and came to the Crown at the general Diſſolution, order'd for Sale by the Stat. 22 *Car.* 2.

GILDABLE, or GELDABLE, denotes *Tributary*, that is, liable to Pay, Tax, or Tribute.

Cambden, dividing *Suffolk* into three Parts, calls the firſt *Gildable*, becauſe liable to Tax; from which the other two Parts were exempt, becauſe *Eccleſiæ Donatæ*.

Guildable is alſo explained in an antient MS. to be that Land or Lordſhip which is *ſub diſtrictione Curiæ Vice-Com.*

GILGUL *Hammethin*, a *Hebrew* Phraſe, literally ſignifying the *Rolling of the Dead*.

To conceive the Uſe of this Diction, it is to be obſerv'd that the *Jews* have a Tradition, that at the coming of the *Meſſiah*, no *Iſraelite* ſhall riſe any where but in the Holy Land. What, then, ſhall become of all the Faithful inter'd in other Parts? Shall they periſh, and remain in the State of Death?

No, ſay the Jewiſh Doctors: But GOD will dig them ſubterraneous Canals, or Cavities, thro' which they ſhall *roll* from their Tombs to the Holy Land; and when arrived there, GOD will blow on them, and raiſe them again.

This imaginary Paſſage of the Carcaſſes, or Aſhes of the *Jews*, from their Tombs, to the Holy Land, by *rolling* under Ground, is what they call *Gilgul Hammethin*, the rolling of the Dead.

GILHALDA *Teutonicorum*, was us'd for the Fraternity of Eaſterling Merchants in *London*; called the *Stillyard*. See STILLYARD.

GILD-*Hall*, *q. d. Gildæ Aula*, the chief Hall in the City of *London*. See GUILD-*Hall*.

—Gildarum *nomine continentur non ſolum minores Fraternitates, & ſodalitia, ſed ipſæ etiam civitatum Communitates*, ſays the learned *Spelman*. See GILD.

GILD-*Merchant*, *Gilda Mercatoria*, was a certain Privilege, or Liberty, granted to Merchants, whereby they were enabled among other Things to hold certain Pleas of Land within their own Precincts.

King *John* granted *Gildam Mercatoriam* to the Burgeſſes of *Nottingham*.

GILDING, or GUILDING, the Art, or Act of ſpreading or covering a Thing over with Gold, either in Leaf or Liquid. See GOLD.

The Art of *gilding* was not unknown among the Antients, tho' it never arrived among them at the Perfection to which the Moderns have carried it.

Pliny aſſures us, that the firſt *gilding*, ſeen at *Rome*, was after the Deſtruction of *Carthage*, under the Cenſorſhip of *Lucius Mummius*; when they began to *gild* the Ceilings of their Temples, and Palaces; the Capitol being the firſt Place on which the Enrichment was beſtow'd. But he adds, that Luxury advanced on them ſo haſtily, that in a little time you might ſee all, even private and poor Perſons, *gild* the very Walls, Vaults, *&c.* of their Houſes.

We need not doubt but they had the ſame Method with us, of beating Gold, and reducing it into Leaves; though it ſhould ſeem they did not carry it to the ſame Height; if it is true which *Pliny* relates, that they only made five-hundred Leaves four Fingers ſquare of a whole Ounce. Indeed he adds that they could make more; that the thickeſt were called *Bracteæ Prænestinæ*, by reaſon of a Statue of that Goddeſs at *Præneste* gilt with ſuch Leaves; and that the thinner ſort were called *Bracteæ Queſtoriæ*.

The modern Gilders do alſo make uſe of Gold Leaves of divers Thickneſſes; but there are ſome ſo fine, that a thouſand don't weigh above four or five Drachms. The thickeſt are uſed for *gilding* on Iron, and other Metals; and the thinneſt, on Wood.—

But we have another Advantage over the Antients, in the manner of uſing, or applying the Gold: The Secret of painting in Oil, lately diſcover'd, furniſhes us with means of *gilding* Works that ſhall endure all the Injuries of Time and Weather, which to the Antients was impracticable. They had no way to lay the Gold on Bodies that would not endure the Fire but with Whites of Eggs, or Size; neither of which will endure the Water: So that they could only *gild* ſuch Places as were ſhelter'd from the Moiſture of the Weather.—

The *Greeks* called the Compoſition which they uſed for *gilding* on Wood, *Leucopheum*, or *Leucophorum*; which is deſcribed as a ſort of glutinous, compound Earth, ſerving, in all Probability, to make the Gold ſtick, and bear poliſhing. But the Particulars of this Earth, its Colour, Ingredients, &c. the Antiquaries and Naturaliſts are not agreed upon.

There are ſeveral Methods of *Gilding* in uſe among us; *viz. Gilding in Oil*; *Water Gilding*; *Gilding by the Fire*, which is peculiar to Metals; *Gilding of Books*, &c.

Method of GILDING *in Oil.*

The Baſis, or Matter whereon the Gold is applied, in this Method, is the Remains of Colours found ſettled to the Bottom of the Pots wherein the Painters waſh their Pencils. This Matter, which is very viſcid, they firſt grind; then paſs it thro' a linen Cloth; and thus lay it with a Pencil on the Matter to be gilt, after having firſt waſh'd it once or twice over with Size; and if it be Wood, with ſome white Paint.

