made longer or ſhorter, by Strokes of different Length or Quickneſs.

This Continuity, is, properly, a Succeſſion of ſeveral *Sounds*, or the Effect of ſeveral diſtinct Strokes, or repeated Impulſes on the ſonorous Body, ſo quick, that we judge it one continued *Sound*; eſpecially if it be continued in the ſame degree of Strength: And hence ariſes the Doctrine of *Meaſure* and *Time*. See TIME.

Sounds, again, are diſtinguiſhed, with regard to Muſic, into *Simple* and *Compound*; and that two Ways:

In the Firſt, a *Sound* is ſaid to be *Compound*, when a Number of ſucceſſive Vibrations of the ſonorous Body and the Air, come ſo faſt upon the Ear, that we judge them the ſame continued *Sound*; as in the Phænomenon of the Circle of Fire, cauſed by putting the fir'd End of a Stick in a quick, circular Motion; where, ſuppoſing the End of the Stick in any Point of the Circle, the Idea we receive of it there, continues till the Impreſſion is renewed by a ſudden Return.

A *ſimple Sound*, then, with regard to this Compoſition, ſhould be the Effect of a ſingle Vibration, or of ſo many Vibrations as are neceſſary to raiſe in us the Idea of *Sound*. In the Second Senſe of Compoſition, a *ſimple Sound* is the Product of one Voice, or one Inſtrument, &c.

A *compound Sound*, conſiſts of the *Sounds* of ſeveral diſtinct Voices or Inſtruments all united in the ſame individual Time and Meaſure of Duration, that is, all ſtriking the Ear together, whatever their other Differences may be: But in this Senſe, again, there is a two-fold Compoſition; a *Natural* and *Artificial* one.

The natural Compoſition, is that proceeding from the manifold Reflexions of the firſt *Sound* from adjacent Bodies, where the Reflexions are not ſo ſudden, as to occaſion Eccho's; but are all in the ſame Tune with the firſt Note. See RESONANCE.

The artificial Compoſition, which alone comes under the Muſicians Province, is, that Mixture of ſeveral *Sounds*, which being made by Art, the Ingredient *Sounds* are ſeparable, and diſtinguiſhable from one another. In this Senſe, the diſtinct *Sounds* of ſeveral Voices or Inſtruments, or ſeveral Notes of the ſame Inſtrument, are called *Simple Sounds*; in contradiſtinction to the *Compound* ones, wherein, to anſwer the End of Muſic, the Simples muſt have ſuch an Agreement in all relations, chiefly as to Acuteneſs and Gravity, as that the Ear may receive the Mixture with Pleaſure. See COMPOSITION.

Another Diſtinction of *Sounds*, with regard to Muſic, is that, whereby they are ſaid to be *ſmooth* and *even*, or *rough* and *harſh*, alſo *clear* and *hoarſe*; the Cauſe of which Differences, depends on the Diſpoſition and State of the ſonorous Body, or the Circumſtances of the Place; but the Ideas of the Differences muſt be ſought from Obſervation.

Smooth and *rough Sounds* depend, principally, on the *ſounding* Body; Of theſe we have a notable Inſtance in Strings that are uneven, and not of the ſame Dimenſion or Conſtitution throughout.

M. *Perrault*, to account for *Roughneſs* and *Smoothneſs*, maintains, there is no ſuch thing as a ſimple *Sound*; but that the *Sound* of the ſame Chord or Bell, is a Compound of *Sounds* of the ſeveral Parts of it; ſo that where the Parts are homogeneous, and the Dimenſions, or Figure uniform, there is always ſuch a perfect Mixture and Union of all the *Sounds*, as makes one uniform and ſmooth *Sound*: Contrary Conditions, produce *Harſhneſs*. In effect, a Likeneſs of Parts and Figure, makes an Uniformity of Vibrations, whereby a great Number of ſimilar and coincident Motions conſpire to fortify and improve each other, and unite, for the more effectual producing of the ſame Effect.

This Account he confirms, from the Phænomena of a Bell, which differs in Tone, according to the Part 'tis ſtruck in; and yet ſtrike it any where, there is a Motion over all the Parts. Hence, he conſiders the Bell as compoſed of an infinite Number of Rings, which, according to their different Dimenſions, have different Tones; as Chords of different Lengths have; and when ſtruck, the Vibrations of the Parts immediately ſtruck, ſpecify the Tone, being ſupported by a ſufficient Number of Conſonant Tones in other Parts. This muſt be allowed, that every Note of a ſtring'd Inſtrument, is the Effect of ſeveral ſimple *Sounds*: For there is not only the *Sound* reſulting from the Motion of the String; but that from the Motion of the Parts of the Inſtrument, which has a conſiderable Effect in the total *Sound*, as is evident from hence, that the ſame String on different Violins, *ſounds* very differently.

But *Perrault* affirms the ſame of every String in itſelf, and without conſidering the Inſtrument. Every Part of the String, he ſays, has its particular Vibrations, different from the groſs and ſenſible Vibrations of the whole; and theſe are the Cauſes of different Motions and *Sounds* in the Particles, which uniting, compoſe the whole *Sound* of the String, and make an uniform Compoſition, wherein the Tone of the particular Part ſtruck, prevails; and all the others mix under a due Subordination with it, ſo as to make the Compoſition ſmooth and agreeable. If the Parts be unevenly, or irregularly conſtituted, the *Sound* is harſh; which is the Caſe in what we call *falſe Strings*, and various other Bodies; which, for this Reaſon, have no certain and diſtinct Tone; but a Compoſition of ſeveral Tones, which don't unite and mix, ſo as to have one predominant, to ſpecify the total Tone.

As to *clear* and *hoarſe Sounds*, they depend on Circumſtances that are accidental to the ſonorous Body: Thus a Voice or Inſtrument will be hollow and hoarſe, if raiſed within an empty Hogſhead, that yet is clear and bright out of it: The Effect is owing to the Mixture of other and different *Sounds*, raiſed by Reflexion, which corrupt and change the Species of the primitive *Sound*.

For *Sounds* to be fit to obtain the End of Muſic, they ought to be *ſmooth* and *clear*, eſpecially the firſt; ſince without this, they cannot have one certain and diſcernable Tone, capable of being compared to others, in a certain relation of Acuteneſs, of which the Ear may judge; and of Conſequence can be no Part of the Object of Muſic. Upon the whole, then, with Mr. *Malcolm*, we call that a *harmonic* or *muſical Sound*, which being *clear* and *even*, is agreeable to the Ear, and gives a certain and diſcernable Tune; (hence called *tunable Sound*) which is the Subject of the whole Theory of Harmony. See HARMONY.

SOUND, in Geography, a Streight, or Inlet of the Sea, between two Capes or Head-lands. See STREIGHT.

The Word is particularly uſed, by way of Eminence, for that famous Streight, which joins the *German* Sea to the *Baltic*.

It is ſituate between the Iſland of *Zeland* and the Coaſt of *Schonen*. 'Tis about ſixteen Leagues long, and generally five broad, excepting againſt the Caſtle of *Cronenbourg*, where 'tis but one: So that there is no Paſſage for Veſſels, but under the Cannon of the Fortreſs.

This has given occaſion to the *Danes* to ſettle a Toll on all Veſſels, which is one of the beſt Revenues of the Crown of *Denmark*; and to forbid all Pilots from paſſing through the great and little Belt, which are two other Inlets into the *Baltic*, though ſomewhat leſs commodious than the former. The *Swediſh* Veſſels are exempted from paying this Toll, by the Treaty of 1658, whereby the *Danes* yielded *South-Gothland* to the *Swedes*. See TOLL.

SOUND-*Board*, the principal Part of an Organ, and that which makes the whole Machine play. See ORGAN.

The *Sound-board* or *Summer*, is a Reſervoir, into which the Wind drawn in by the Bellows, is conducted by a Port-vent, and hence diſtributed into the Pipes placed over the Holes of its upper Part. This Wind enters them by Valves, which open by preſſing upon the Stops or Keys, after drawing the Regiſters, which prevent the Air from going into any of the other Pipes, but thoſe 'tis required in.

Organs, whoſe longeſt blind Pipes are four Foot, have their *Sound-Board* from five to ſix Feet. Organs of 16 Feet have two *Sound-Boards*, which communicate the Wind from one to the other, by a Pewter Port-vent.

SOUNDING, in Navigation, the trying of the Depth of the Water, and the Quality of the Bottom, by a Line and Plummet, or other Artifice.

There are two Kinds of Lines occaſionally uſed in *Sounding* the Sea; the *Sounding Line* and the *deep Sea Line*.

The firſt, is the thickeſt and ſhorteſt, as not exceeding 20 Fathom in Length; and marked at two, three and four Fathoms, with a Piece of black Leather between the Strands; and at Five, with a Piece of white Leather.

The *Sounding* Line may be uſed when the Ship is under Sail, which the deep Sea-Line cannot. The Plummet is uſually in form of a Nine-pin, and weighs 18 Pounds; the End is frequently greaſed, to try whether the Ground be Sandy or Rocky, &c. Near Banks, Shores, &c. they are *Sounding* continually.

Dr. *Hook* has invented a manner of *Sounding* the Depth of the deepeſt Sea, without any Line; only by a wooden Globe, lighter than Water, to which, at a little Diſtance is a piece of Lead or Stone fix'd, by means of a ſpringing Wire in the Firſt, fitted into a Staple in the Second. The whole being let gently down, with the Stone or Lead foremoſt, aſſoon as that arrives at the Botom, it will ſtop; but the Ball, by the Impetus it has acquired in deſcending, will be carried a little lower after the Weight is ſtopp'd; by which means the ſpringing Wire will be inabled to fly back, and diſingaging itſelf, will reaſcend.

By obſerving, then, the Time of the Ball's ſtay under Water by a Watch or Pendulum, and the Help of ſome Tables; the Depth of the Sea is found.

In ſome Experiments made in the *Thames* with a maple Globe, 5 $\frac{13}{16}$ Inches in Diameter, and weighing 4 Pound and a Half, lined with Pitch; and a conical Weight 11 Inches long, the ſharp End downwards; at the Depth of 19 Feet, there paſſed ſix Seconds; and at the Depth of 10 Feet 3 $\frac{1}{2}$ Seconds between the Immerſion and Emerſion of the Ball. From theſe Numbers given, the Depths, at any other ſtays, may be computed by the Rule of Three.

SOUP, a kind of Potage made of Bread, and Broth or

the Juice of Fleſh, or other Matters; uſually ſerved at the beginning of a Meal.

Soup is eſteem'd eſſential to a *French* Meal. Occaſionally, they improve the Reliſh by the Addition of Onions or Leaks, or Cabbage or Turnips, &c. The Word is *French*, form'd from the *Italian*, *Zuppa* or *Suppa*, of the *Latin*, *Sapa*, Wine boil'd away to a Third Part. Others derive it from the *German*, *Soupp*, or the *Celtic*, *Souben*, which ſignify the ſame Thing.

SOURCE. See SPRING.

SOUTH *direct Dials*, SOUTHERN *Signs*, } See { DIAL. SIGN.

SOWING. See SEMINATION and SEMBRADOR.

SOWNE, a Term uſed in the *Exchequer*; ſeeming to be a Corruption from the *French Souvenu*; that is, remembred. For the Statute, 4 *H.* 5. *c.* 7. in the Original *French*, hath *Des Eſtreats oriens Souvenu*. And ſuch Eſtreats and Caſualties, as are not to be remembred, run not in Demand, that is, are not Leviable. So now in the *Exchequer*, they ſay, ſuch Eſtreats, as the Sheriff by his Induſtry cannot get, are Eſtreats that *Sowne* not; and Eſtreats that *Sowne*, are ſuch as he may gather. See ESTREAT.

SPACE, a ſimple Idea. The Modes, whereof, are Diſtance, Capacity, Extenſion, Duration, &c. See MODE, EXTENSION, DURATION, &c.

SPACE, in Philoſophy, conſidered barely in Length between any two Bodies; is the ſame Idea which we have of Diſtance. See DISTANCE.

If it be conſidered in Length, Breadth and Thickneſs, it is properly called *Capacity*. See CAPACITY.

When conſidered between the Extremities of Matter, which fills the Capacity of *Space*, with ſomething Solid, Tangible and Moveable, it is then called EXTENSION. So that Extenſion is an Idea belonging to Body only; but *Space*, it is plain, may be conſidered without it. See BODY.

Space, therefore, in the general Signification, is the ſame thing with Diſtance, conſidered every Way, whether there be any ſolid Matter in it or not.

Accordingly, *Space*, is either *Abſolute* or *Relative*.

Abſolute Space, is that conſidered in its own Nature, without regard to any thing External; which always remains the ſame; and is infinite and immoveable.

Relative Space, is that moveable Dimenſion, or Meaſure of the former, which our Senſes define by its Poſitions to Bodies within it; and this the Vulgar uſe for immoveable *Space*.

Relative *Space*, in Magnitude and Figure, is always the ſame with Abſolute; but it is not neceſſary it ſhould be ſo numerically; as if you ſuppoſe a Ship to be, indeed, in abſolute Reſt, then the Places of all Things within her, will be the ſame Abſolutely and Relatively, and nothing will change its Place: But, ſuppoſe the Ship under Sail, or in Motion, and ſhe will continually paſs through new Parts of abſolute *Space*: But all Things on Board, conſidered relatively, in reſpect to the Ship, may be, notwithſtanding, in the ſame Places, or have the ſame Situation and Poſition, in regard to one another.

Proper and abſolute Motion, is defined to be the Application of a Body to different Parts of *Abſolute*, that is, of *infinite* and *immoveable Space*. See PLACE, MOTION and REST.

The *Carteſians*, who make Extenſion the Eſſence of Matter, aſſert, That the *Space* any Body takes up, is the ſame thing with the Body itſelf; and that there is no ſuch Thing as mere *Space*, void of all Matter, in the Univerſe: But this ſee diſproved under the Article VACUUM.

SPACE, in Geometry, is the Area of any Figure; or that which fills the Intervals or Diſtance between the Lines that terminate it. See AREA and FIGURE.

The *Parabolic Space*, is that included in the whole Parabola. See PARABOLA.

The *Conchoidal Space*, and the *Ciſſoidal Space*, are what are included within the Cavity of the Conchoid and Ciſſoid.

By the new Methods now introduced, of applying Algebra to Geometry, 'tis demonſtrated, That the *Conchoidal* and *Ciſſoidal Spaces*, though infinitely extended, are yet finite Magnitudes. See CONCHOID and CISSOID.

SPACE, in Mechanicks, the Line a moveable Body, conſider'd as a Point, is conceived to deſcribe by its Motion. See MOTION.

SPHÆNOPHARYNGÆUS, in Anatomy, a Pair of Muſcles, called alſo *Pterygopharyngæus*, *Cephalopharyngæus*, &c. See PTERYGOPHARYNGÆUS.

SPAGYRIC, an Epithet given to Chymiſtry; which is called the *Spagyric Art*, or *Medicina Spagyrica*; and to Chymical Phyſicians, who are alſo called *Spagyriſts*. See CHYMISTRY.

Voſſius derives the Word from the *Greek*, σπᾶν, to *extract*, and ἀγείρειν, *congregare* to *collect*; which are the two principal Offices of Chymiſts. *Paracelſus* firſt introduced the Word.

SPAHI, a Horſe-man in the Ottoman Army, chiefly raiſed in *Aſia*.

The chief Strength of the Grand Signor's Army conſiſts in the Janiſaries, who are the Foot, and the *Spahi*'s, who are the Horſe. See JANISARY, &c.

The Aga or Commander of the *Spahi*'s, is alſo called *Spahi Agaſi*.

SPALT, or SPELT, a white, ſcaly, ſhining Stone, frequently uſed to promote the Fuſion of Metals. 'Tis found pretty frequently in *England* and *Germany*; and ſometimes brought from the *Levant*. The beſt is in long Scales, very ſoft, and eaſily pulveriz'd. The *Engliſh Spalt* is generally very hard.