When almoſt dry, but while yet unctuous enough to catch and retain the Gold, they ſpread their Gold Leaves thereon, either whole, or cut in pieces: To take up and apply the Leaves, they make uſe of a Piece of fine, ſoft, well carded Cotton; or of a Palet for the purpoſe; or barely the Knife, wherewith the Leaves were cut, according to the Parts of the Work they are to *gild*, or the Breadth of the Gold to be applied.

In proportion as the Gold is laid, they paſs over it a coarſe, ſtiff Pencil or Bruſh, to make it ſtick, and, as it were, incorporate, with the Ground: With the ſame Pencil, or a ſmaller one, they mend any Cracks that may happen therein, after the ſame manner as will be hereafter ſhewn in *Water* GILDING.

This ſort of *Gilding* is chiefly uſed for Domes, and Roofs of Churches, Courts, Banquetting Houſes, &c. and for Figures of Plaſter, Lead, &c. that are to ſtand expoſed to the Weather.

Method of GILDING *in Water.*

Water *Gilding* is not perform'd without more Apparatus; nor can it be uſed ſo ordinarily, nor on ſuch large Works, as the former: WoodenWorks, and thoſe of Stuc, are almoſt the only ones *gilt* in this way: which, beſide, muſt be ſhelter'd from the Weather.

The Size made uſe of for *gilding*, is to be made of Shreds, &c. of Parchment, or Gloves, boil'd in Water, to the Conſiſtence of a Gelly. See GLUE.

If it be Wood that is to be *gilt*, they firſt give it a *Waſh* of this Size, boiling hot; and when this is dry, another of white Paint, mix'd up with the ſame Size. For this White, ſome uſe Plaſter of Paris, well beaten and ſifted; others Spaniſh White, &c. It is laid on with a ſtiff Bruſh, and oftener, or ſeldomer repeated, according to the Nature of the Work: For Pieces of Sculpture, ſeven or eight Lays ſuffice; for flat, or ſmooth Works, ten, or twelve. In the latter Caſe they are applied by drawing the Bruſh over the Work; in the former by dabbing it.

When the whole is dry, they moiſten it with fair Water, and rub it over with ſeveral Pieces of coarſe Linen, if it be on flat; otherwiſe, they beat or ſwitch it with ſeveral Slips of the ſame Linen tied to little Sticks, to make it follow and enter all the Cavities and Depreſſures thereof.

The White thus finiſh'd, they proceed to yellow it; obſerving, that if it be a Piece of Sculpture in Relievo, they firſt touch up, and repare the ſeveral Parts which the white Ground may have diſfigur'd, with little iron Inſtruments, as Gouges, Chiſſels, &c.

The Yellow, which they uſe, is only common Oker well ground and ſifted, and thus mix'd up with the Size us'd for the White, only weaker by one half. This Colour is laid on hot; and in Works of Sculpture ſupplies the Place of Gold, which frequently cannot be carried into all the Cavities and Dentings of Foliages and other Ornaments.

Over this yellow is applied a Lay, which is to ſerve for the Ground whereon the Gold is to be immediately laid: It is uſually compoſed of the *Armenian* Bole, Blood-ſtone, Black Lead, and a little Fat, to which ſome add Soap and Oil of Olives; others, burnt Bread, Biſtre, Antimony, Glaſs of Tin, Butter and SugarCandy. Theſe Ingredients being all ground together, with hot Size, they apply three Lays of the Compoſition upon the Yellow, each after the other is dried; taking Care not to put any in the ſmall Cavities of the Work, to hide the yellow. The Bruſh uſed in this Application, is to be ſoft; and when the Matter is well dried, they go over it with a ſtronger Bruſh, to rub it down, and take off the little prominent Grains, and thus facilitate the burniſhing of the Gold.

In order to proceed to *gild*, they muſt have three ſorts of Pencils; one, to wet; another to touch up, and amend; and a third to flatten: There is alſo required a Cuſhion, to ſpread the Gold Leaves on, when taken out of the Book; a Knife to cut them; and a Squirrel's Tail fitted with a Handle; or elſe a piece of fine Stuff on a Stick, to take them up, direct, and apply them.—

They begin with the wetting Pencils, by which they moiſten the Lay laſt laid on with Water, that it may the better receive and retain the Gold: The Leaves are then laid on the Cuſhion; and taken up, if whole, with the Squirrel's Tail; if in pieces, with the other Inſtrument, or even the Knife they are cut withal, and laid, and ſpread gently on the Parts of the Work before moiſten'd.

When the Leaves happen to crack, or break in laying on, they make up the Breaches with little Pieces of Leaf taken up on the repairing Pencil; and with the ſame Pencil, or another ſomewhat bigger, they ſmooth the whole; preſſing the Gold into the Dents, where it could not ſo well be carried with the Squirrel's Tail.

The Work thus far *gilt*, when dry, remains either to be burniſh'd, or flatted.—

To *burniſh* it, is to ſmooth, and poliſh with a Burniſher, which is uſually a Dog's, or Wolf's Tooth, or a Blood-ſtone fitted in a Handle for the purpoſe. See BURNISHING.

To *flat*, is to give it a light Lick in the Places not burniſh'd, with a Pencil dipt in Size, wherein a little Vermillion ſometimes has been mix'd. This helps to preſerve and prevent its flawing, when handled.

The laſt thing is to apply the Vermeil in all the little Lines, and Cavities; and to ſtop and amend any little Faults with Shell Gold.

The Compoſition here call'd *Vermeil*, is made of Gum Gutta, Vermillion, and a little of ſome ruddy, brown Colour, ground together, with *Venice* Varniſh, and Oil of Turpentine. Some *Gilders*, in lieu hereof, content themſelves with fine Lacca, or Dragons Blood, with Gum Water.

Sometimes, inſtead of burniſhing the Gold, they burniſh the Ground or Compoſition laid on laſt before it; and content themſelves afterwards to waſh the Part over with the Size. This Method is chiefly practiced for the Hands, Face, and other Nudities in Relievo; which, by this means, don't appear ſo very brillant as the Parts burniſh'd; though much more ſo than the Parts perfectly flat.

To *gild* a Work, and yet preſerve white Grounds; they uſe to apply a Lay of Spaniſh White mix'd with a weak Fiſh Glue, on all the Parts of the Ground whereon the yellow, or the laſt Lay might run.—

Method of GILDING *by the Fire.*

There are two ways of *Gilding by Fire*, *viz.* that with Liquid Gold, and that with Leaf Gold.

The firſt is perform'd with Gold, reduc'd to a Calx, and amalgamated with Mercury, in the Proportion of about an Ounce of Mercury to a Drachm of Gold.

In order to the Operation, they heat a Crucible red hot, then put the Gold and Mercury in it, and ſtir them gently about, till the Gold be found melted and incorporated into a Maſs with the Mercury. This done, they caſt them into Water, to waſh and purify; and thence into other Waters, where the Amalgama which is almoſt as liquid as if there were nothing but Quickſilver in it, may be preſerved a long time for Uſe.

Before they proceed to apply this amalgamated Gold, they firſt *roughen* the Metal it is to be applied on; which is done by waſhing it over with *Aqua fortis*, or *Aqua ſecunda*: Then rincing the Metal in fair Water, and ſcouring it a little with ſmall Sand, it is ready for the Gold.—

They now cover over the Metal with the Mixture of Gold, and Mercury, taking it up with a Slip of Copper, or a Bruſh made of braſs Wire, and ſpreading it as equably thereon as poſſible; in order to which they wet the Bruſh from time to time in fair Water.—

Thus

Thus far advanc'd, the Metal is ſet to the Fire, upon a Grate, or in a ſort of a Cage, under which is a Pan of Coals: In proportion as the Mercury evaporating and flying off diſcovers Places where Gold is wanting, they take Care to ſupply them, by adding new Pieces of Amalgama.—

The Work is then rubb'd over, with the Wire Bruſh dipt in Beer, or Vinegar, which leaves it in a Condition to be brought to Colour, which is the laſt Part of the Proceſs, and which the Gilders keep to themſelves as a mighty Secret; tho' we know it cannot differ much from what we ſhall hereafter ſhew of the manner of giving Gold Species their Colour, under the Article COINING.

GILDING *by the Fire with Gold Leaves.*

To prepare the Metal for this *Gilding*, it muſt be firſt well ſcratch'd, or raked; then poliſh'd, with a Poliſher; and then ſet to the Fire to *blue*, *i. e.* to heat, till it appear of a blue Colour. This done, the firſt Lay of Gold is clap'd thereon, and lightly rubb'd down with a Poliſher; and thus expoſed to a gentle Fire.

They uſually only give it three ſuch Lays, or four at moſt; each Lay conſiſting of a ſingle Leaf for the common Works, and of two for the extraordinary ones: After each Lay they ſet it a-freſh to the Fire. After the laſt Lay, the Gold is in a Condition to be burniſh'd.

GILDING *of Books*; ſee BOOK-*binding*.

GILL, or *Ground-Ivy*, a Medicinal Plant, which gives the Denomination to a ſort of medicated Ale, or Drink, called *Gill*, or *Gill Ale*, made by infuſing the dried Leaves of the Plant therein. See ALE.

Gill is held very abſterſive and vulnerary, and is preſcribed in all Diſorders of the Lungs, and Breaſt; and is alſo eſteem'd good in Obſtructions of the Viſcera: Whence it alſo paſſes for Hepatic, Diuretic, Splenetic, and Nephritic. It is ſaid to do Wonders in Tubercles and tartarous Indurations of the Lungs. *Willis* commends its Powder in obſtinate Coughs; and *Etmuller* gives the Hiſtory of a Scorbutic Conſumption cured by a ſtrong Decoction of this Herb after a Vomit.

GILLA, in Chymiſtry and Pharmacy, is an *Arabic* Term for *Salt*; peculiarly uſed among us for the Emetic Salt of Vitriol. See VITRIOL.

This Salt is prepared from that Mineral, by three, or four repeated Operations, *viz.* Diſſolution, in *May* Dew; Filtration; and Cryſtallization. In default of *May* Dew, Rain Water may ſerve.

Gilla is uſed in Tertian Agues, and all Fevers ariſing from a Corruption of the Humors of the firſt Region. It deſtroys Worms, and prevents Putrefaction. The Doſe is from 20 Grains to half a Drachm, taken in Broth, or in Cordial Waters.—

GILLS, BRANCHIÆ, in Natural Hiſtory, thoſe membranous, cartilaginous Parts in Fiſhes, whereby they reſpire, hear, *&c.* See FISH; ſee alſo BRANCHIA.