SPAN, a Meaſure taken from the Space between the Thumb's End, and the Top of the little Finger, when both are ſtretch'd out. The *Span* is eſtimated at three Hands-breadth's, or nine Inches. See MEASURE.

SPANISH, or the SPANISH *Language*. See LANGUAGE.

SPANISH-*Flies*. See CANTHARIDES.

SPANISH-*Inquiſition*, &c. See INQUISITION.

SPAR, in Natural Hiſtory, a ſhining, ſtony Subſtance, frequently found in Caves and Grotto's, in the Clefts of Rocks, Lead-Mines, &c. See STONE, GROTTO, &c.

Mr. *Beaumont*, in the *Philoſophical Tranſactions*, endeavours to account for the Origin and Growth of *Spar*; which he makes to be a kind of *Rock Plant*.

Spar, he obſerves, may be form'd three Ways; either from Steams alone, or from Steams coagulating Dew, as it falls on the Ground, or Waters iſſuing from the Joints of Rocks: Or, it may grow from Earths and Clays. To ſay nothing of the Account we have from *Switzerland*, *viz.* That Snow, by long lying and continual Froſts, becomes hardened into *Spar*.

We have Inſtances of the firſt Kind in many Grotto's where *Spars* produced from Steams, hang like Icicles; Lead Ore being often found to grow in the ſame Manner. And as this *Spar* grows downwards; ſo in many Places, from the Sides of it, iſſue little Plants of *Spar*, ſhooting upwards, contrary to the Tendency of the others. An Inſtance of the Second, we have in a certain Place in *Italy*, where Cryſtals (which are a ſort of *Spars*) are produced in clear Evenings, from a Coagulation of Dew falling on Nitrous Stones. But hereof we have Inſtances enough nearer Home. See STALACTITES.

For the third Kind of Generation of *Spar*, never before taken Notice of by Naturaliſts; Mr. *Beaumont* gives us Inſtances of it in *Mendip* Hills, and other Mines, wherein are Subterraneous Vaults or Grotto's. In the Bottoms of ſome of theſe, is a Steam incumbent thereon. From this Earth, ſhoots up Spires of various Heights, &c. from the firſt Buddings out of it, till it is come as high as a Man's Finger; the biggeſt ordinarily an Inch in Diameter. Theſe Spires have all irregular Ridges and Furrows; and ſome ſooner, ſome later, begin on the Tops to be congealed into *Spar*; and ſo gathering a Cruſt downwards by degrees, are all at laſt, turned into an abſolute *white Spar* or Stone. See PETRIFACTION.

SPARADRAP, in Pharmacy, &c. an ancient Name for a Sear-cloth, or Cere-cloth; or a Cloth ſmear'd on each Side with a kind of Plaiſter. See CERE-CLOTH.

'Tis prepared by melting a ſufficient Quantity of ſome Plaiſter or Unguent, and dipping a linnen Cloth therein, till ſuch time as it have imbibed its fill. 'Tis then taken out, cool'd and poliſh'd on a Marble.

There are as many different Kinds of *Sparadrap*, as there are of Plaiſters for the Cloth to be dipp'd in. 'Tis ſometimes alſo called *Tela Gualteriana*.

SPARRING, among Cock-fighters, is the fighting a Cock with another to breathe him. In *ſparring*, they put Hotts on their Spurs, that they may not hurt one another. To *ſparr the Cock*, imports in general, to breathe him, to embolden him to Fight.

SPASMA or SPASMUS, in Medicine, a *Greek* Term, σπασμα, of equal Import with the *Latin*, *Convulſio*, and the *Engliſh*, *Convulſion*. See CONVULSION.

A *Spaſmus* happening after the taking of Hellebore, or any other violent Purgative, is mortal.

There are *Spaſma*'s peculiar to certain Members, and diſtinguiſhed by particular Names: That of the Mouth is called *Spaſmus Cynicus*; that of the Penis, *Satyriaſis*, &c. See SATYRIASIS, CYNICUS, &c.

Cardan diſtinguiſhes two Kinds of *Spaſma*'s: The firſt conſiſting in a conſtant Contraction of the Muſcles, which renders the Members rigid, and inflexible. The Second, in ſudden, unnatural Motions and Palpitations, frequently intermitting and beginning again.

Accidental *Spaſmi*, are of little Continuance: There are ſome ariſing from Flatulencies; from Bites of venomous Beaſts, from the Puncture of a Nerve, the Acrimony of the Humours vellicating the Stomach, Vapours of the Matrix, exceſſive Cold, &c.

SPASMODIC, ſomething belonging to a *Spaſma*, or Convulſion;

vulſion; as a *Spaſmodic Medicine*, *Spaſmodic Diſeaſe*, &c. See SPASMA.

Hunger, according to M. *Hecquet*, is a *Spaſmodic Affection* of the Fibres of the Stomach; unleſs it ariſes from the Fibres being too much moiſten'd by the Liquor thereof, ſo as to incapacitate them for their Office. See HUNGER.

SPATULA, an Inſtrument uſed by Surgeons and Apothecaries; made flat at one end, and round at the other. The Surgeons have little Silver or Steel *Spatulas*, to ſpread their Plaiſters and Unguents withal.

The Apothecaries have large ones of Wood, to ſtir their Drugs in diluting, tempering or boiling them. The Word is form'd from the *Latin*, *Spathus*, of the *Greek* σπάθιον.

SPAVIN, a Diſeaſe in a Horſe; being a Swelling or Stiffneſs in the Ham, that cauſes him to halt.

There are two Kinds of *Spavins*, *viz.* the *Ox-Spavin*, which is a callous Tumour, at the Bottom of the Ham, on the Inſide, hard as a Bone, and very painful. While 'tis yet young, ſome Horſes only halt with it, at the firſt coming out of the Stable.

The *dry Spavin* is more eaſily perceived, by the Horſe's raiſing one of his hind Legs, with a Twitch, higher than the other. Sometimes 'tis found on both Legs. This Kind frequently degenerates into the *Ox-Spavin*, for which there is no Remedy, but to apply the Fire; which, however, is not always ſucceſsful.

The Word is form'd from the *French*, *Eſparvin*, which ſignifies the ſame thing.

There are two other Kinds of *Spavin*, which have their Seat in the Hoof, *viz.* the *Blood Spavin*, and *Bone Spavin*; which ſee under their proper Articles.

SPAWS, are Springs of Water, ariſing out of Minerals in the Earth, or from Mines of Nitre, Sulphur, Allum, Bitumen, Copperas, &c. See MINERAL and WATER.

Spaws are phyſical Waters, ſome purging by Urine, others by Vomit, and Stool.

That in *Yorkſhire* is the moſt noted of this Kind in *England*. See BATH.

SPAYING, the Operation of Caſtrating the Females of ſeveral Kinds of Animals, as Sows, Bitches, &c. to prevent any further Conception, and promote their fattening. See CASTRATION.

'Tis perform'd, by cutting them in the mid Flank, on the left Side, with a ſharp Knife or Lancet, taking out the Birth-Bag and cutting it off, and ſo ſtitching up the Wound, anointing the Sore with Tar, and keeping the Animal warm for two or three Days.

The uſual Way, is to make the Inciſion a-ſlope, two Inches and a Half long, that the Fore-finger may be put in towards the Back, to feel for Two Kernels, as big as Acorns on both Sides the Birth, one of which is drawn to the Wound, the String thereof cut, and thus both taken out.

SPEAKER, a Member of the Houſe of Commons, elected by a Majority of the Votes thereof, to act as Chair-man, or Preſident, in putting Queſtions, reading Briefs or Bills, keeping Order, reprimanding the Refractory, adjourning the Houſe, &c.

The firſt Thing done upon the firſt Meeting of a Parliament, is to chuſe a *Speaker*; who is to be approved of by the King; and who upon his Admiſſion, begs his Majeſty, That the Commons, during their Sitting, may have *free Acceſs to his Majeſty*; *Freedom of Speech in their own Houſe*, and *Security from Arreſts*.

The *Speaker* is not allowed to perſuade or diſſuade, in paſſing of a Bill; but only to make a ſhort and plain Narrative; nor to Vote, unleſs the Houſe be equally divided. See PARLIAMENT.

The Lord Chancellor is uſually *Speaker of the Houſe of Lords*. See CHANCELLOR.

The *Speaker of the Convocation*, is called the *Prolocutor*. See PROLOCUTOR.

SPEAKING, the Art or Act of expreſſing one's Thoughts in articulate Sounds or Words. See WORD and VOICE; ſee alſo SPEECH and GRAMMAR.

Pliny, *Ælian*, *Plutarch* and other Authors, make mention of ſeveral Beaſts that have *Spoke*: And *Pliny* himſelf, ſpeaks with Aſſurance, in his Hiſtory, of an Ox that *Spoke*. *Philoſtrates*, in his Life of *Apollonius*, gives the like Privilege to an Elm, and even to Ships. *Homer* makes *Xanthos*, one of *Achilles*'s Horſes, ſpeak; wherein he has been followed by *Oppian*. But theſe are all fabulous: We have much better Authority for a Serpent, and an Aſs's ſpeaking. See LANGUAGE.

SPEAKING-*Trumpet*. See TRUMPET.

SPECIAL, ſomething that has a particular Deſignation; from the *Latin*, *Species*; in Oppoſition to *general*, of *Genus*. See SPECIES and GENUS.

The King in his Letters, frequently ſays, of our *Special Grace*, full Power and royal Authority.

SPECIAL *Matter*, in Evidence, in Law. See GENERAL *Iſſue*.

SPECIAL *Verdict*, &c. See VERDICT, &c.

SPECIALTY, in Law, is moſt commonly taken for a Bond, Bill, or ſuch like Inſtrument. Sometimes it is alſo uſed for *Special* or particular Acquaintance.

SPECIES, an Idea, which relates to ſome other more general one; or is compriz'd under a more univerſal Diviſion of a Genus. See GENUS.

Species is a mere Term of Relation: And the ſame Idea may be a *Species*, when compared to another more general one; and a *Genus*, with regard to a more particular one. Thus Body is a *Genus*, with regard to an animate and inanimate Body; and a *Species*, with regard to Subſtance.

The laſt *Species*, is that which can only be divided into Individuals. See INDIVIDUAL.

Animal is a *Species*, with regard to Body; and Man is a *Species* with regard to Animal. God deſtroy'd Mankind by the Deluge; but he preſerv'd the *Species*. See DELUGE.

SPECIES, in Logic, is one of the Five Words, call'd by *Porphyry*, *Univerſals*. See UNIVERSAL.

The Word is *Latin*, form'd from the ancient Verb, *Specio*, I ſee; as if a *Species* of Things were a Collection of all the Things ſeen at one View.

SPECIES, in Rhetoric, is a particular Thing, contained under a more univerſal one.

The Orators alſo call it *Hypotheſis*, *E. gr.* Virtue is to be loved, is the *Genus* or *Theſis*. Temperance is to be preſerved here, at this Time, is the *Species* or *Hypotheſis*. See THESIS.

SPECIES, in the ancient Muſic, a Sub-diviſion of one of the Genera.

The Genera of Muſic were Three, the *Enharmonic*, *Chromatic* and *Diatonic*; the two laſt of which were variouſly ſub-divided into *Species*; nor was the Firſt without *Species*, though thoſe had not particular Names as the *Species* of the other Two had.

Theſe *Species* were alſo called the *Chroai*, Colours of the Genera: The Conſtitution whereof, ſee under the Article GENERA.

SPECIES, in Opticks, the Image painted on the Retina by the Rays of Light reflected from the ſeveral Points of the Surface of Objects, received in at the Pupilla, and collected, in their Paſſage through the Cryſtallin, &c. See VISION.

The Philoſophers have been in great Doubt, whether the *Species* of Objects, which give the Soul an Occaſion of *Seeing*, are an Effuſion of the Subſtance of the Body; or a mere Impreſſion which they make on all ambient Bodies, and which they all reflect, when in a proper Diſtance and Diſpoſition; or, laſtly, whether they are not ſome other more ſubtile Body, as Light, which receives all theſe Impreſſions from Bodies, and is continually ſent and returned from one to other, with the different Figures and Impreſſions it had taken on all Sides: But the Moderns have decided this Point by their Invention of artificial Eyes, wherein the *Species* of Objects are received on a Paper or Linnen-cloth in the ſame manner as they are received in the natural Eye. See EYE.

The Ancients have diſtinguiſhed the *Species*, whereby Objects become viſible, into *Impreſſæ* and *Expreſſæ*.

Impreſs'd Species are ſuch, as come from without; or are ſent from the Object to the Organ; ſuch are thoſe we have already been ſpeaking of.

Expreſs'd Species, are thoſe, on the contrary, from within; or that are ſent from the Organ to the Object.

Le Clerc, in his Syſtem of Viſion, by one of thoſe Revolutions very frequent in philoſophical Opinions, has call'd upon the Stage again the *Species expreſſæ*, of the ancient Philoſophers. For, according to him, 'tis not by *Species* or Images impreſs'd on the Optic Nerve, that the Soul ſees Objects; but by Rays, which ſhe herſelf directs to them, and which ſhe uſes as a Blind Man does his Staff, to grope out Objects.

The Peripateticks account for Viſion, from a kind of *Intentional Species*, thus: Every Object, ſay they, expreſſes a perfect Image of itſelf on the Air next to it. This expreſſes another leſſer one on the Air next to that; and this a Third ſtill leſs. Thus are the Images continued from the Object to the Cryſtallin, which theſe Philoſophers hold the principal Organ of Seeing. Theſe they call *Species Intentionales*; and to account the better for their Generation, affirm, That Objects exhibit them in the ſame Manner, as Mirrors do a Man's Face.

SPECIES, in Theology, the Appearances of the Bread and Wine in the Sacrament, after Conſecration: Or, as the *Romaniſts* call them, the Accidents remaining in the Bread, &c. whereby they become ſenſible to us, after their Subſtance is deſtroy'd.

The *Species* of the Bread, &c. are its Whiteneſs, Quantity, Figure, Friableneſs, &c. Of Wine, its Flavour, Quickneſs, ſpecific Gravity, &c.

The Generality of the *Romiſh* Divines, hold, That the *Species* are abſolute Accidents: And the *Carteſians*, who are bound to deny any ſuch Things as abſolute Accidents, are greatly puzzled to explain the *Species*, without incurring the Cenſure of Hereſy. F. *Magnan* is forced to aſſert, That the

the *Species* are mere Deluſions and Appearances, which God impreſſes on our Senſes. See ABSOLUTE *Accident*.

SPECIES, in Commerce, are the ſeveral *Pieces* of Gold, Silver, Copper, &c. which having paſs'd their full Preparation, and Coinage, are currant in Public. See COIN.

Species decried, or *cried down*, are ſuch as the Prince has forbidden to be received in Payment.

Light Species, are thoſe that fall ſhort of the Weight preſcribed by Law.

Falſe Species, are thoſe of different Metal from what they ſhould be, &c.

SPECIES, in Algebra, are the Symbols, or Characters, whereby the Quantities are repreſented. See CHARACTER.

SPECIFIC, in Philoſophy, that which is proper, or peculiar to any thing; that characterizes it, and diſtinguiſhes it from every other Thing.

Thus the attracting of Iron is *Specific* to the Load-ſtone, or a *Specific* Property of the Load-ſtone.

A juſt Definition ſhould contain the *ſpecific Notion* of the Thing defined, or that which *ſpecifies* and diſtinguiſhes it from every thing elſe. See DEFINITION.

SPECIFIC, in Medicine, a Remedy, whoſe Virtue and Effect is peculiarly adapted to ſome certain Diſeaſe; is adequate thereto; and exerts its whole Force immediately thereon.

Thus Quinquina, or the Jeſuits Bark, is held a *Specific* for intermitting Fevers or Agues; Mercury for the Venereal Diſeaſe, &c. See QUINQUINA.

Authors make mention of three Kinds of *Specific Medicines*.

1° Such as are eminently and particularly friendly to this or that Part, as the Heart, the Lungs, the Brain, the Stomach, &c.

2° Such as ſeem to attract, expell, or evacuate ſome determinate Humour, by a kind of *Specific* Power they are endowed withal; as Jalap is ſuppoſed to purge watery Humors, Rhubarb, Bile, &c.

And, 3°, Such as remove the Cauſe of a Diſeaſe, by ſome ſudden Property, without our knowing how or why; or the Manner of whoſe Operations we are entirely ignorant of, and have only learnt their Effects by Experience.

In the Uſe of theſe laſt, there is no Enquiry into the Nature of the Diſeaſe; no regard had to the Symptoms or Phænomena: Nor is the Medicine to be at all adapted to the particular Circumſtances thereof. All that we regard, is the Name of the Diſeaſe, and that of the Remedy: As, immediately, upon finding an intermitting Fever, we preſcribe the Bark; to aſſuage Pain, Opium; to expel Poiſon, ſome particular Antidote.

A *Specific* Medicine, therefore, ſtands in Oppoſition to a *Scientific* or *Methodic* Medicine. See MEDICINE.

SPECIFIC *Gravity*, in Hydroſtaticks, that Gravity, or Weight peculiar to each *Species*, or Kind of natural Body; and whereby it is diſtinguiſhed from all other Kinds. See WEIGHT.

In this Senſe, a Body is ſaid to be *ſpecifically Heavier* than another, when under the ſame Bulk it contains a greater Weight than that other; and that other, is ſaid to be *ſpecifically Lighter* than the Firſt. Thus, if there be two equal Spheres, each a Foot in Diameter; only the one Wood, the other Lead: Since the Leaden one is found heavier than the Wooden one, it is ſaid to be *ſpecifically* or in *Specie*, *Heavier*, and the Wooden one *ſpecifically Lighter*.

This kind of Gravity, ſome call *relative Gravity*; in oppoſition to *abſolute Gravity*, which increaſes in Proportion to the Quantity or Maſs of the Body. See GRAVITY.

Laws of the SPECIFIC *Gravity and Levity of Bodies.*

1. If two Bodies be equal in Bulk, their *ſpecific Gravities* are, to each other, as their abſolute Gravities. Thus a Body is ſaid to be twice as heavy, *ſpecifically*, as another, if it have twice its Gravity under the ſame Bulk

Hence, the *ſpecific* Gravities of equal Bodies, are as their Denſities. See DENSITY.

2. The *ſpecific* Gravities of Bodies of the ſame Weight, are in a reciprocal *Ratio* of their Bulks. Hence, the Maſſes of two Bodies of the ſame Weight, are in a reciprocal *Ratio* of their Bulks.

3. The *ſpecific* Gravities of two Bodies are, in a *Ratio*, compounded of the direct *Ratio* of the abſolute Gravities, and the reciprocal one of their Bulks.

Hence, again, the *ſpecific* Gravities are as the Denſities.

4. A Body *ſpecifically* heavier than a Fluid, loſes ſo much of its Weight therein, as is equal to a Quantity of the Fluid of the ſame Bulk.

For, ſuppoſe a Cubic Inch of Lead immerged in Water: a Cubic Inch of Water will, thereby, be expell'd from its Place: But the Weight of this Water was ſuſtained by the Reſiſtance of the ambient Water. Therefore, ſuch a Part of the Weight of the leaden Cube, muſt be ſuſtained by the Reſiſtance of the ambient Water, as is equal to the Weight of the Water expell'd. The Gravity of the Body immerg'd, therefore, muſt be diminiſhed by ſo much.

Hence, 1°, Since a Fluid *ſpecifically* heavier, has a greater Weight, in the ſame Bulk, than a lighter; the ſame Body will loſe a greater Part of its Weight in a Fluid, *ſpecifically* heavier than in a lighter; and therefore it weighs more in a lighter than a heavier.

2° Equal homogeneous Bodies weighing equally in Air, loſe their Equilibrium, if one of them be immerg'd in a heavier Fluid; the other in a lighter.

3° Since the *ſpecific* Gravities are as the abſolute Gravities under the ſame Bulk; the *ſpecific* Gravity of the Fluid, will be to the Gravity of the Body immerged; as the Part of the Weight loſt by the Solid, to the whole Weight.

4° Two Solids equal in Bulk, loſe the ſame Weight in the ſame Fluid; but the Weight of the *ſpecifically* heavier Body, is greater than that of the *ſpecifically* lighter; therefore, the *ſpecifically* lighter, loſes a greater Part of its Weight, than the *ſpecifically* heavier.

4. Since the Bulks of Bodies equal in Weight, are reciprocally as the *ſpecific* Gravities; the *ſpecifically* lighter, loſes more Weight in the ſame Fluid than the heavier; wherefore, if they be in *Equilibrio* in one Fluid; they will not be ſo in another; but the *ſpecifically* heavier, will preponderate, and that the more as the Fluid is denſer.

5. The *Specific* Gravities of Fluids, are as the Weights loſt by the ſame Solid immerged in the ſame.

To find the SPECIFIC *Gravity of any Fluids.*

On one Arm of a Balance ſuſpend a leaden Globe; and to the other, faſten a Weight, which is in *Equilibrium* therewith in the Air. Immerge the Globe ſucceſſively in the ſeveral Fluids, whoſe *ſpecific* Gravities are to be determined, and obſerve the Weight which balances it in each. Theſe ſeveral Weights, ſubtracted, ſeverally, from the firſt Weight, the Remainders are the Parts of the Weight loſt in each Fluid. Whence the *Ratio* of the *ſpecific* Gravity of the Fluids is ſeen. See HYDROSTATICAL *Balance*.

Hence, as the Denſities are as the *ſpecific* Gravities; we find the *Ratio* of the Denſities of the Fluids at the ſame time.

This Problem is of the utmoſt Uſe; as by it, the Degree of Purity or Goodneſs of Fluids, is eaſily found; a Thing, not only of Service in Natural Philoſophy; but alſo in common Life, and in the Practice of Phyſic.

At different Seaſons of the Year, the *ſpecific* Gravities of the ſame Fluids, are found different. *Joan. Caſp. Eiſenchmidius*, in his *Diſquiſitio Nova de Ponderibus*, &c. gives us Variety of Experiments relating hereto: The principal whereof, to ſave the Trouble of too frequent Experiments, we ſhall here ſubjoin.

Table of SPECIFIC *Gravities of ſeveral Fluids.*

A Cubic Inch *Paris* Meaſure.	In Summer O. D. G.	In Winter O. D. G.
Of Mercury	7 1 66	7 2 14
Oil of Vitriol	7 59	7 71
Spirit of Vitriol	5 33	5 38
Spirit of Nitre	6 24	6 44
Spirit of Salt	5 49	5 55
Aquafortis	6 23	6 35
Vinegar	5 15	5 21
Diſtill'd Vinegar	5 11	5 15
Burgundy Wine	4 67	4 75
Spirit of Wine	4 32	4 42
Pale Ale	5 1	5 9
Brown Ale	5 2	5 7
Cows Milk	5 20	5 25
Goats Milk	5 24	5 28
Urine	5 14	5 19
Spirit of Urine	5 45	5 53
Oil of Tartar	7 27	7 43
Oil of Olives	4 53	Is froze in Winter
Oil of Turpentine	4 39	4 46
Sea Water	6 12	6 18
River Water	5 10	5 13
Spring Water	5 11	5 14
Diſtill'd Water	5 8	5 11

That the *ſpecific* Gravity may be found the more accurately; the Weight of the Thread not immerged in the Fluid, is to be ſubtracted from the Weight of the Solid in Air; and the Force neceſſary to make the Thread ſubſide (if it be *ſpecifically* lighter) is be to added to the Weight loſt. But if the Thread that ſuſtains the Solid be heavier than the Fluid; the whole Weight of the Thread in the Air is to be ſubtracted from the Weight of the Solid in Air; and the Weight the Thread loſes from the Weight loſt in the Fluid. Indeed, this Precaution may be ſpared, if in examining the *ſpecific* Gravity of ſeveral Fluids, Care be taken that the ſame Thread be immerged to the ſame Depth in each.

6. To determine the *Ratio* which the *ſpecific* Gravity of a Fluid has to the *ſpecific* Gravity of a Solid, that is *ſpecifically* heavier than the Fluid.

Weigh any Maſs of the Solid in the Fluid, and note the juſt Weight therein: The *ſpecific* Gravity of the Fluid will be to that of the Solid, as the Part of the Weight loſt by the Solid, is to its whole Weight.

7. The *ſpecific* Gravities of equally heavy Bodies, are reciprocally as the Quantities of Weight loſt in the ſame Fluid. Hence we find the *Ratio* of the *ſpecific* Gravities of Solids, by weighing Maſſes thereof, that are equal in Air, in the ſame Fluid; and noting the Weights loſt by each.

The *ſpecific* Gravities of various Solids, have been determined by many Authors. *Marin Ghetaldus*, particularly tried the *ſpecific* Gravities various Bodies had, eſpecially metallic Ones; which were borrowed thence by *Oughtred*. In the *Philoſophical Tranſactions*, we have very prolix Tables of *ſpecific* Gravities, by various Authors.

'Twill be ſufficient for us to give thoſe of ſome of the more uſual Bodies, as determined with great Care and Accuracy by M. *Petit*; and publiſh'd by *F. Merſenne*; and from him by ſeveral others.

Table of the SPECIFIC *Gravities of ſeveral Solids.*

An Hundred pound Weight of Gold, is equal in bulk to

71 ½	of Mercury	38 ¼	of fine Tin
60 ½	of Lead	26	of Load-ſtone
54 ½	of Silver	21	of Marble
47 ⅓	of Copper	14	of Stone
45	of Braſs	12 ½	of Sulphur
42	of Iron	5	of Wax
39	of Tin	5 ⅓	of Water.

8. A Body *ſpecifically* heavier, deſcends in a Fluid *ſpecifically* lighter, with a Force equal to the Exceſs of its Weight, over that of an equal Quantity of the Fluid.

Hence, 1°, The Force which ſuſtains a *ſpecifically* heavier Body in a Fluid, is equal to the Exceſs of the abſolute Gravity of the Body above that of the Fluid, under the ſame Bulk; *E. gr.* 47 ⅓ Pound of Copper loſes 5 ⅓ Pounds of its Weight in Water; therefore a Power of 42 Pounds is able to ſuſtain it.

2° Since the Exceſs of the Weight of a Solid over the Weight of a Fluid *ſpecifically* heavier, is leſs than that over the Weight of a *ſpecifically* lighter Fluid under the ſame Bulk; it will deſcend with leſs Force in a *ſpecifically* heavier Fluid than in a lighter; and, conſequently, will deſcend more ſlowly in the former than in the latter.

9. A *ſpecifically* lighter Body, ſinks in a heavier Fluid, till the Weight of a Quantity of the Fluid, equal in Bulk, to the Part immerſed, is equal to the Weight of the whole Body.

Hence, 1°, Since the *Specific* Gravities of Bodies of the ſame Weight, are reciprocally as their Bulks; and the Bulks of Fluids equal in Weight, are as the Parts of the ſame Solid immerged therein; the *ſpecific* Gravities of Fluids are reciprocally as the Parts of the ſame Body immerged therein.

2° A Solid, therefore, immerges deeper in a lighter Fluid than a heavier; and deeper as the Proportion of the *ſpecific* Gravity of the Solid to that of the Fluid is greater.

3° If a Body be of the ſame *ſpecific* Gravity with a Fluid; the whole Body will be immerged; and it will remain in any given Place of the Fluid.

4° If a *ſpecifically* lighter Body be wholly immerged in a Fluid; it will be urged by the collateral Columns of the Fluid, to aſcend with a Force equal to the Exceſs of the Weight of the Fluid, Bulk for Bulk, over the Weight of the Solid.

5° A Body, therefore, *ſpecifically* lighter, lying on the Bottom of a Veſſel, will not be raiſed up, unleſs the heavier Fluid riſe above ſuch a Part, as is equal in Bulk to a Quantity of the Fluid of the ſame Weight with the whole Solid.

10. The *ſpecific* Gravity of a Solid, is to the *ſpecific* Gravity of a lighter Fluid, wherein 'tis immerged, as the Bulk of the Part immerged, is to the whole Bulk.

11. The *ſpecific* Gravities of equal Solids, are as their Parts immerged in the ſame Fluid.

12. The Weight and Bulk of a *ſpecifically* lighter Body, and the Weight of the *ſpecifically* heavier Fluid, being given, to find the Force required, to keep the Solid wholly immerged under the Fluid.

As this Force is equal to the Exceſs of the Weight of the Fluid, beyond that of an equal Bulk of the Fluid; from the given Bulk of the Solid, and the Weight of a Cubic Foot of Water, find, by the Rule of Three, the Weight of a Bulk of Water, equal to that of the Body. From this, ſubtract the Weight of the Solid; the Remainder is the Force required. *E. gr.* Suppoſe the Force neceſſary to detain a Solid Eight Feet in Bulk, and 100 Pounds in Weight, under Water, required: Since a Cubic Foot of Water is found to weigh 70 Pound, the Weight of Water under the Bulk of Eight Feet, is 560; whence, 100 Pound, the Weight of the Solid, being ſubtracted; the Remainder 460 Pound, is the Force neceſſary to detain the Solid under Water.

Hence, ſince a *ſpecifically* lighter Body aſcends in a heavier Fluid, with the ſame Force that would prevent its Aſcent: by the preſent Problem, we can likewiſe find the Force wherewith a *ſpecifically* lighter Body aſcends in a heavier.

13. The Weight of a Veſſel, to be made of a *ſpecifically* heavier Matter; and that of a *ſpecifically* lighter Fluid, being given: to determine the Cavity the Veſſel muſt have, to ſwim on the Fluid.

The Weight of a Cubic Foot of the Fluid being given; the Bulk of the Fluid equal to the Weight of the Veſſel, is found by the Rule of Three. If, then, the Cavity be made a little bigger than this, the Veſſel will have leſs Weight under the ſame Bulk, than the Fluid, and will therefore be *ſpecifically* lighter than the ſame, and conſequently, will ſwim. *E. gr.* Suppoſe it required to make an Iron Ball of 30 Pounds Weight, ſo as it ſhall ſwim upon Water. Since the Weight of a Cubic Foot of Water is 70 Pound, the Quantity of Water equal to 30 Pounds, will be found 728 571‴; and therefore the Cube of the Diameter of the Sphere 1392174‴, whence the Cube Root being extracted 1′ 1″ 1‴ is the Diameter of a Sphere of Water of 30 Pounds. If, therefore, the Diameter of the Cavity be made a little bigger, *e. gr.* 1 ½ or 2 Feet; ſo much leſs of the Ball will be immerged as the Diameter is increaſed.

14. The Force employ'd to retain a *ſpecifically* lighter Solid, under a heavier Fluid; and the Weight loſt by a heavier Solid in a lighter Fluid; are each added to the Weight of the Fluid, and weigh together with it.

The ſeveral Theorems here delivered, are not only all demonſtrable from the Principles of Mechanicks; but are conformable to Experiment. In effect, Experience is here found to anſwer exactly to Calculation, as is abundantly evident from the Courſes of philoſophical Experiments, now frequently exhibited; where the Laws of *ſpecific Gravitation* are well illuſtrated.

SPECILLUM, is an Inſtrument, wherewith Surgeons ſearch Wounds; in manner of a Probe.

SPECIOUS *Arithmetic*, is that converſant in Quantities, deſign'd by *Species*, that is by the Letters of the Alphabet; in contradiſtinction to that, where the Quantities are expreſs'd by Numbers, which is call'd *Numerous Arithmetic*. See ARITHMETIC; ſee alſo SPECIES.