What we call *Gills* in Fiſhes, are properly their Lungs: Reſpiration of Air is as neceſſary to Fiſhes, as to terreſtrial Animals: There is always a deal of Air incloſed among Water; and 'tis this Air that Fiſhes reſpire. The whole Mechaniſm of their *Gills* is contrived with this View, *viz.* to ſeparate and imbibe this Air from the Water, and preſent it to the Blood, after the ſame manner as it is preſented to the Lungs of other Animals. See LUNGS.

M. *du Verney* has unravel'd this infinitely complicated Piece of Mechaniſm, in the *Gills* of a Carp: The firſt thing that offers, is a ſort of Timber-work, conſiſting of a great Number of bony Laminæ, each ſubdivided into an Infinity of bony Fibres, whoſe Office is to ſuſtain the innumerable Ramifications of an Artery diſpatch'd hither from the Heart. The Uſe of theſe Ramifications is to preſent the Blood extremely ſubdivided, and, as it were, each Globule of Blood by it ſelf, to the Water. Between theſe Laminæ, and throughout the whole Contexture of the *Gills*, are an infinite Number of very narrow Paſſages, deſtined to receive and ſubdivide the Water which the Fiſh takes in by the Mouth, into little Parcels. In this State the Air, its Priſon Doors being now in ſome meaſure open'd, makes its Eſcape, and joins it ſelf with the Blood of all the little Arteries.—

Theſe *Gills* have neceſſarily an alternate Motion of Dilatation and Compreſſion, which is effected by another very curious Piece of Mechaniſm; when they dilate, the Water is taken in, and when they contract, it is expell'd again. Hence 'tis probable that it is in the very Inſtant of Contraction, that the Air expreſs'd from the Water is forc'd to enter the Pores of the little Blood Veſſels, by reaſon the Force is then greater than at any other time; and this Action requires a conſiderable Force. The ſame Reaſon holds with reſpect to the Lungs of Men; accordingly M. *du Verney* maintains, that tho' the Air enter the Lungs in the time of Inſpiration, it is only received into the Blood in that of Expiration, when the ſuperfluous Air is carried off by the Trachea; ſo that the real Inſpiration, *i. e.* the Entrance of the Air into the Blood, ſhould be the Expiration. See RESPIRATION.

The Water is taken in by the Mouth, and carried off again, ſtrip'd of its Air, by the *Gills*; and the Air gain'd from it, is diſtributed firſt to the Arteriolæ of the *Gills*, and thence by the Law of Circulation to all the little Veins inoſculated therewith. See CIRCULATION, &c.

GINGER, GINGIBER, an Aromatic Root, of conſiderable Uſe both as a Spice, and a Medicine.—

It is brought chiefly from *Calicut*, in the Eaſt Indies; tho' of late it has been cultivated with good Succeſs in the *Antilles* Iſlands.

The Plant which affords it, reſembles our Ruſh, both in reſpect of Stem, and Flower.—The Root goes no depth under Ground, but ſpreads itſelf near the Surface, in form not unlike a Man's Hand; but very knotty.

When arrived at Maturity, they dig it up, and dry it in Hurdles, either in the Sun, or Oven: The beſt is that which is new, dry, well fed, hard to break, of a ruddy, brown Colour without, reſinous within, and of a hot, pungent Taſte.

They uſe to comfit the Root, when green, with Sugar, and Honey; having firſt ſteep'd it ſome time in Water, to take away part of its Acrimony, and diſpoſe it to part with the Outer-ſkin. They alſo make a Marmelade of it, and dry Cakes.

The Northern People make great uſe of this Confection, as holding it ſoveraign againſt the Scurvy. The *Indians* eat the Root, when green, by way of Salade, firſt chipping it ſmall, mixing it with other Herbs, and ſeaſoning it with Oil and Vinegar.

As to its Medicinal Uſe, it is held good to ſtrengthen the Stomach, and awaken Appetite. It promotes Digeſtion, prevents Putrefaction, *&c.*

GINGER-*Bread*, a richer kind of Bread, the Flavour and Taſte whereof are heighten'd and improv'd with Spices, and particularly *Ginger*; whence the Name. See BREAD.

There are various Forms and Preparations of *Ginger*-Bread: We ſhall content ourſelves with the following one, which is well recommended.

Into a Pound of Almonds, grate a penny white Loaf, ſift, and beat them together: To the Mixture add an Ounce of *Ginger*, ſcraped fine, and Liquorice and Annis Seed in Powder, of each a quarter of an Ounce: Pour in two or three Spoonfuls of Roſe-water, and make the whole into a Paſte, with half a Pound of Sugar: Mould, and roll it, print it, and dry it in a Stove.

Others make it of Treacle, Citron, Lemon, and Orange Peel, with candied *Ginger*, Coriander, and Carroway Seeds, mix'd up with as much Flower as will make it into a Paſte.

GINGIVA, in Anatomy, the *Gums*; a hard ſort of Fleſh, inveſting the Alveoli, or Sockets of the Teeth. See FLESH, and TEETH.

The *Gingivæ* are form'd by the Union of two Membranes; one of which is a Production of the Perioſteum, and the other of the internal Membrane of the Mouth. See MOUTH.

GINGLYMUS, in Medicine, one of the Species of Articulation. See ARTICULATION.

The *Ginglymus* is that Jointure of the Bones, where each Bone mutually receives the other; ſo that each both receives, and is recived. See BONE.

There are three Species of *Ginglymus*: The firſt, when the ſame Bone, at the ſame Extremity, receives and is reciprocally received by another Bone; after the manner of a Hinge: Such is that of the Cubitus and Humerus. See CUBITUS, and HUMERUS.

The ſecond, when a Bone receives another at one of its Extremes, and is received into another, at the other: As the Vetebræ do. See VERTEBRÆ.

The third is that where a Bone is received into another, after the manner of a Wheel, or Axis of a Wheel in a Box: Such is that of the ſecond Vertebra of the Neck in the firſt. See AXIS.

GIN-SENG, or GIN-SEM, in Natural Hiſtory, a very extraordinary and wonderful Plant, hitherto only found in *Tartary*.

The *Gin-ſeng* is one of the principal Curioſities of the *Chineſe*, and *Tartars*: Their moſt eminent Phyſicians have wrote many a Volume of its Virtues.

It is known among them by divers other Names, as the *only ſpirituous*; the *pure Spirit of the Earth*; the *Plant that gives Immortality*, &c. It makes, in effect, the whole *Materia Medica*, for the People of Condition; being too pretious for the Populace.

All the Writers of the *Chineſe* Affairs make mention of the *Gin-ſeng*: As *Martinius*, in his *Atlas*; F. *Kircher*, in his *China Illuſtrata*; F. *Tachard*, in his *Voyages*; and F. *le Comte*, in his *Memoirs*.

And yet we knew but very little of this Plant, before F. *Jartoux*, a Jeſuit, and Miſſionary in *China*; who being employ'd by Order of the Emperor, in making a Map of *Tartary*, in the Year 1709, had an Opportunity of ſeeing it growing

growing in a Village about four Leagues from the Kingdom of *Corea*, inhabited by *Tartars*, call'd *Calca-Tatze*.

That Father took the occaſion to deſign the Plant, and give an accurate Deſcription thereof, with its Virtues, and the manner of preparing it; which, being a great Curioſity, we ſhall here gratify the Reader withal.

The *Gin-ſeng*, repreſented *Tab. Nat. Hiſtory, Fig.* 10. has a white Root, ſomewhat knotty, about thrice the Thickneſs of the Stem, and which goes tapering to the End: At a few Inches from the Head, it frequently parts into two Branches, which gives it ſome Reſemblance of a Man, whoſe Thighs the Branches repreſent: And 'tis hence it takes the Denomination *Gin-ſeng*.

From the Root riſes a perfectly ſmooth, and tolerable round Stem: Its Colour is a pretty deep Red, except toward the Foot, where, by the Neigbourhood of the Earth, it is turn'd ſomewhat whiter. At the Top of the Stem is a ſort of Joint, or Knot, form'd by the ſhooting out of four Branches, which ſpread as from a Centre: The under Side of each Branch is green, mix'd with white; and the upper Part, much like the Stalk, of a deep Red: The two Colours gradually decreaſe, and at length unite on the Sides.

Each Branch has five Leaves, well enough repreſented in the Figure; and 'tis obſervable that the Branches divide equally from each other, both in reſpect of themſelves, and of the Horizon; and with the Leaves make a circular Figure, nearly parallel to the Surface of the Ground.

The Fibres of the Leaves are very diſtinguiſhable, and on the upper Side are ſet with ſmall whitiſh Hairs: The Membrane, or Pellicle between the Fibres, riſes a little in the Middle, above the Level of the Fibres.

The Colour of the Leaf is a dark Green, above, and a ſhining, whitiſh Green underneath; and all the Leaves are finely jagged or indented.

On the Edges, from the Centre of the Branches, ariſes a ſecond Stalk, D E, very ſtraight, ſmooth, and whitiſh, from Bottom to Top, bearing a Bunch of round Fruit, of a beautiful red Colour. This Bunch, in the Plant viewed by our Miſſionary, was compoſed of twenty four Berries; two of which are here repreſented 9, 9.

The Red Skin, that covers the Berry, is very thin, and ſmooth, and contains within it a white Pulp: As theſe Berries were double (for they are ſometimes ſingle) each had two rough Stones, of the Size and Figure of our Lentils. The Pedicles, whereon the Berries were ſupported, all aroſe from the ſame Center; and ſpreading exactly like the Radii of a Sphere, made the Bunch of Berries of a circular Form. The Fruit is not good to eat; and the Stone includes a Kernel: It has alſo a ſmall Beard at the Top, diametrically oppoſite to the Pedicle.

The Plant dies away every Year; the Number of its Years may be known by the Number of Stalks it has ſhot forth; of which there always remains ſome Mark, as is ſhewn in the Figure, by the Letters *b b b*, &c. From whence it appears, that the Root A was ſeven Years old; and the Root H fifteen.

As to the Flowr, F. *Jartoux* owns he had never ſeen it; and therefore could not deſcribe it: Some have aſſured him, that it is white, and very ſmall; others, that there is no Flower at all, and that no body had ever ſeen it. He rather inclines to think it ſo ſmall as to have eſcap'd Notice; and, what confirms him in the Opinion, is, that thoſe who ſeek the *Gin-ſeng*, having nothing in view but its Root, overlook and deſpiſe the reſt as uſeleſs.