Specious Arithmetic, is what we more uſually call *Algebra*. See ALGEBRA.

SPECTACLE, *Shew*; ſome extraordinary Object, which draws the View and Attention; and is not beheld without ſome Emotion.

The Term is chiefly uſed by the Ancients, for theatrical and amphitheatrical Performances: For Comedies, Combats of Gladiators, of Beaſts, and even for ſolemn Proceſſions, as thoſe of the *Circus*, &c.

The People of *Rome* were extremely fond of *Spectacles*; and the *Roman* Hiſtorians obſerve, There was no ſurer Way of gaining their Affections, and making Parties to introduce Tyranny and Oppreſſion, than by the Uſe of *Spectacles*.

SPECTACLES, an Optic Machine, conſiſting of two Lens's ſet in Horn, or other Matter; and applied on the Noſe; to aſſiſt in Defects of the Organ of Sight. See LENS.

Old People and all Presbytæ, uſe *Spectacles* of convex Lens's, to make Amends for the Flatneſs of the Eye, which does not make the Rays converge enough to have them meet in the Retina. See PRESBYTÆ.

Short-ſighted People, or Myopes, uſe concave Lens's, to keep the Rays from converging ſo faſt, through the great Roundneſs of the Eye, as to make them meet e'er they reach the Retina. See MYOPES.

In *Spain*, and at *Venice* eſpecially, *Spectacles* are uſed with a different View: All the People of Note and Faſhion there, have them continually on their Noſes; a Folly, that has its Source in the natural Pride of thoſe People, who value themſelves on a profound Wiſdom; and affect to ſtare very near at every Thing; as if their Eyes were weakned, and wore out with Exceſs of Attention. *Vign. de Marv.*

F. Cherubin, a Capuchin, deſcribes a kind of *Spectacle-Teleſcopes*, for the viewing of remote Objects with both Eyes; hence called *Binoculi*. Though *F. Rheita* had mentioned the ſame before him, in his *Oculus Enoch* and *Eliæ*. See TELESCOPE.

The ſame Author invented a kind of *Spectacles*, with three or four Glaſſes, which perform'd extraordinarily.

Spectacles were certainly unknown to the Ancients; yet are they not of ſo late a Date as the Teleſcope. *Franciſco Redi*, in a very learned Treatiſe on *Spectacles*, will have them to have been invented in the 13th Century, between the Years 1280 and 1311; and adds, that *Alexander Deſpina*, a Monk of the Order of *Predicants* of St. *Catherine* at *Piſa*, firſt communicated the Secret, which was of his own Invention; upon learning, that another Perſon had it as

well as himſelf. This Hiſtory is wrote in the Chronicles of that Convent.

The ſame Author tells us, That in an old Manuſcript ſtill preſerv'd in his Library, compoſed in 1299, *Spectacles* are mentioned as a Thing invented about that Time: And that a famous Jacobin, one *Jourdon de Rivalto*, in a Treatiſe compoſed in 1305, ſays, expreſly, That 'twas not yet 20 Years, ſince the Invention of *Spectacles*. He likewiſe quotes *Bernard Gordon* in his *Lilium Medicinæ*, wrote the ſame Year, where he ſpeaks of a Collyrium, good to enable an Old Man to read without *Spectacles*.

Du Cange, however, carries the Invention of *Spectacles* farther back; aſſuring us, That there is a *Greek* Poem in Manuſcript in the *French* King's Library, which ſhews, That *Spectacles* were in Uſe in the Year 1150: ſtill, the Dictionary of the Academy *Della Cruſca*, under the Word *Occhiale*, inclines to *Redi*'s Side; and quotes a Paſſage from *Jourdon*'s Sermons, which ſays, That *Spectacles* had not been 20 Years in Uſe: Now *Salviati* has obſerved, that thoſe Sermons were made between the Years 1330 and 1336.

SPECTATOR, a Perſon preſent at a *Spectacle*.

Among the *Romans*, *Spectators*, *Spectatores*, were a kind of Gladiators, who had had their Diſcharge; and were frequently hired to be preſent, as *Spectators*, at the Combats of Gladiators, &c. the People were entertained withal. See GLADIATOR.

SPECULARIA, the Art of preparing, and making *Specula* or Mirrors: Or, the Laws of Mirrors, their Phænomena, Cauſes, &c. call'd alſo *Catoptricks*. See CATOPTRICKS.

SPECULARIS *Lapis*, in natural Hiſtory, is a kind of Stone, clear as Glaſs, uſed in ſeveral Countries where 'tis found, for Window-lights, &c. 'Tis a kind of Talc, ſplits eaſily into thin Laminæ or Plates; and is ſometimes calcined to make a fine Plaiſter. See TALC.

SPECULUM, *Mirror*, in Opticks, any poliſh'd Body, impervious to the Rays of Light: Such as Water in Wells and deep Rivers, poliſh'd Metals, and Glaſſes lined with Mercury, or other opake Matter, popularly call'd *Looking-Glaſſes*. See LOOKING-*Glaſs*.

The ſeveral Kinds and Forms of *Specula*, *plain*, *concave* and *convex*
The Theory and Phænomena of the ſeveral Kinds of *Specula* - -
The Method of preparing, grinding, &c. Glaſs or Metal *Specula* of various Forms - - - -
} See under MIRROR.

The Laws and Effect of the *Specula* of various Forms - } See particularly under { REFLECTION.
The Theory of concave *Specula* } See particularly under { BURNING-*Glaſs*.

SPECULUM *Ani*, an Inſtrument, wherewith Surgeons dilate the Fundament, examine Sores, extract Bones, or let out any peccant Matter that may be there lodged.

SPECULUM *Matricis*, is an Inſtrument uſed by Surgeons, to examine and dreſs corrupted Places in the natural Parts of Women. Its Form is the ſame with that of the *Speculum Ani*.

SPECULUM *Oris*, is an Inſtrument ſerving to examine Diſorders in the Mouth.

There are two Kinds: the one common; the other bigger and ſtronger, fit not only to keep down the Tongue; but alſo the lower Jaw; while the Mouth is ſurveyed, to the very Extremity of the Throat, and the neceſſary Remedies applied.

SPEECH, the Act, or Art of expreſſing a Man's Thoughts, by certain Signs invented for that Purpoſe.

Theſe Signs are principally *Sounds*, made by the *Voice* and *Letters*. See VOICE and LETTER.

SPEECH, in Grammar, an Aſſemblage of ſeveral Words ranged in Order. See LANGUAGE.

The Grammarians generally make *Eight Parts of Speech*; *i. e.* Eight kinds of Words uſed in Diſcourſe, *viz. Noun*, *Pronoun*, *Verb*, *Participle*, *Adverb*, *Conjunction*, *Preposition* and *Interjection*; each of which ſee under its proper Article ADVERB, NOUN, PRONOUN, &c.

F. Buffier, one of the laſt and beſt Writers of Grammar, only admits of three Parts of Speech, *viz. Noun*, *Verb* and *Modificative*; which laſt includes the *Adverb*, *Conjunction* and *Prepoſition*. See MODIFICATIVE.

SPELL, a kind of Charm, to drive away a Diſeaſe, by hanging a Word or Sentence on a Paper about the Neck. See CHARM and PHYLACTERY.

SPELL, in the Sea Language. *To Spell*, is to let go the Sheets and Bowlings of a Sail, and brace the Weather Brace, that the Sail may lie looſe in the Wind. *To do a Spell*, is to do any thing by Turns, for a ſhort Time, and then leave it. *To give a Spell*, is to be ready to work in ſuch a one's Room. *Freſh Spell*, is when freſh Men come to work; eſpecially when the Rowers are relieved, with another Gang.

SPELLING, that Part of Grammar properly called *Orthography*. See ORTHOGRAPHY.

Dr. *Jones* gives the following Rules or Maxims of *Spelling*. 1°. That all Words were originally writ as *ſpelt*. 2° That in all Words, whoſe Sounds have been ſince alter'd (the Origin of the Difficulty of *Spelling*) the Alteration was made for the ſake of Eaſe and Pleaſure: And hence, 3° All Words that can be written ſeveral Ways, muſt be *ſpelt* according to the hardeſt, harſheſt and moſt unuſual Sound.

SPELTER, or *Zinck*, a kind of imperfect Metal, which ſome confound with *Biſmuth*, and others with *Spalt*; others making it a female Antimony. See ZINK.

The *Spelter* is a kind of mineral Lead, very hard, white and brilliant; which though not perfectly malleable, yet ſtretches a little under the Hammer.

'Tis found in greateſt Quantity in the Mines of *Goſſelar* in *Saxony*; and is ordinarily ſold in large, ſquare, thick Cakes, whence one would judge it to have been melted as it came out of the Mines, and caſt into that Figure.

'Tis uſed to clear and whiten Tin, in making of Pewter, much as Lead is uſed to purify Gold and Silver.

Thoſe who imagine that the *Spelter* is put in to increaſe the Weight, are miſtaken; ſince in melting Five or Six hundred Weight of Tin, they ſcarce put in a Pound of *Spelter*, and that mix'd with Turmaric. 'Tis alſo uſed in the making of Solder, and with Curcuma, in the melting of Copper, to give that Metal a gold Colour; which, however, is not permanent. See SOLDER.

The Beſt is white, in fine Scales, difficult to break, &c.

SPERM or *Sperma*, the Seed whereof an Animal is form'd. See SEED.

The Word is *Greek*, σπέρμα.

SPERMA-*Ceti*, in Pharmacy, uſually call'd *Parmaſity*, is a Preparation made from the Brain, and Cerebel of a kind of Animal, call'd by ſome, the *Male Whale*, and by the *Latins*, *Orca*; only diſtinguiſh'd from the common Whale, by its having Teeth, in lieu whereof, the Whale has a kind of Tufts in the Throat. See WHALE.

The Ancients were great Strangers to the Nature of this Preparation; inſomuch, that *Schroder* ſeems in doubt, whether to reckon it an animal or mineral Subſtance.

It had its Name *Sperma Ceti*, Seed or Sperm of a Whale, given it, no doubt, to raiſe the Value, by a Notion of its Scarcity.

The Method of preparing it, is a Secret in the Hands of a very few: The Proceſs is thus;

The Brain being taken out of the Animal, is melted over a gentle Fire, and put into Moulds, like thoſe wherein Sugar-Loaves are form'd. When cold and drain'd of its Oil, 'tis taken out and melted over again; and this they continue to do till it be well purified, and become white. 'Tis then cut with a Knife for the Purpoſe, and reduced into Flakes, ſuch as we have it from the Druggiſts.

It muſt be choſen white, clear and tranſparent, of a rankiſh Smell, which ſome fancy to partake of that of the Violet: ſome ſophiſticate it with Wax; but the Deceit is diſcovered, either by the Smell of the Wax, or by the Dulneſs of the Colour.

Some alſo ſell a Preparation made from the Tail of the Whale, inſtead of that from the Brain; which laſt kind turns Yellow, aſſoon as opened to the Air. In the General, there is no Merchandiſe that ſhould be kept cloſer from the Air than *Sperma Ceti*.

'Tis of ſome Uſe in Medicine. Dr. *Quincy*, ſays, 'tis a noble Remedy in many Caſes, as the Aſthma, &c. though chiefly uſed in Bruiſes, inward Hurts, and after Delivery. But 'tis certain, its greateſt Property, and that which makes it ſo much in Vogue, is its ſoftning the Skin, and reſolving Tumours of the Breaſt. Whence it comes to be uſed by the Ladies in Paſtes, Waſhes, &c.

SPERMATIC, in Anatomy, ſomething belonging to the *Sperm* or *Seed*.

The Ancients made a general Diviſion of the Parts of the Animal Body into *Spermatic* and *Fleſhy*.

The *ſpermatic* Parts, were thoſe, which by their Colour, &c. bore ſome Reſemblance to Seed, and were ſuppoſed to be form'd thereof; ſuch are the Nerves, Membranes, Bones, &c.

The *Fleſhy*, were thoſe ſuppoſed to be form'd of the Blood, after Conception. But the Moderns, with much better Reaſon, hold all the Parts to be *Spermatic* in this Senſe, and either form'd of the Ovum of the Female, or of the Semen of the Male. See GENERATION.

M. *Andry* mentions *ſpermatic Worms* in the human Body. See WORMS.

SPERMATIC *Veſſels*, called alſo *Vaſa præparantia*, are certain Veſſels appointed for the bringing of the Blood to the Teſticles, &c. to be ſecreted and prepared into Seed; and for the carrying back again the Blood, remaining after the Secretion is effected. See SEED.

The *ſpermatic Veſſels* are two Arteries and two Veins.

Spermatic Arteries ariſe from the fore Part of the Trunk of the Aorta, below the Emulgents. Their Structure is very ſingular, in that, contrary to the Fabric of all other Arteries, which are largeſt at their Exit from the Trunk, theſe are ſmalleſt at their Origin, and grow bigger in their Progreſs towards

wards the Teſtes. By this means, the Blood receives a Check at its firſt going off for thoſe Parts, which diſpoſes it for the future Changes, &c. it is to paſs. The ſame End is anſwered in Quadrupeds, by having theſe Arteries curl'd and contorted in their Paſſage like a Screw.

The Reaſon why Nature has taken another Method in Man; Mr. *Cowper* obſerves, is, that in that Caſe, the Abdominal Muſcles muſt have been much larger than they are; by which means, the Inteſtines would have been frequently let down into the Scrotum; an Inconvenience Quadrupeds are ſecured from, by the horizontal Poſition of their Bodies.

The *ſpermatic Arteries*, in their Progreſs, meeting with the *ſpermatic Veins*, enter together with them the inner Lamella of the Peritonæum, where, inſinuating into the Duplicature of the Proceſs, and being cloathed therewith, they paſs on to within three or four Fingers Breadth of the Teſticles, where they divide into Two unequal Branches; the biggeſt of which, goes to the Teſticle, and is diſtributed therein (See TESTICLE.) And the leſs in the *Paraſtata* or *Epididydimis*. See PARASTATA.

The *ſpermatic Veins* take the ſame Courſe with the Arteries; only a little above the Teſticles, they ſplit into ſeveral Branches, which uniting, form a Plexus, called *Corpus Varicoſum Pampiniforme* or *Pyramidale*. The Blood returned by the *ſpermatic Veins*, is delivered on the right Side to the Cava, and on the Left, into the emulgent Vein.

SPERMATOCELE, in Medicine, a Rupture occaſioned by a Contraction of the ſeminal Veſſels, whereby they are let fall into the Scrotum. *Harris*.

SPHACELUS, in Medicine, a total Mortification of any Part, occaſioned by an Interception of the Blood and Spirits. See MORTIFICATION.

The Word is *Greek*, σφάκελος, form'd, perhaps, of σφάττω, *I kill*.

The *Sphacelus* is diſtinguiſhed from the Gangrene; which is only a Mortification begun, and, as it were, the Road to a *Sphacelus*, which is the State and Perfection thereof. See GANGRENE.

The *Sphacelus* is diſtinguiſhed by the Lividneſs or Blackneſs of the Part affected; its Softneſs, Inſenſibility and cadaverous Smell.

The other Cauſes of the *Sphacelus*, are cloſe Ligatures, exceſſive Colds, great Inflammations, Bites of Mad Dogs. 'Tis ſometimes, alſo, called *Necroſis*, and ſometimes *Sideratio*. See NECROSIS and SIDERATIO.

A *Sphacelous* Foot, according to *Aquapendente*, ought to be cut off in the mortified Part, near the live Part. When the Foot is off, the dead Fleſh left behind, is to be conſumed by the Application of an actual Cautery, repeated ſeveral Times, till the Patient feel the Heat of the Fire. *Scultet*.

SPHÆRISTERIUM, in Antiquity, the ſeventh Part of the ancient Gymnaſium; being that wherein the Youth practiſed Tennis-Playing. See GYMNASIUM.