As they have ſowed the Seed in vain, without any Plant ever ariſing therefrom; 'tis probable this might give occaſion to the Fable which is current among the *Tartars*:—They ſay, that a Bird eats it, as ſoon as in the Earth; and not being able to digeſt it, it purifies in its Stomach, and afterwards ſprings up in the Place where it was caſt by the Bird with its Dung.—The Miſſionary rather believes that the Stone remains a long time in the Ground, before it takes root; which Opinion appears the more probable, as there are ſome Roots no longer or bigger than ones little Finger, which yet have ſhot forth at leaſt ten Stalks.

Tho' the Plant, here deſcribed, had four Branches; yet there are ſome which have but two; others, three; and others, five, ſix, or ſeven: But each Branch has always five Leaves.

The Heighth of the Plant is proportionable to its Bigneſs, and the Number of Branches the Root has: The larger and more uniform it is, and the fewer ſmall Strings or Fibres it has, the better it is accounted.

'Tis hard, to ſay, why the *Chineſe* ſhould call it *Gin-ſeng*, a Word which ſignifies *Form*, or *Repreſentation*: Neither that Father, nor any he inquir'd of, could ever find that it bore more Reſemblance to the Figure of a Man, than is ordinarily ſeen among other Roots. The *Tartars*, with more Reaſon, call it *Orhota*, that is, the *firſt of Plants*.

Thoſe who gather the *Gin-ſeng*, preſerve only the Root; and all they can get of it in ten, or fifteen Days time, they bury together in ſome Place under Ground. Then they take care to waſh it well, and ſcour it with a Bruſh: Then dip it in ſcalding Water, and prepare it in the Fume of a ſort of yellow Milet, which gives it Part of its Colour.

The Milet is put in a Veſſel, with a little Water, and boil'd over a gentle Fire; the Roots being laid over the Veſſel upon ſmall, tranſverſe Pieces of Wood, being firſt cover'd with a linen Cloath, or ſome other Veſſel, plac'd over them.

They may alſo be dried in the Sun, or by the Fire; but then, tho' they retain their Virtue well enough, they have not that yellow Colour, which the *Chineſe* ſo much admire. When the Roots are dried, they muſt be kept cloſe in ſome very dry Place; otherwiſe they are in danger of corrupting, or being eaten by Worms.

As to the Place where this Root grows, it is between the thirty ninth and forty ſeventh Degree of North Latitude, and between the tenth and twentieth Degree of Eaſt Longitude, reckoning from the Meridian of *Peking*. Here is found a long Tract of Mountains, which the thick Forreſts that cover and encompaſs them, render almoſt unpaſſable. It is upon the Declivities of theſe Mountains, and in theſe thick Forreſts, upon the Banks of Torrents, or about the Roots of Trees, and amidſt a thouſand other different Sorts of Plants, that the *Gin-ſeng* is found. It is not to be met with in Plains, Vallies, Marſhes, the Bottoms of Rivulets, or in Places too much expoſed and open.

If the Foreſt take fire, and be conſumed, this Plant does not appear till two or three Years after: It alſo lies hid from the Sun as much as poſſible, which ſhews that Heat is an Enemy to it.

The Places where the *Gin-ſeng* grows, are on every Side ſeparated from the Province of *Quan-tong*, by a Barrier of wooden Stakes, which incompaſſes this whole Province, and about which Guards continually patroll, to hinder the *Chineſe* from going out, and looking after this Root.

Yet, how vigilant ſoever they are, their Greedineſs after Gain incites the *Chineſe* to lurk about privately in theſe Deſerts, ſometimes to the Number of two or three thouſand; at the hazard of looſing their Liberty, and all the Fruit of their Labour, if they are taken, either as they go out of, or come into the Province.

The Emperor having a mind that the *Tartars* ſhould reap all the Advantage that is to be made of this Plant, rather than the *Chineſe*, gave Orders, in 1709, to ten thouſand *Tartars*, to go and gather all that they could of the *Gin-ſeng*, upon Condition that each Perſon ſhould give him two Ounces of the beſt, and that the reſt ſhould be paid for Weight for Weight, in pure Silver.

It was computed that by this means the Emperor would get this Year about twenty thouſand *Chineſe* Pounds of it, which would not coſt him above one fourth Part of its Value.

We met, by chance, with ſome of theſe *Tartars*, in the Midſt of thoſe frightful Deſerts; and their Mandarins, who were not far out of our Way, came one after another, and offer'd us Oxen for our Subſiſtance, according to the Commands they had received from the Emperor.

This Army of Herbariſts obſerved the following Order: After they had divided a certain Tract of Land among their ſeveral Companies, each to the Number of an hundred Perſons, ſpread itſelf out in a Right Line, to a certain fix'd Place, every ten of them keeping at a diſtance from the reſt.

Then they ſearch'd carefully for the Plant, going on leiſurely in the ſame Order; and in this manner, in a certain Number of Days, they run over the whole ſpace of Ground appointed them.

When the Time is expired, the Mandarins, who are encamp'd with their Tents in ſuch Places as are proper for the Subſiſtance of their Horſes, ſend to view each Troop, to give them freſh Orders, and to inform themſelves if their Number is compleat.

If any one of them is wanting, as it often happens, either by wandring out of the way, or being attack'd by wild Beaſts, they look for him a Day or two, and then return again to their Labour, as before.