The *Sphæriſterium* or Tennis-Court, was between the Place, named *Palæſtra*, and that where they run Races, which was between the Portico's and the outer Wall: Though *Vitruvius* does not make mention of it in the Deſcription he gives of the ancient Gymnaſium.

The Exerciſe here perform'd was called *Sphæriſtica* and *Sphæromachia*, which ſome will have to have differ'd from the modern Tennis; but 'tis not known wherein the Difference conſiſted.

The *Mileſians* were particularly averſe to this Exerciſe; and the *Athenians* as remarkably fond of it.

They frequently gave the Right of Citizens to the *Sphæriſtes*, or Maſters in this Art, by way of Reſpect.

SPHENOIDAL *Suture*, in Anatomy, a *Suture* thus call'd, from its encompaſſing the *Os Sphenoides*, which it ſeparates from the *Os frontis*, the *Os petroſum* and *Os occipitis*. See SUTURE.

SPHENOIDES, in Anatomy, a Bone of the Head, common to the Cranium and upper Jaw. See CRANIUM, &c.

It is ſituate in the lower Part of the Skull, whereof it is, as it were, the Baſis, and is connected to all the other Members thereof, by the *Sphenoidal Suture*. Its Form, is irregular, and not eaſy to be deſcribed; whence ſome have call'd it *Multiforme*. It has its Name *Sphenoides* from the *Greek*, σφὴν, *Cuneus*, Wedge, from the Form of its Inſertion into the other Bones of the Skull.

In Adults, 'tis one continued Bone; but in young Children, ſometimes conſiſts of Three, and ſometimes of Four diſtinct Pieces.

SPHENOSTAPHYLINUS, in Anatomy, a Muſcle of the Larynx. It deſcends from a round, fleſhy Origination, near the Root of a Proceſs of the *Os Sphenoides*, and is implanted into the poſterior Part of the Uvula, where it joins its Partner. It ſerves to draw the Uvula upwards and backwards; and hinders the maſticated Aliment from paſſing into the Foramina Narium in Deglutition.

SPHERE, in Geometry, a Solid Body contained under one ſingle Surface, and having a Point in the middle, call'd the *Centre*, whence all the Lines drawn to the Surface, are equal. See SOLID, &c.

The *Sphere* is ſuppoſed to be generated by the Revolution of a Semi-circle, as K, (Tab. Geometry Fig. 34.) about its Diameter A B, which is alſo called the *Axis of the Sphere*, and the extreme Points of the Axis, A and C the *Poles of the Sphere*. See CENTRE, CIRCUMFERENCE, AXIS, POLE, &c.

Properties of the SPHERE.

1° A *Sphere* is equal to a Pyramid, whoſe Baſe is equal to the Surface, and its Height to the Radius of the *Sphere*.

Hence a *Sphere* being eſteem'd ſuch a Pyramid, its Cube or Solid Content, is found like that of a Pyramid. See PYRAMID.

2° A *Sphere* is to a Cylinder, ſtanding on an equal Baſis, and of the ſame Height, as 2 to 3. Hence, alſo, may the Cube or Content of the *Sphere* be found. See CYLINDER.

3° The Cube of the Diameter of a *Sphere*, is to the Solid Content of the *Sphere*, nearly as 300 to 157: And thus, alſo, may the Content of the *Sphere* be meaſured.

4° The Surface of a *Sphere* is quadruple that of a Circle deſcribed with the Radius of the *Sphere*. For ſince a *Sphere* is equal to a Pyramid, whoſe Baſe is the Surface, and its Altitude, the Radius of the *Sphere*: The Surface of the *Sphere* is had, by dividing its Solidity by a third Part of its Semi-diameter.

If, now, the Diameter of the Circle be 100, the Area will be 7850; conſequently, the Solidity 1570000, which divided by a Third of the Semi-diameter, 100; the Quotient is the Surface of the *Sphere* 31400; which is manifeſtly quadruple the Area of the Circle.

The Diameter of a SPHERE *being given, to find its Surface and Solidity.*

Find the Periphery of the Circle deſcribed by the Radius of the *Sphere*. See PERIPHERY.

Multiply this, found, into the Diameter; the Product is the Surface of the *Sphere*. Multiply the Surface by a ſixth Part of the Diameter, the Product is the Solidity of the *Sphere*.

Thus, ſuppoſing the Diameter of the *Sphere* 56, the Periphery will be found 175; which multiplied by the Diameter, the Product 9800 is the Surface of the *Sphere*; which multiplied by one ſixth Part of the Diameter, gives the Solidity 919057. Or, thus;

Find the Cube of the Diameter 175616; then to 300157, and the Cube found, find a Fourth proportional, 919057. See PROPORTIONAL. This is the Solidity of the *Sphere* required.

For Segments and Sectors of Spheres; ſee SEGMENT and SECTOR.

Doctrine of the SPHERE } See { SPHERICKS.
Projection of the SPHERE } See { PROJECTION.

SPHERE *of Activity* of any Body; is that determinate Space or Extent, all round about it, to which, and no farther, the Effluvia continually emitted from that Body, do reach, and where they operate according to their Nature. See EFFLUVIA.

Thus we ſee the magnetical Effluvia have certain Bounds and Limits, beyond which they will have no Influence to turn, or attract the Needle: But where-ever a Needle is placed, ſo as it may be moved by a Load-ſtone, it may be ſaid to be within the *Sphere* of Activity of the Stone. See MAGNET.

SPHERE, in Aſtronomy, that concave Orb or Expanſe, which inveſts our Globe, and in which the heavenly Bodies, Sun, Stars, Planets and Comets, appear to be fix'd, at equal Diſtances from the Eye. See HEAVENS.

This is alſo call'd the *Sphere of the World*; and is the Subject of the *Spherical* Aſtronomy. See SPHERICAL *Aſtronomy*.

This *Sphere*, as it includes the fix'd Stars, whence we alſo occaſionally call it, the *Sphere of the fix'd Stars*, is vaſtly great. The Diameter of the Earth's Orbit is ſo ſmall, in reſpect of the Diameter hereof, that the Centre of the *Sphere* is not ſenſibly changed by any Alteration of the Spectator's Place in the ſeveral Parts of the Orbit: But ſtill, in all the Points of the Earth's Surface, and at all Times, the Inhabitants have the ſame Appearance of the *Sphere*; that is, the fix'd Stars ſeem to poſſeſs the ſame Points in the Surface of the *Sphere*. For our Way of judging of the Places, &c. of the Stars, is to conceive right Lines drawn from the Eye or the Centre of the Earth, through the Centres of the Stars, and continued thence, till they cut the foreſaid *Sphere*; the Points where theſe Lines terminate therein, are the apparent Places of thoſe Stars. See PLACE and PARALLAX.

The better to determine the Places of the heavenly Bodies in the *Sphere*; ſeveral Circles are imagined to be deſcribed in the Surface thereof; hence called *Circles of the Sphere*. See CIRCLE *of the Sphere*.

Of these, some are said to be *greater*, as the Ecliptic, Meridian, Equator, &c. others *less*, as the Tropicks, Parallels, &c. See GREATER and LESSER.

Of these, again, some are *moveable*, or owe their Origin, to the Motion of the Earth, &c. such is the Ecliptic, Secondaries of the Ecliptic, &c. See each Circle under its proper Head; as EQUATOR, ECLIPTIC, HORIZON, &c.

SPHERE, in Geography, &c. a certain Disposition of the Circles on the Surface of the Earth, with regard to one another; which varies in various Parts thereof. See EARTH.

The Circles originally conceived on the Surface of the *Sphere* of the World, are almost all transferred, by Analogy, to the Surface of the Earth; where they are conceived to be drawn directly underneath those in the *Sphere*, or in the same Planes therewith; so that were the Planes of those of the Earth continued to the *Sphere*, they would coincide with the respective Circles thereon.

Thus we have a Horizon, Meridian, Equator, &c. on the Earth.

As the Equator in the Heavens divides the *Sphere* into two equal Parts; the one *North* and the other *South*; so does the Equator on the Surface of the Earth, divide the Globe in the same Manner. See EQUATOR.

And as the Meridians in the Heavens, pass through the Poles of the Horizon; so those on the Earth, &c. See MERIDIAN.

With regard, then, to the Position of some of these Circles in respect of others, we have a *Right*, a *Parallel*, and an *oblique Sphere*.

A *right* SPHERE, is that where the Equator cuts the Horizon of the Place at right Angles: For the particular Phænomena, &c. whereof; see RIGHT *Sphere*.

A *parallel* SPHERE, is where the Equator is parallel to the sensible Horizon, and in the Plane of the Rational. See PARALLEL *Sphere*.

An *oblique* SPHERE, is where the Equator cuts the Horizon obliqually. See OBLIQUE *Sphere*.

Armillary, or *artificial* SPHERE, is an astronomical Instrument, representing the several Circles of the *Sphere*, in their natural Order; serving to give an Idea of the Office and Position of each thereof, and to solve various Problems relating thereto.

'Tis thus called, as consisting of a Number of Fasciæ or Rims of Brass, or other Matter, called by the *Latins*, *Armillæ*, from their resembling of Bracelets, or Rings for the Arm.

By this, 'tis distinguished from the *Globe*, which, though it have all the Circles of the *Sphere* on its Surface; yet is not cut into *Armillæ* or *Rings*, to represent the Circles, simply and alone; but exhibits also the intermediate Spaces, between the Circles. See GLOBE.

Armillary Spheres, are of different Kinds, with regard to the Position of the Earth therein; whence they become distinguished into *Ptolomaic* and *Copernican Spheres*. In the First whereof, the Earth is in the Centre; and in the latter near the Circumference, according to the Position that Planet has in those Systems. See SYSTEM.

The *Ptolomaic* SPHERE, is that commonly in Use, and is represented (Tab. Astronomy, Fig. 21.) with the Names of the several Circles, Lines, &c. of the *Sphere*, inscribed thereon. See PTOLOMAIC.

In the Middle, upon the Axis of the *Sphere*, is a Ball, representing the Earth; on whose Surface are the Circles, &c. of the Earth. The *Sphere* is made to revolve about the said Axis, which remains at rest: By which Means, the Sun's Diurnal and Annual Course about the Earth, are represented according to the *Ptolomaic* Hypothesis: And even by Means hereof, all Problems relating to the Phænomena of the Sun and Earth, are solved, as upon the Cœlestial Globe; and after the same Manner; which see described under the Article GLOBE.

The *Copernican* SPHERE, represented (Fig. 22.) is very different from the *Ptolemaic*, both in its Constitution and Use; and more intricate in both. Indeed the Instrument is in the Hands of so few People, and its Use so inconsiderable, except what we have in the other more common Instruments, particularly the Globe and *Ptolomaic Sphere*, that we shall be easily excused the not filling up Room, with any Description thereof.

SPHERICAL *Angle*, is the mutual Inclination of Two Planes, whereby a Sphere is cut: Thus the Inclination of the two Planes, C A F and C E F (Tab. Trigon. Fig. 9.) forms the *Spherical Angle* A C E. See SPHERE and ANGLE.

The Measure of a *Spherical Angle*, A C E, is an Arch of a great Circle A E, described from the Vertex C, as from a Pole, and intercepted between the Legs C A and C E.

Hence, 1°, Since the Inclination of the Plane C E F, to the Plane C A F, is every where the same; the Angles in the opposite Intersections G and F, are equal.

2° Hence the Measure of a *Spherical Angle* A C E, is described with the Interval of a Quadrant A C or E C, from the Vertex C between the Legs C A, C E.

If a Circle of the *Sphere*, A E B F (Fig. 8.) cut another C E D F, the adjacent Angles, A E C and A E D are equal to two Right ones; and the vertical Angles A E C and D E B equal to one another. The former likewise, holds of several Angles form'd on the same Arch C E D, at the same Point E.

Hence, any Number of *Spherical Angles*, as A E C, A E D, D E B, B E C, &c. made on the same Point E, are equal to four right Angles. See SPHERICAL *Triangle*.

SPHERICAL *Triangle*, a Triangle comprehended between three Arches of *great Circles of a Sphere*, intersecting each other in the Surface thereof. See TRIANGLE.

Properties of the SPHERICAL *Triangles.*

1. If in two *Spherical* Triangles, (Tab. Trigon. Fig. 10.) A B C and a b c A=*a*, B A=*b a* and C A=*c a*: Then will B and the Sides, including the Angles, be respectively equal, the whole Triangles are equal: That is, B C=*bc*, B=*b* and C=*c*.

Again, if in two *Spherical Triangles* A=*a*, C=*c* and A C=*ac*; then will B=*b*, A B=*ab* and *bc*=B C. Lastly, if in two *Spherical* Triangles A B=*a b*, A C=*ac*, and B C=*bc*, then will A=*a*; B=*b* and C=*c*; the Demonstrations whereof, coincide with those of the like Properties in plain Triangles. The Theorems of the Congruency of rectilinear Triangles, extending to all other curvilinear, circular, parabolical, &c. provided their Sides be Similar. See TRIANGLE.

2. In an equilateral Triangle A B C (Fig. 11.) the Angles at the Base, B and C, are equal; and if in any Triangle, the Angles B and C, at the Base B C, are equal; the Triangle is equilateral.

3. In every *Spherical Triangle*, each Side is less than a Semi-circle: Any two Sides taken together are greater than the Third; and all the three Sides together are less than the Periphery of a great Circle: And a greater Side is always opposed to a greater Angle, and a less Side to a less Angle.

4. If in a *Spherical Triangle* B A C (Fig. 12.) two Legs A B and B C taken together, be equal to a Semi-circle; the Base A C being continued to D; the external Angle B C D will be equal to the internal opposite one B A C.

If the two Legs together, be less than a Semi-circle, the external Angle B C D, will be greater than the internal opposite one A: And if the Legs be greater than a Semi-circle, the external Angle B C D, will be less than the internal opposite one A; and the Converse of all these holds, *viz.* If the Angle B C D be equal to, greater, or lesser than A; the Sides A B and B C are equal to, greater, or lesser than a Semi-circle.

5. If in a *Spherical Triangle* A B C, two Sides A B and B C, be equal to a Semi-circle; the Angles at the Base A and C, are equal to two Right ones: If the Sides be greater than a Semi-circle, the Angles are greater than two Right ones; and if less, less. And, conversely.

6. In every *Spherical Triangle*, each Angle is less than two Right ones; and the Three together, less than Six right Angles, and greater than two.

7. If in a *Spherical Triangle* B A C (Fig. 13.) the Sides A B and A C be Quadrants; the Angles at the Base, B and C, will be right Angles. And, conversely, If the intersected Angle A be a right Angle, B C will be a Quadrant: If A be obtuse, B C will be greater than a Quadrant; and if acute, less. And, conversely.

8. If a *Spherical* rectangular Triangle, the Side B C (Fig. 14.) adjacent to the right Angle B, be a Quadrant; the Angle A will be a right Angle; if B E be greater than a Quadrant, the Angle A will be obtuse; and if B D be less than a Quadrant, the Angle A will be acute. And, conversely.

9. If in a *Spherical* rectangular Triangle, each Leg be either greater or lesser than a Quadrant; the Hypothenuse will be less than a Quadrant. And, conversely.

10. If in a *Spherical Triangle* A B C (Fig. 15.) rectangular only at B, one Side C B be greater than a Quadrant, and the other Side A B less; the Hypothenuse A C will be greater than a Quadrant. And, conversely.

11. If in a *Spherical* obliquangular Triangle A C B (Fig. 16.) both Angles at the Base, A and B, be either obtuse or acute; the Perpendicular C D let fall from the Third Angle C to the opposite Side A B, falls within the Triangle: if one of them, A, be obtuse; and the other, B, acute; the Perpendicular falls without the Triangle.

12. If in a *Spherical Triangle* A C B, all the Angles A, B and C be acute; the Sides are each less than a Quadrant. Hence, if in an obliquangular *Spherical Triangle*, one Side be greater than a Quadrant, one Angle is obtuse, *viz.* that opposite to this Side.