The *Gin-ſeng*, we have obſerv'd, is an Ingredient in moſt of the Medicines which the *Chineſe* Phyſicians preſcribe to the better ſort of Patients: They affirm that it is a ſovereign Remedy for all Weakneſſes occaſion'd by exceſſive Fatigues, either of Body, or Mind; that it attenuates and carries off pituitous Humours; cures Weakneſs of the Lungs, and the Pleuriſy; ſtops Vomitings; ſtrengthens the Stomach, and helps the Appetite; diſperſes Fumes, or Vapours; fortifies the Breaſt; is a Remedy for ſhort and weak Breathing; ſtrengthens the vital Spirits, and is good againſt Dizzineſs of the Head, and Dimneſs of Sight, and that it prolongs Life to extreme old Age.

No body can imagine, that the *Chineſe* and *Tartars* would ſet ſo high a Value upon this Root, if it did not conſtantly produce a good Effect: Thoſe that are in Health, often make uſe of it to render themſelves more vigorous and ſtrong; and I am perſuaded it would prove an excellent

Medicine

Medicine in the Hands of any *European* who underſtands Pharmacy, if he had but a ſufficient Quantity of it to make ſuch Trials as are neceſſary to examine the Nature of it chymically, and to apply it in a proper Quantity, according to the Nature of the Diſeaſe for which it may be beneficial.

It is certain that it ſubtiliſes, increaſes the Motion of, and warms, the Blood; that it helps Digeſtion, and invigorates in a very ſenſible manner.

After I had deſigned the Root, I obſerved the State of my Pulſe, and then took half of the Root, raw as it was, and unprepar'd; in an Hour after, I found my Pulſe much fuller and quicker: I had an Appetite, and found myſelf much more vigorous, and could bear Labour better and eaſier than before. Four Days after, finding myſelf ſo fatigued and weary, that I could ſcarce ſit on Horſeback, a Mandarin who was in Company with us, perceiving it, gave me one of theſe Roots: I took half of it immediately, and an Hour after I was not in the leaſt ſenſible of any Wearineſs. I have often made uſe of it ſince, and always with the ſame Succeſs: I have obſerv'd alſo, that the green Leaves, and eſpecially the fibrous Part of them, chewed, would produce nearly the ſame Effect. The *Tartars* often bring us the Leaves of *Gin-ſeng*, inſtead of Tea; and I always find myſelf ſo well afterwards, that I ſhould readily prefer them before the beſt Tea. Their Decoction is of a grateful Colour; and when one has taken it twice, or thrice, its Taſte and Smell become very agreeable.

As for the Root, it is neceſſary to boil it a little more than Tea, to allow time for extracting its Virtue; as is practis'd by the *Chineſe*, when they give it to ſick Perſons; on which occaſion they ſeldom uſe more than the fifth Part of an Ounce of the dried Root.

To prepare the Root for Exhibition, cut it into thin Slices, and put it into an earthen Pot well glazed, with about half a Pint of Water; the Pot to be well cover'd, and ſet to boil over a gentle Fire; and when the Water is conſumed to the Quantity of a Cup full, a little Sugar to be mix'd with it, and to be drank: Immediately after this as much more Water to be put on the Remainder, and to be boiled as before, to extract all the Juice, and what remains of the ſpirituous Part of the Root. Theſe two Doſes to be taken, the one in the Morning, and the other in the Evening.

GIRDERS, in Architecture, the largeſt Pieces of Timber in a Floor—Their Ends are uſually faſten'd into the Summers, or Breſt-Summers, and the Joiſts are framed in at one End to the *Girders*. See JOIST.

By the Statute *for rebuilding London*, no *Girder* is to lie leſs than ten Inches into the Wall; and their Ends to be always laid in Lome, *&c.*

Girders and *Summers* in Length.	*From*		*to*		*muſt be in*			
	F.	In.	F.	In.	Breadth	Inches.	Depth	Inches.
	10	0	15	0	11		8	
	15	0	18	0	13		9	
	18	0	21	0	14		10	
	21	0	24	0	16		12	
	24	0	26	0	17		14	

GIRDING-*Beams*, in Building, the ſame as *Girders*. See GIRDER.

GIRDLE, CINGULUS, or ZONA, a Belt, or Band, of Leather, or other Matter, tied about the Reins; to keep the Part more firm, and tight.

It was antiently the Cuſtom for Bankrupts, and other Ceſſionaries, to put off, and ſurrender their *Girdle*, in open Court—The Reaſon hereof, was, that our Anceſtors uſed to carry all their neceſſary Utenſils, as Purſe, Keys, *&c.* tied to the *Girdle*; whence the *Girdle* became a Symbol of the Eſtate. Hiſtory relates, that the Widow of *Philip* I. Duke of *Burgundy*, renounced her Right of Succeſſion, and put off her *Girdle* on the Duke's Tomb. See INVESTITURE.

The *Romans* always wore a *Girdle*, to tuck up the Gown when they had occaſion to do any thing. This Cuſtom was ſo general, that ſuch as went without *Girdles*, and let their Gowns hang looſe, were reputed idle, diſſolute Perſons.

Maidens or *Virgins* GIRDLE—It was the Cuſtom among the *Greeks*, and *Romans*, for the Husband to untie his Bride's *Girdle*.

Homer, *lib.* 11. of the *Odyſſey*, calls this *Girdle* παρθένιον ζωνον, Maid's *Girdle*. *Feſtus* relates, that this *Girdle* was made of Sheep's Wool; and that the Husband untied it in Bed. He adds, that it was tied in the *Herculian* Knot; and that the Husband untied it, as a happy Preſage of his having as many Children as *Hercules*, who at his Death left ſeventy behind him.