13. If in a *Spherical Triangle* A C B, two Angles A and B, be obtuse, and the third C acute; the Sides A C and C B opposite to the obtuse Sides, are greater than a Quadrant; and that opposite to the acute Side A B, less than a

Quadrant. Hence, if the two Sides be leſs than a Quadrant, the two Angles are acute.

14. If in a *Spherical Triangle*, the ſeveral Sides be each greater than a Quadrant; or only two of them greater, and the Third equal to a Quadrant; the ſeveral Angles are obtuſe.

15. If in an obliquangular *Spherical Triangle*, two Sides be leſs than a Quadrant, and the Third greater; the Angle oppoſite to the greateſt will be obtuſe, and the reſt acute.

Reſolution of SPHERICAL *Triangles*. See TRIANGLE.

SPHERICAL *Geometry*, the Doctrine of the Sphere; particularly of the Circles deſcribed on the Surface thereof, with the Method of projecting the ſame on a Plane. See SPHERICKS.

SPHERICAL *Trigonometry*, the Art of reſolving *Spherical Triangles*; *i. e.* from three Parts of a *Spherical* Triangle given, to find the reſt. *E. gr.* From two Sides of one Angle; to find the other two Angles, and the third Side. See SPHERICAL *Triangle* and TRIGONOMETRY.

SPHERICAL *Aſtronomy*, that Part of Aſtronomy which conſiders the Univerſe, ſuch as it appears to the Eye. See ASTRONOMY.

Under *Spherical Aſtronomy*, then, come all the Phænomena and Appearances of the Heavens and heavenly Bodies, ſuch as we perceive them; without any Inquiry into the Reaſon, the Theory, or the Truth thereof: by which it is diſtinguiſhed from *Theorical Aſtronomy*, which conſiders the real Structure of the Univerſe, and the Cauſe of thoſe Phænomena.

In the *Spherical Aſtronomy*, the World is conceived to be a concave, *ſpherical* Surface, in whoſe Centre is the Earth, or rather the Eye, about which the viſible Frame revolves, with Stars and Planets fix'd in the Circumference thereof. And on this Suppoſition all the other Phænomena are determined.

The *Theorical Aſtronomy* teaches us, from the Laws of Opticks, *&c.* to correct this Scheme, and reduce the whole to a juſter Syſtem. See SYSTEM.

SPHERICITY, the Quality of a *Sphere*; or that whereby a thing becoms *Spherical*, or round. See SPHERE.

The *Sphericity* of Pebbles, Fruits, Berries, *&c.* of Drops of Water, Quick-ſilver, *&c.* of Bubbles of Air under Water, *&c.* Dr. *Hook* takes to ariſe from the Incongruity of their Particles with thoſe of the ambient Fluid, which prevents their Coaleſcing; and by preſſing on them, and encompaſſing them all around equally, turns them into a round Form. See DROP.

This, he thinks, appears evidently, from the Manner of making ſmall round Shot of ſeveral Sizes, without caſting the Lead into any Moulds; from Drops of Rain being form'd, in their fall, into round Hail-ſtones; and from Drops of Water falling on ſmall Duſt, Sand, *&c.* which ſtrait produce an artificial round Stone; and from the ſmall, round, red-hot Balls, form'd by the Colliſion or Fuſion of Flint and Steel, in ſtriking Fire.

But all theſe Caſes of *Sphericity* ſeem better accounted for, from the great Principle of Attraction; whereby the Parts of the ſame Fluid drop, *&c.* are all naturally ranged as near the Centre as poſſible, which neceſſarily induces a *ſpherical* Figure: and, perhaps, a repelling Force between the Particles of the Drop, and of the Medium, contribute not a little thereto. See ATTRACTION.

SPHERICKS, the *Doctrine of the Sphere*, particularly of the ſeveral Circles deſcribed on the Surface thereof; with the Method of projecting the ſame in Plano. See SPHERE.

The principal Matters ſhewn herein, are as follow:

1. If a Sphere be cut in any Manner, the Plane of the Section will be a Circle, whoſe Centre is in the Diameter of the Sphere.

Hence, 1°, The Diameter H I (Tab. Trigon. Fig. 17.) of a Circle, paſſing through the Centre C, is equal to the Diameter A B of the generating Circle; and the Diameter of a Circle, as F E, that does not paſs through the Centre, is equal to ſome Chord of the generating Circle.

Hence, 2°, As the Diameter is the greateſt of all Chords; a Circle paſſing through the Centre, is the *greateſt Circle of the Sphere*; and all the reſt are *leſſer* than the ſame.

3° Hence, alſo, all *great Circles of the Sphere* are equal to one another.

4° Hence, alſo, if a *great Circle of the Sphere* paſs through any given Point of the Sphere, as A; it muſt alſo paſs through the Point diametrically oppoſite thereto, as B.

5° If Two great Circles mutually interſect each other, the Line of the Section is the Diameter of the Sphere, and therefore two great Circles interſect each other in Points diametrically oppoſite.

6° A *great Circle of the Sphere*, divides it into two equal Parts or Hemiſpheres.

2. All great Circles of the Sphere, cut each other into two Parts; and, converſely, all Circles that thus cut each other, are *great Circles of the Sphere*.

3. An Arch of a great Circle of the Sphere, intercepted between another Arch H I L (Fig. 18.) and its Poles A and B, is a Quadrant.

That intercepted between a *leſs Circle* D E F, and one of its Poles A, is greater than a Quadrant; and that between the ſame and the other Pole B, leſs than a Quadrant; and, converſely.

4. If a *great Circle of the Sphere* paſs through the Poles of another, that other paſſes through the Poles of this. And if a great Circle paſs through the Poles of another, the Two cut each other at right Angles, and converſely.

5. If a great Circle, as A F B D, paſs through the Poles A and B of a leſſer Circle D E F, it cuts it into equal Parts; and at right Angles.

6. If two great Circles A E B F and C E D F (Fig. 19.) interſect each other in the Poles E and F of another great Circle A C B D; that other will paſs through the Poles H and h, I and i of the Circles A E B F and C E D F.

7. If two great Circles A E B F and C E D F, cut each other mutually; the Angle of Obliquity A E C, will be equal to the Diſtance of the Poles H I.

8. All *Circles of the Sphere*, as G F and L K (Fig. 20.) equally diſtant from its Centre C, are equal; and the further they are removed from the Centre, the leſs they are. Hence, ſince of all parallel Chords, only two, D E and E K are equally diſtant from the Centre; of all the Circles parallel to the ſame great Circle, only two are equal.

9. If the Arches F H and K H, and G I and I L, intercepted between a great Circle I M H and the leſſer Circles G N F and L O K; be equal, the Circles are equal.

10. If the Arches F H and G I of the ſame great Circle A I B H, intercepted between two Circles G N F and I M H, be equal, the Circles are parallel.

11. An Arch of a parallel Circle I G (Fig. 21.) is ſimilar to an Arch of a great Circle A E; if each be intercepted between the ſame great Circles C A F and C E F.

Hence the Arches A E and I G, have the ſame *Ratio* to their Peripheries; and, conſequently, contain the ſame Number of Degrees. And hence the Arch I G is leſs than the Arch A E.

12. The Arch of a great Circle, is the ſhorteſt Line which can be drawn from one Point of the Surface of the Sphere to another: And the Lines between any two Points on the ſame Surface, are the greater, as the Circles whereof they are Arches, are the leſs.

Hence, the proper Meaſure, or Diſtance of two Places on the Surface of the Sphere, is an Arch of a great Circle intercepted between the ſame.

SPHEROID, in Geometry, a Solid approaching to the Figure of a Sphere, but not exactly round, but oblong; as having one of its Diameters bigger than the other; and generated by the Revolution of a Semi-ellipſis about its Axis.

When 'tis generated by the relation of the Semi-ellipſis about its greater Axis, 'tis call'd an *Oblong Spheroid*; and when generated by the Revolution of an Ellipſis about its leſs Axis, an *oblate Spheroid*. See OBLATE.

The Contour of a Dome, *Daviler* obſerves, ſhould be Half a *Spheroid*. Half a Sphere, he ſays, is too low to have a good Effect below. See DOME.

For the Solid Dimenſions of a *Spheroid*, 'tis $\frac{2}{3}$ of its Circumſcribing Cylinder: Or it is equal to a Cone, whoſe Altitude is equal to the greatet Axis, and the Diameter of the Baſe to four Times the leſs Axis of the generating Ellipſis.

Or a *Spheroid* is to a Sphere deſcribed on its greater Axis, as the Square of the leſs Axis to the Square of the greater: Or 'tis to a Sphere deſcribed on the leſſer Axis, as the greater Axis to the Leſs. The Word is form'd from *Sphæra*, and εἶδος, *Shape*.

SPHINCTER, in Anatomy, a Term applied to a kind of circular Muſcles, or Muſcles in Form of Rings, which ſerve to cloſe and draw up ſeveral Orifices in the Body, and prevent the Excretion of the Contents. See MUSCLE.

The Word is form'd from the *Greek* σφιγκτὴρ, *Stricter*, *i. e.* ſomething that binds and conſtringes a Thing very cloſely; theſe Muſcles having an Effect much like that of a Purſe-ſtring.

SPHINCTER *Ani*, is a circular Muſcle, ſerving to ſhut the *Anus*, and keep the Excrements from coming away involuntarily. See ANUS and EXCREMENTS.

'Tis near two Inches broad, and hangs down below the *Rectum*, near an Inch. It is faſten'd on the Sides to the Bones of the *Coxendix*, and behind to the *Os ſacrum*: Before, in Men, to the *Accelerator Urinæ*, and in Women, to the *Vagina Uteri*. See RECTUM.

Some would have it Two Muſcles, and ſome Three; but without much Reaſon.

SPHINCTER *Veſicæ*, is a Muſcle conſiſting of circular Fibres, placed at the Exit of the Bladder, to prevent the perpetual dripping of the Urine. See URINE and BLADDER.

It keeps the Bladder conſtantly ſhut; and is only opened, when by the Contraction of the Abdominal Muſcles, the Bladder is compreſs'd, and the Urine forced out.

SPHINCTER *Vaginæ*, a conſtrictory Muſcle, ſerving to hinder the Reflux of the Blood from the *Clitoris*, &c. in Coition. See VAGINA.

SPHINCTER *Gulæ* } See { OESOPHAGÆUS.
SPHINCTER *Labiorum* } See { CONSTRICTOR.

SPHINX, in Sculpture, &c. a Figure or Repreſentation of a Monſter of that Name, famed among the Ancients; now moſtly uſed as an Ornament in Gardens, Terraſſes, &c.

'Tis repreſented with the Head and Breaſts of a Woman, the Wings of a Bird, the Claws of a Lion, and the reſt of the Body like a Dog.

It is ſuppoſed to have been engender'd by *Typhon*, and ſent by *Juno*, to be revenged on the *Thebans*. Its Office was to propoſe dark, enigmatical Queſtions to all Paſſers-by, and if they did not give the Explication thereof, to devour them.

It made horrible Ravages on Mount *Sphingion*, and could not by any means be deſtroyed, till after *Oedipus* had ſolved the following Riddle; What Animal is it, that in the Morning walks on four Legs; at Noon on Two, and at Night on Three?

Among the *Egyptians*, the *Sphinx* was the Symbol of Religion, by reaſon of the Obſcurity of its Myſteries. And on the ſame account, the *Romans* placed a *Sphinx* in the *Pronaos* or Porch of their Temples.

SPICA-*Nardi*, Spike-nard, a kind of Ear growing even with the Ground, and ſometimes in the Ground; uſed in the Compoſition of Treacle. See TREACLE.

It likewiſe ſhould be uſed in the Compound-Syrop of Chicory, in lieu of Cinnamon, which the Apothecaries generally put for it, becauſe cheaper.

The Ear or *Spica*, is about the Length and Thickneſs of a Finger; very light, covered with long, reddiſh Hairs, of a ſtrong Smell, and a bitteriſh, ſharp Taſte. There riſe ſeveral of theſe Ears from the ſame Root. The Stem is ſmall, and the Root the Thickneſs of a Quill.

The *Spica-Nardi*, is uſually reckon'd in the Number of Roots. 'Tis alſo call'd *Nardus Indicus*; becauſe brought from the *Eaſt-Indies*.

'Tis accounted a *Stomachic* and *Nephritic*, proper to ſtrengthen the Stomach, and promote the Diſcharge of Urine.

There is alſo another Kind, call'd *Spica-Celtica*, growing in the *Pyreneans*, and the Mountains of *Tirol*.

SPICA *Virginis*, a Star of the firſt Magnitude in the Conſtellation *Virgo*. See VIRGO.

Its Place is in the more ſoutherly Hand. Its Longitude, according to Mr. *Flamſtead*, is 19° 31′ 22″; its Latitude 2° 1′ 59″ South.

SPICE, any kind of aromatic Drug, that has hot and pungent Qualities; ſuch are *Pepper*, *Nutmeg*, *Ginger*, *Cinnamon* and *Cloves*. See PEPPER, NUTMEG, &c.

Some alſo apply the Word to medicinal Drugs brought from the *Eaſt*, as *Senna*, *Caſſia*, *Frankincenſe*, &c. See each under its proper Article, SENNA, CASSIA, &c.

SPIDERS-*Silk*. See SILK.

SPIKING *up the Ordnance*; a Sea Phraſe, for the faſtening a Quoin with *Spikes* to the Deck, cloſe to the Breech of the Carriages of great Guns; that they may keep cloſe and firm to the Ship's Sides, and not get looſe when the Ship rolls, and by that means endanger the breaking out of the Butt-head of a Plank.

SPINA *Ventoſa*, in Medicine, &c. an Ulceration, wherein the Bones are eaten by a malignant Tumour, without any Pain of the *Perioſteum*, or Membrane that covers the Bone. After which, an indolent Swelling being riſen, the Part affected is quite eat out with the Ulcer; whence frequently follows a neceſſity of Amputation.

SPINAL *Marrow* } See { MEDULLA *Spinalis*.
SPINAL *Nerves* } See { NERVE.

In the Hiſtory of the *French* Academy of Sciences, for the Year 1714, we have an Inſtance of a Fœtus born without either Brain, Cerebel, or *Spinal Marrow*, though perfectly well form'd in other reſpects. It had gone its natural Time; lived two Hours; and even gave Signs of Life, upon ſprinkling the Baptiſmal Water on its Head.

Inſtances of this Kind, as this is not the only one we meet withal, furniſh a terrible Objection againſt the Exiſtence of the animal Spirits, which ſhould be generated in the Brain, or at leaſt in the Cerebel or *Spinal Marrow*; and which are generally allowed of ſuch abſolute Neceſſity in the Animal Oeconomy. See SPIRIT.

SPINALIS, in Anatomy, a Muſcle on the Side of the Neck, ariſing from the Five ſuperior Proceſſes of the Vertebræ of the Thorax, and inferior of the Neck; and in its Aſcent, becomes more fleſhy, and is laſtly inſerted into the inferior Part of the Vertebræ of the Neck, laterally. It ſerves to draw the Neck backwards.

SPINDLE, in the Sea Language, is the ſmalleſt Part of a Ship's Capſtan, which is betwixt the two Decks: The *Spindle* of the Jeer Capſtan hath Whelps to heave the Viol. Alſo the Axis of the Wheel of a Watch or Clock, is called the *Spindle*, and its Ends the Pevets. See CLOCK, &c.

SPINE, or SPINA *Dorſi*, in Anatomy, the Series or Aſſemblage of Vertebræ, or Bones of the Back, which ſuſtain the reſt of the Body, and to which are connected the Ribs. See VERTEBRÆ.

The *Spine* is uſually divided into four Parts; the Neck, which contains Seven Vertebræ; the Back, Twelve; the Loins Five; and the *Os ſacrum*, Four. The *Spine* includes a kind of Medulla, much reſembling that of the Brain, hence call'd *Medulla Spinalis*, or *Spinal Marrow*; which ſee.