The Poets attribute to *Venus* a particular kind of *Girdle*, called *Ceſtus*; to which they annex a Faculty of inſpiring the Paſſion of Love. See CESTUS.

Quickſilver GIRDLE, in Medicine, is a ſort of *Girdle* ſmeered over with Mercury, or having Mercury incloſed within it. See MERCURY.

It is made of Leather, Linen, Cloth, Cotton, Stuff, or the like, and the Mercury prepared or killed various ways; as with faſting Spittle, Fat, or the like.

It is applied as a Topical Medicine about the Waſte, ſometimes with good Effect, but frequently proves dangerous, principally in weak Conſtitutions, and thoſe ſubject to Convulſions.

Its Intention is, the Cure of the Itch, driving away Vermin, killing Lice, *&c.*

Queens GIRDLE, is an antient Duty, or Tax, rais'd at *Paris* every three Years, at the rate of three Deniers upon each Muid of Wine, and ſix for each Queue. It was intended for the Maintenance of the Queen's Houſhold: Afterwards they augmented and extended it to other Commodities, as Coals, *&c.*

Vigenere ſuppoſes it to have been originally thus called, by reaſon the *Girdle* antiently ſerved for a Purſe; but he adds, that a like Tax had been raiſed in *Perſia*, and under the ſame Name, above two thouſand Years ago; as appears from *Plato*, in his *Alcibiades*, *Cicero*, *Atheneus*, &c.

Chriſtians of the GIRDLE. *Motavackkel*, tenth Calif of the Family of the *Abaſſides*, enjoin'd the Chriſtians, and *Jews* in the Year of the Hegira, 235; of Jeſus Chriſt, 856, to wear a large leathern *Girdle*, as a Badge of their Profeſſion; which they bear to this Day throughout the Eaſt: From which time the Chriſtians of *Aſia*, and particularly thoſe of *Syria* and *Meſopotamia*, who are almoſt all *Neſtorians*, or *Jacobites*, have been called *Chriſtians of the Girdle*.

Order of the GIRDLE, the Order of *Cordeliers*; ſee CORD, and CORDELIER.

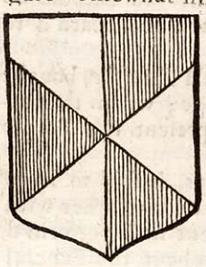
GIRDLE, in Architecture; ſee CINCTURE.

GIRLE, among Hunters, is a Roe-buck of two Years.

GIRON, or GUIRON, in Heraldry, a Gore, or triangular Figure, having a long, ſharp Point, like the Step of a ſpiral Stair Caſe, and ending in the Centre of the Eſcutcheon.

When a Coat has ſix, eight, or ten of theſe *Girons*, meeting or centring in the Middle of the Coat, it is ſaid to be *Gironne*, or *Gironny*. See GIRONNE.

The Word is *French*, and literally ſignifies the *Gremium*, or Lap; by reaſon, in ſitting, the Knees being ſuppoſed ſomewhat aſunder, the two Thighs, together with a Line imagin'd to paſs from one Knee to the other, forms a Figure ſomewhat ſimular hereto.



GIRONNE, GIRONNY, in Heraldry, is when a Shield or Coat is divided into ſeveral *Girons*, which are alternately Colour and Metal; as in the adjoining Figure, which we Blazon, *Gironne* of ſix Argent and Sable.

When there are eight pieces or *Girons*, it is abſolutely ſaid to be *Gironne*; when there are more, or fewer, the Number is to be expreſs'd—*Gironne* of four, of fourteen, *&c.*

Some, inſtead of *Gironne*, ſay, *Parti*, *Couppé Trenché*, and *Faillé*, by reaſon the *Girons* are form'd by ſuch Diviſions of the Field.

Four *Girons* form a *Salteer*, and eight, a *Croſs*, See SALTEER, &c.

GIVEN, *Datus*, a Term frequently uſed in Mathematicks, ſignifying ſomething which is ſuppoſed to be known. See DATA.

Thus, if a Magnitude be known, or we can find another equal to it, we ſay, it is a *given Magnitude*, or that ſuch a Thing is *given* in Magnitude. See MAGNITUDE.

If the Poſition of any thing be ſuppoſed as known, we ſay, *Given in Poſition*. See POSITION.

Thus, if a Circle be actually deſcribed on a Plain, its Centre is *Given in Poſition*; its Circumference *Given in Magnitude*; and the Circle is *Given* both *in Poſition*, and *Magnitude*.

A Circle may be *given* in Magnitude only, as when only its Diameter is *given*, and the Circle not actually deſcribed.

If the Kind, or Species of any Figure be *given*, they ſay, *given in Specie*.—If the Ratio between any two Quantities is known, they are ſaid to be *given in Proportion*.

GLACIALIS, ICY, ſomething relating to Ice; and particularly, a Place that abounds in Ice.

Thus, we ſay, the *Mare Glaciale*, or *Congelatum*, that is, the Icy, or Frozen Sea; call'd alſo *Chronian* Sea, or *Sarmatian* Sea. See SEA.

The Word is form'd of the Latin *Glacies*, Ice. See ICE.

GLACIS, in Building, *&c.* is an eaſy, inſenſible Slope, or Declivity. See DECLIVITY.

The Deſcent, or Inclination of the *Glacis* is leſs ſteep than that of the *Talut*. See TALUT.