It has its Name *Spine*, by reaſon the hind Part thereof is Edg'd, or *Spiny*. Some call it the *Canalis Sacer*.

SPINET, a Muſical Inſtrument, rank'd in the Second or Third Place among harmonious Inſtruments. See MUSIC.

It conſiſts of a Cheſt or Belly, made of the moſt porous and reſinous Wood to be found; and a Table of Firr faſten'd on Rods, call'd *Sound-boards*, which bear on the Sides. On the Table is raiſed a little Prominence, wherein are placed as many Pins as there are Chords to the Inſtrument.

The Inſtrument is played by two Ranges of continued Keys, the foremoſt Range being in the Order of the Diatonick Scale; and the other Range ſet backwards in the Order of the Artificial Notes or Semi-tones. See SCALE.

The Keys are ſo many long, flat Pieces of Wood, which when touched and preſs'd down at one End, make the other raiſe a Jack, which ſounds the Strings by means of the End of a Crow's Quill, wherewith 'tis armed. The 30 firſt Strings are of Braſs, the other more delicate ones of Steel or Iron Wiar. They are all ſtretch'd over Two Bridges glued to the Table.

The Figure of the *Spinet* is a long Square, or Parallelogram a Foot and Half broad; ſome call it a *Harp Couch'd*, and the Harp, an *Inverted Spinet*.

The *Spinet* is generally tuned by the Ear; which Method of the practical Muſicians, is founded on this Suppoſition, That the Ear is a perfect Judge of an Octave and Fifth. The general Rule, is to begin at a certain Note, as *c*, taken towards the middle of the Inſtrument, and tuning all the Octaves up and down, and alſo the Fifth's, reckoning Seven Semi-tones to each Fifth, by which means the whole is tuned.

Sometimes to the common or fundamental Play of the *Spinet*, is added another ſimilar one in Uniſon, and a Third in Octave to the firſt; to make the Harmony the fuller. They are played either ſeparately or together, which is call'd the *double* or *triple Spinet*. Sometimes a Play of Violins is added, by means of a Bow, or a few Wheels parallel to the Keys, which preſs the Strings, and make the Sounds laſt as long as the Muſician pleaſes; and heighten and ſoften them, as they are more or leſs preſs'd. The Harpſichord is a kind of *Spinet*, only with another Diſpoſition of the Keys. See HARPSICHORD.

The Inſtrument takes its Name from the little Quills Ends, wherewith the Strings are drawn, which are ſuppoſed to reſemble *Spinæ*, Thorns.

SPINNING, in Commerce, the reducing of Silk, Line, Hemp, Wooll, Hair or other Matters into Thread. See THREAD.

Spinning, is either perform'd on the Wheel, or with a Diſtaff or Spindle, or with other Machines proper for the ſeveral kinds of Working. Hemp, Line, Nettles and other like Plants are to be wet in *Spinning*: Silks, Woolls, Cottons, &c. are *ſpun* dry, and don't need Water; yet there is a Way of *Spinning* Silk as it comes off the Caſes or Balls, where hot, and even boiling Water is to be uſed. See SILK; ſee alſo WHEEL, DISTAFF, &c.

SPINOSISM, the Doctrine of *Spinoſa*; or, Atheiſm propoſed after the Manner of *Spinoſa*. The Retainers whereto, are called *Spinoſiſts*.

The great Principle of *Spinoſiſm* is, That there is nothing properly and abſolutely exiſting, but Matter, and the Modifications of Matter; among which are even comprehended, Thought, abſtract and general Ideas, Compariſons, Relations, Combinations of Relations, Properties, &c. See MATTER, SUBSTANCE, &c.

Spinoſa or *Eſpinoſa*, was a Man well known in *Holland*. He was born a *Jew*; but did not make Profeſſion of any Religion, either the Jewiſh or Chriſtian. He compoſed ſeveral Books in *Latin*, the moſt celebrated whereof, is his *Tractatus Theologico Politicus*, wherein he overturns the Foundation of all Religion: The Book, accordingly, was condemn'd by a publick Decree of the States; though it has ſince been ſold publickly, and even reprinted, both in *Latin* and *French*, in that Country.

Spinoſa, here, maintains, That all Religions are only political Engines, calculated for the publick Good; to render the People obedient to Magiſtrates, and to make them practiſe Virtue and Morality.

He

He does not here lay down his Notion of the Deity openly; but contents himſelf with inſinuating it.

In his Converſations, he uſed to be more expreſs; and maintained, That God is not, as we imagine him, an infinite, intelligent, happy and perfect Being; nor any thing, but that natural Virtue, or Faculty, which is diffuſed throughout all Creatures. See NATURE.

There have been abundance of Anſwers made to this Work of *Spinoſa*; but all exceedingly weak, except what we have in *Clark*'s Sermons at *Boyle*'s Lecture.

Spinoſa, in the ſaid Treatiſe, is very full on the Subject of the Authors of the Scriptures; and endeavours to ſhew, That the Pentateuch is not the Work of *Moſes*; contrary to the common Opinion, both of the *Jews* and Chriſtians. He has alſo his particular Sentiments, as to the Authors of the other Books. This Part of the Treatiſe has been anſwered by M. *Huet*, in his *Demonſtration Evangelique*; and by M. *Simon*, in his *Hiſt. Crit. du vieux Teſt.* See PENTATEUCH.

SPINSTER, in Law, an Addition uſually given to all unmarried Women, from the Viſcount's Daughter downwards.

Yet Sir *Edward Coke* ſays, *Generoſa* is a good Addition for a Gentlewoman; and that if ſhe be named *Spinſter* in any Original Writ, Appeal or Indictment, ſhe may abate and quaſh the ſame.

Spelman ſays, That anciently, even the Queens uſed the Diſtaff and Spindle; whence *Spinſter* became a common Appellation for all Women.

SPIRAL, in Geometry, a curve Line, of the circular Kind, which in its Progreſs, recedes from its Centre; as in winding from the Vertex down to the Baſe of a Cone. See SPIRE.

'Tis called from its Inventor, *Archimedes*'s *Spire*, or *Helix*; and is thus deſcribed:

Divide the Periphery of a Circle A P p A (Tab. Geometry Fig. 39.) into any Number of equal Parts, by a continual Biſſection in the Points p. Into the ſame Number of Parts divide the Radius C A, and make C M equal to one Part, C *m* to two Parts, &c. Then will the Points M *m*, *m*, &c. be Points in the *Spiral*, which connected, will give the *Spiral* itſelf. This now, is called the *firſt Spiral*, and the Space included between its Centre, and the Point A, the *Spiral Space*.

This firſt *Spiral* may be continued to a *ſecond Spiral*, by deſcribing another Circle with double the Radius of the Firſt; and the Second may be continued a Third, by a third Circle, &c.

Hence, 1°, A P is to the Periphery, as C *m* to the Radius. Wherefore, if the Periphery be called p, the Radius A C$=r$, A P$=x$, P M$=y$; then will C M$=r-y$: Conſequently as $p : mr :: x : r-y$, we ſhall have $pr-py=rx$.

2° If C M$=y$; then will $rx=py$. Which Equation the *Spiral* has in common with the Quadratrix of *Dinoſtrates*, and that of *Tſchirnhauſen*; and therefore $r^n x^m=p^n y^m$ will ſerve for infinite *Spirals* and Quadratrices. See QUADRATRIX.

3° The Lines M *m*, M *m*, &c. are to one another as the Arches of the Circle, intercepted between M A and thoſe Lines: And, when continued, making equal Angles with the firſt and ſecond *Spiral*, are in arithmetical Proportion.

4° Lines drawn from M to the ſecond *Spiral*, are to each other as the ſaid Arches, together with the whole Periphery added on both Sides.

Quadrature of SPIRALS, *Logiſtic* SPIRAL } See { QUADRATURE. LOGISTIC.

SPIRAL, in Architecture, Sculpture, &c. is a Curve that aſcends, winding about a Cone or *Spire*; ſo as all the Points thereof continually approach the Axis: By this it is diſtinguiſhed from the *Helix*, which winds after the ſame Manner, around a Cylinder. See HELIX.

Ignorant Architects confound the Two: But the more knowing diſtinguiſh them carefully.

The *Spiral* Line is conceived to be thus generated.

If a Right Line as A B, (Tab. Geometry Fig. 40.) having one End fix'd at B, be equally moved round, ſo as with the other End B, to deſcribe the Periphery of a Circle; and at the ſame Time, a Point be conceived to move forward, equally from B towards A in the Right Line A B, ſo as that the Point deſcribes that Line, while the Line generates the Circle:

Then will the Point, with its two Motions, deſcribe the curve B, 1, 2, 3, 4, 5, &c. which is called a *Spiral Line*, and the plain Space contained between the *Spiral Line*, and the Right Line B A, is called the *Spiral Space*.

Again, if the Point B be conceived to move twice as ſlow as the Line A B; ſo that it ſhall get but Half way along B A, when that Line ſhall have formed the Circle; and if then, you imagine a new Revolution to be made of the Line carrying the Point, ſo that they ſhall end their Motion, at leaſt, together; there ſhall be formed a double *Spiral Line*; as in the Figure: From the Manner of which, may be eaſily drawn theſe Corollaries.

1. That the Lines B 12, B 11, B 10, &c. making equal Angles with the firſt and ſecond *Spiral* (as alſo B 12, B 10, B 8, &c.) are in an arithmetical Proportion.

2. The Lines B 7, B 10, &c. drawn any how to the firſt *Spiral*, are to one another as the Arches of the Circle intercepted betwixt B A, and thoſe Lines: Becauſe whatever Parts of the Circumference the Point A deſcribes, as ſuppoſe 7, the Point B will alſo have run over 7 Parts of the Line A B.

3. Any Line drawn from B to the ſecond *Spiral*, as B 18, B 22, &c. are to each other, as the aforeſaid Arches, together with the whole Periphery added on both Sides: For at the ſame time that the Point A runs over 12, or the whole Periphery, or perhaps 7 Parts more, ſhall the Point B have run over 12, and 7 Parts of the Line A B, which is now ſuppoſed to be divided into 24 equal Parts.

Proportional SPIRALS, are ſuch *Spiral* Lines, as the Rumb Lines on the Terreſtrial Globe, which, becauſe they make equal Angles with every Meridian, muſt alſo make equal Angles with the Meridians in the Stereographick Projection on the Plane of the Equator; and therefore will be, (as Dr. *Halley* obſerves) proportional *Spirals* about the Polar Point. From whence he demonſtrates, that the Meridian Line, is a Scale of Log-Tangents of the Half Meridian-Complements of the Latitudes.

SPIRAL *Stairs*, in Building. See STAIRS.

SPIRE, SPIRA, in the ancient Architecture, is ſometimes uſed for the Baſe of a Column; and ſometimes for the *Aſtragal* or *Tore*. See BASE.

From the *Latin*, *Spiræ*, the Folds of a Serpent, which when laid, bears ſome Reſemblance thereto; or from the *Greek*, σπεῖρα, the Coils of a Rope.

SPIRIT, in Theology, is uſed by way of Eminence, for the Third Perſon in the Holy Trinity; called *The Spirit*, or *The Holy Spirit*. See TRINITY and PERSON.

The *Macedonians*, &c. deny the Divinity of the *Spirit*. See MACEDONIANS.

The *Arians*, &c. deny his Co-equality with the Father. See ARIANS.

Divines expreſs the Manner wherein the *Spirit* was produced by the active *Spiration* or Breathing of the Father and the Son; whence the Name *Spiritus*, Breath.

Order of the Holy SPIRIT. See *Holy* GHOST.

SPIRIT, is alſo uſed among Divines, for the divine Power and Virtue; and the Communication thereof to Men.

In this Senſe, the *Spirit* is ſaid to have gone out on the Face of the Deep, *Geneſis*, *c.* i. *v.* 2. And the Prophets to have been poſſeſs'd of the *Spirit* of God.

Providence, in this Senſe, is that univerſal *Spirit*, whereby God makes all Nature to act. Thus the Holy Virgin is ſaid to have conceived of the *Spirit*, 1. *Cor.* vii. 40.

SPIRIT, is alſo uſed for any Incorporal Being, or Intelligence.

In this Senſe, God is ſaid to be a *Spirit*: Angels, *Spirits*; and the Devil an *Evil Spirit*. See GOD, ANGEL, DEVIL, &c.

In this Senſe, the Human Soul is alſo call'd *Spirit*, from its thinking and reflecting Powers, which cannot be conceived to reſide in any thing Material. See SOUL.

F. *Mallebranch* obſerves, 'tis extremely difficult to conceive what it is, ſhould make the Communication between the Body and the *Spirit*; for if the *Spirit* have no material Parts, it can't move the Body: But the Argument muſt be falſe ſome how or other; for we believe that God can move Bodies, and yet don't attribute any material Parts to him.

Private SPIRIT, is a Term that made a great Figure in the Controverſies of the two laſt Centuries. It ſignifies the particular View or Notion each Perſon has of the Dogmata of Faith, and the Truths of Religion, as ſuggeſted by his own Thought, and the Perſuaſion he is under with regard thereto.

The firſt Reformers denying ſtrenuouſly any infallible Interpreter of the Scripture, or any ſettled Judge of Controverſies; maintained, that every Perſon was to interpret and judge of revealed Truths, by his own Light, aſſiſted by the Grace of God; and this was what they call'd *private Spirit* or *Judgment*.

Againſt this, the Arguments uſed by the Romaniſts are, That revealed Truths being one and the ſame for all Believers; the Rule God has given us for the judging of them, ought to repreſent them to us uniformly and the ſame; but the *private Spirit* informs *Luther* one way, and *Zuinglius* another. It divides *Oecolompadius*, *Bucer*, *Oſiander*, &c. And the Doctrine it diſcovers to the *Confeſſionites*, is quite different from that it ſhews the *Anabaptiſts* and *Mennonites*, in the very ſame Paſſage of Scripture.

SPIRIT, in Chymiſtry, is one of the Principles of natural Bodies, called alſo *Mercury*. See PRINCIPLE and MERCURY.

The chymical Principle *Spirit*, is a fine, ſubtile, volatile, penetrating, pungent Liquor, which ariſes ordinarily before the Phlegm or Water, and ſometimes after it.

The great Properties of this Liquor are, that it penetrates and opens ſolid Bodies, corrodes, breaks, diſſolves, and even diſſolves certain mix'd Bodies; coagulates others, and produces an Infinity of Effects; and thoſe even contrary to one another.

In the general, the Chymiſts call *Spirits*, all the fine ſubtile, and not aqueous Particles, raiſed from Bodies by Heat, and reduced into Liquors by Diſtillation; ſuch are *Spirit* of *Vitriol*, of *Salt-petre*, of *Salt*, &c.

They alſo call *Spirits*, thoſe aqueous Liquors drawn by Liquidation, when they are impregnated with Salts, or other active Principles, raiſed, together with them, by the Violence of the Fire.

Theſe, when they excite any Senſation of Heat on the Tongue, are particularly called *Acid*, or *Sharp Spirits*.

When they make any Eroſion on the Tongue, they are call'd *Corroſive Spirits*. See CORROSIVE.

Such as Taſte ſomewhat like common Salt, are call'd *Saline Spirits*. See SALT.

Such as partake of the Taſte of common Sulphur, *Sulphurous Spirits*. See SULPHUR.

And when this Taſte is very ſtrong, *Urinous Spirits*. See URINOUS.

Such as take Fire readily, *Inflamable* or *Ardent Spirits*. See INFLAMABLE.

Such where the Acid predominates, though qualified with a little Sulphur, &c. are called *Mix'd Spirits*.

In this Senſe, the Chymiſts are ſaid to draw a *Spirit* from Sulphur, Salt and other Bodies, when they extract the Eſſence, or the ſubtileſt Part thereof, by Diſtillation or otherwiſe. See DISTILLATION, &c.

SPIRITS is alſo a general Name among Diſtillers, for all diſtill'd Liquors that are neither Oil nor Phlegm.

SPIRIT *of Wine*, is only Brandy rectified once or more Times, by repeated Diſtillations. See BRANDY.

One may likewiſe make a perfect Rectification of *Brandy* into *Spirit of Wine*, at one ſingle Diſtillation, by uſing a chymical Inſtrument, conſiſting of ſeveral Cucurbites, deſcribed by *Glaſer*. See RECTIFICATION.

Spirit of Wine is uſed in Dying, as a non-colouring Drug, and giving no Colour itſelf, but ſerving to prepare the Stuffs to receive the Colours. See DYING.

The Conſumption of *Spirit of Wine* is very conſiderable in ſeveral other Works and Manufactures, particularly the making of Varniſh. See VARNISH.

SPIRIT *of Sulphur*, is a *Spirit* drawn from *Sulphur* melted and inflamed; the moſt ſubtile Part whereof, is converted into a Liquor, by ſticking to a Glaſs Bell ſuſpended over it, whence it falls Drop by Drop, into a Trough, in the Middle whereof, is placed the Stone Pot wherein the Sulphur is burnt. See SULPHUR.

This *Spirit* is held Specific for the ſame Diſeaſes as *Spirit of Vitriol*. See SPIRIT *of Vitriol*.

SPIRIT *of Salt*, a yellow Liquor drawn, by Chymiſtry, from Sea Salt. See SALT.

The beſt, is that prepared in *England*. 'Tis much uſed in Medicine; but has not, perhaps, all the Virtues aſcribed to it. The common *Spirit of Salt*, being very corroſive, may be dulcified, by letting it digeſt three Days on a gentle Sand heat, with an equal Quantity of *Spirit of Wine* mix'd therewith. See DULCIFYING, FRESH-*water*, &c.

SPIRIT *of Vitriol*, is *Vitriol* dried in the Sun, or in Defect thereof, by the Fire, and then diſtill'd by chymical Operations ſeveral Times repeated; firſt by a reverberatory Fire, and then in *Balneo Mariæ*. See VITRIOL.

'Tis held excellent againſt the Epilepſy, as well as againſt burning and malignant Fevers.

The laſt *Spirit* drawn from Vitriol, and which is improperly called *Oil of Vitriol*, is uſed in the Diſſolution of Metals and Minerals.

SPIRIT *of Tartar*	See	TARTAR.
SPIRIT *of Sugar*		SUGAR.
SPIRIT *of Turpentine*		TURPENTINE.
SPIRIT *of Venus*		VENUS.

SPIRIT, in Phyſicks. Sir *Iſaac Newton* cloſes his immortal *Principia*, with obſerving, That he might "there "have added ſome Things, concerning a moſt ſubtile *Spirit* "which pervades all, even the denſeſt Bodies, and lies hid "therein; by the Force and Action whereof, the Particles "attract each other, at very ſmall Diſtances, and when con- "tiguous, cohere: And electric Bodies act at greater Di- "ſtances, both attracting and repelling the neighbouring "Corpuſcles; and Light is emitted, reflected, and in- "flected and warms Bodies; and all Senſation is excited; "and the Members of Animals moved at the Inſtance of the "Will, *viz.* by Vibrations of this *Spirit*, propagated through "the ſolid Capillaments of the Nerves, from the external "Organs of Senſe to the Brain, and from the Brain to the "Muſcles."

But he chuſes to poſt-pone them; "as not having a ſufficient "Number of Experiments, whereby the Laws of the Action "of this *Spirit* might be preciſely determined." See NEWTONIAN *Philoſophy*; ſee alſo MEDIUM, VACUUM, &c.

SPIRITS, in Medicine, are the moſt ſubtile and volatile Parts, or Juices of the Body; by means whereof, all the Functions and Operations thereof are performed.

The *Spirits* are uſually diſtinguiſhed into *Vital* and *Animal*.

The Ancients, indeed, made a four-fold Diſtinction of *Spirits*; into *Vital*, *Animal*, *Natural* and *Genital*: Whereof the Firſt they placed in the Heart; the Second in the Brain; the Third in the Stomach and Liver; and the laſt in the Teſticles: But as this Diviſion is founded on a falſe Hypotheſis; 'tis now deſervedly ſet aſide.

Vital SPIRITS, are only the fineſt, and moſt agitated Part of the Blood; whereon its Motion, and Heat depend. See BLOOD.

Animal SPIRITS, are an exceedingly thin, ſubtile, moveable Fluid, Juice or Humour ſeparated from the Blood in the Cortex of the Brain, hence received into the minute Fibres of the Medulla, and by them diſcharged into the Nerves, by which it is convey'd through every Part of the Body, to be the Inſtruments of Senſation, muſcular Motion, &c. See SENSATION, MUSCULAR *Motion*, &c.

The *Animal Spirits*, call'd alſo *Nervous Spirits* and *Nervous Juice*, only differ from the *Vital Spirits*, in that theſe laſt are ſtill mix'd and blended with the groſſer Parts of the Blood, and circulate along with it: Whereas, the *Animal Spirits* are ſecreted thence by the Glands whereof the cortical Subſtance is compoſed; and have a Motion, Circulation, &c. peculiar to themſelves. See CIRCULATION.

Dr. *Willis* conceives, that the *Animal Spirits* are prepared by a proper Diſtillation of the ſubtileſt Part of the arterial Blood, brought by the Carotides into the Cortex of the Brain; and ſhews, that the Blood contained in the Sinus's of the Dura Mater, acts in this Diſtillation in the ſame Manner as Fire does in the chymical Diſtillations perform'd by Defluxion, where being placed over the Matter to be diſtill'd, it makes the ſubtileſt Parts thereof deſcend.

The Exiſtence of the *Animal Spirits* is controverted: But the infinite Uſe they are of in the Animal Oeconomy, and the exceedingly lame Account we ſhould have of any of the Animal Functions without them, will ſtill keep the greateſt Part of the World on their Side. And, in effect, the learned *Boerhave* had gone a good way towards a Demonſtration of their Reality.

The Blood brought to the Brain by the Carotides, and Vertebral Arteries, he ſhews, is infinitely prepared, ſecreted elaborated and changed from its natural State, e'er it arrives there, inſomuch as, contrary to the Nature of the reſt, inſtead of cohering by the Fire, it immediately reſolves wholly into a thin Vapour, without any Fæces behind. And is thus exceedingly well fitted for the Formation of ſo extraordinary a Fluid.

He ſhews, further, That the *Animal Spirits* are not form'd from the Cruor, but the Serum of the Blood, which *Malpighi*'s Hiſtory of the Growth of the Fætus in an incubated Egg, ſhews to be diviſible into Parts or Corpuſcles, inconceivably ſmaller than the Cruor.

He adds, That the Nature of the Juice is ſuch, as that no Salts or Oils in the Body can contribute any thing to it; and that in all appearance, 'tis only a moſt ſubtile, pure Water; which Liquor is found to reſemble theſe *Spirits* in its extraordinary Miſcibility, Mobility, Solidity, Softneſs, Simplicity and want of Elaſticity.

The ſame Author ſhews, further, from the Magnitude of the Carotids and Vertebrals, their ſtraight uninterrupted Courſe, the great Quantity of Blood they bring, the Bulk of the Cortex, &c. that there muſt be a very great Quantity of this Liquor; that there is freſh prepared every Moment of Life; and that it is driven, every Moment, by the Action of Heat, &c. from the Brain and Cerebel, to all the Parts of the Body furniſhed with Nerves; which Motion, he ſhews from the exceeding Fineneſs, Crookedneſs, &c. of the Ramifications muſt be very gentle, equable and conſtant, one Part continually driving before it another. Upon the whole, 'tis no Wonder it eſcapes the Notice of our Senſes; and that no Ligatures, Wounds, Punctures, Injections or the like, make either it or the Apertures of the Nerves through which it flows, viſible: Nor does it avail, what ſome, who allow the Exiſtence of the *Animal Spirits*, urge againſt their being any coherent Juice or Liquor, *viz.* That we ſhould find it ooze out and wet the adjacent Parts, upon cutting a Nerve, as we do in cutting a Lymphatic, &c. that upon binding a Nerve, the upper Part would ſwell; that the Agitations which Objects make on the Filaments, would deaden, &c. that 'tis impoſſible a Liquor ſhould have two oppoſite Motions at the ſame Time; and that the Velocity of Senſations, and the Rapidity of the Motions of Man, prove, that the *Animal Spirits* are rather Light than a Liquor. *Mem. de Trev.*

For the Secretion of the Animal SPIRITS *from the Blood, and the Apparatus in order thereto* - - - - - - - See BRAIN and SECRETION.

For the Courſe of the Animal SPIRITS, *and the Veſſels thro' which they are carried* - - - See NERVE and SECRETION.

For the Office of the Animal SPIRITS *in muſcular Motion and Senſation* - - - - - - See MUSCLE and SENSATION.

SPIRITUALITIES of a Biſhop, are ſuch Profits, as ariſe to him from the Benefit of his Juriſdiction in his Dioceſs, and not as a Baron of the Parliament. See BISHOP.

Such are thoſe of his Viſitations, Inſtitutions, Ordinations, Preſentation-Money, *&c.* See VISITATION, *&c.*

SPIRITUALIZATION, in Chymiſtry, the Action of extracting *Spirits* from natural Bodies. See SPIRIT.

Spiritualization, is an Operation that belongs principally to fermented Salts; then to fermented Juices and Liquors; the Fermentation rendring the *Spirits* Volatile and Inflammable. See FERMENTATION.

Spirit of Wine, is ſometimes *Spiritualiz'd* to that degree, that upon throwing a Quantity into the Air, not a Drop ſhall fall down; but the whole evaporate and be loſt.

SPITTLE. See SALIVA and SPUTUM.

SPITTLE-*Houſe*, a Corruption of the Word *Hoſpital*. See HOSPITAL.

SPLANCHNOLOGY, in Anatomy, a Diſcourſe, or Explication of the Viſcera. See VISCERA.

Sarcology is divided into three Parts, *viz. Splanchnology*, *Myology* and *Angeology*. See SARCOLOGY.

Splanchnology, is that which treats of the Internal Parts, and particularly the Viſcera. The Word is form'd from the *Greek* σπλάγχνον *Viſcus*, *Inteſtin*, and λόγος, *Diſcourſe*.

SPLEEN, *Lien*, in Anatomy, a ſoft, ſpungy Viſcus, of a darkiſh Red, or rather Livid, Colour, ordinarily reſembling the Figure of a Tongue, though ſometimes triangular, and ſometimes roundiſh.

The *Spleen* is uſually ſingle, though ſometimes there are Two, and ſometimes Three found. 'Tis ſituate in the Left Hypochondrium, between the ſpurious Ribs and the Stomach; is ſomewhat convex on the Side, towards the former, and concave towards the latter. Its ordinary Length is Six Inches; Breadth Three, and Thickneſs One. It is connected to the Omentum, and by Means of that and the Blood Veſſels, to the Stomach and Left Kidney, and ſometimes to the Diaphragm.

It is covered with two Tunics; the External derived from the Peritonæum and connected to the Internal only, by the Intervention of the Blood Veſſels. The inner conſiſts of Fibres very curiouſly interwoven. From this, probably, are derived thoſe innumerable Cells or little Bladders, which make up the main Bulk of the *Spleen*: Though *Malipighi* rather takes them to ariſe from the Venous Duct. The Cells communicate with each other, and diſcharge themſelves into the Trunk of the Vein. Their Inſide, according to *Malpighi*, is furniſhed with various minute Glands adhering together; Six, Seven or Eight whereof, form a kind of ſmall conglomerate Glands, wherein the Arteries and Veins ſeem to terminate.

Its Blood-Veſſels are the *Splenic* Artery, which furniſhes it with Blood, from the Cœliac; and the *Splenic Vein*, which carries it thence, by the Porta, to the Liver. See SPLENIC.

Its Nerves come from the *Plexus Lienaris*, near the Bottom of the Stomach. The Veſſels are all, as ſoon as they enter the *Spleen*, wrapt up in one common Capſula or Membrane, and plentifully diſtributed together throughout the Subſtance of the *Spleen*. Beſides theſe, are Lymphaticks in great Abundance.

The Anaſtomoſes between the Arteries and Veins of the *Spleen*, are more apparent than in any other Part of the Body. And this Viſcus is obſerved to be furniſhed with a greater Proportion of Blood than any other Parts. See ANASTOMOSIS.

The Uſe of the *Spleen* has been diſputed in all Ages; both, as no immediate Uſe thereof appears from Diſſection, and as we find, that Animals from whom it has been cut, live very well without it. All the Effects, *e. gr.* following the cutting it from a Dog, are, that the Animal grows more Salacious than uſual; that it urines more frequently; is more hungry than ordinary; and for the firſt Days is troubled with a Vomiting and Nauſea. 'Tis added, That 'tis neceſſary the Part be taken away to make a good Runner.

Hence ſome have imagined that the *Spleen* only ſerved to make a Balance in the Weight of the Body; others, that it was only intended for the ſake of Symmetry; others, an uſeleſs Load, and one of Natures Redundances; others a Pit or Common-Shore to diſcharge the Fœces of the Blood into; others a Fire, by the Heat whereof, the Action of the Ventricles is animated.

Many of the Ancients took it to be the Receptacle of the Atra Bilis or Melancholic Humour; for which Reaſon, ſome of them call it the *Organ of Laughter*.

Mr. *Cowper*, from the great Quantity of Blood, and the apparant Inoſculations of the *Spleen*, draws a very natural Conjecture of the Uſe thereof; at leaſt of the peculiar Mechaniſm. He takes, then, the *Spleen* to be only a ſubordinate Organ, miniſtring to the Circulation; and thinks, that by this Congreſs of the Arterial and Venal Blood, an Impetus is communicated to the latter, by which its Progreſs through the Ramifications of the Porta to the Cava, is promoted, which would otherwiſe be ſo broke by the double Ramifications of the Porta, as to want Strength ſufficient to carry it to the Heart. See CIRCULATION.

The Action or Effect of the *Spleen*, according to Dr. *Boerhaave*, is to receive the freſh arterial Blood, prepare it in its Glands, and pour it into its Cells; to return what Blood is left from this Action, to the little Veins, and thence to the *Splenic* Vein; to mix the Humour thus prepared, with the nervous Juice, and to prepare, attenuate, and more intimately unite them together into one Humour.

Malpighi, and afterwards Dr. *Keil*, and ſome others, take the *Spleen* to be a viſcous Aſſiſtant to the Liver, in the Secretion, *&c.* of the Bile. We have obſerved, that by reaſon of the Nearneſs of the Liver and Heart, and the ſwift Motion of the Blood in the Aorta, a Humour conſiſting of Particles that combine ſo ſlowly as thoſe of the Bile do, could not be prepared but by bringing the Blood round about through the Stomach, Inteſtines and Omentum, *&c.* to the Liver, to abate its Velocity.

Now Dr *Keil* conjectures, that thoſe Part were not ſufficient to receive all the Blood neceſſary to be ſent to the Liver; therefore Nature framed the *Spleen*, into whoſe Cavities the Blood being poured from a ſmall Artery, moves at leaſt as ſlowly as any that paſſes otherwiſe to the Liver; by which Means the Particles that compoſe the Bile in the Blood, which paſſes through the *Ramus Splenicus*, by ſo long and ſlow a Circulation, have more Chances for uniting than otherwiſe they would, had they been carried by the Branches of the Cœliac directly to the Liver; conſequently without the *Spleen*, ſuch a Quantity of Bile as is now ſecerned, that is, as Nature requires, could not have been ſecerned by the Liver. See BILE; ſee alſo LIVER.

SPLEEN, is alſo uſed for a Diſeaſe; by Phyſicians more uſually called the *Hypochondriac Diſeaſe*. See HYPOCHONDRIAC and VAPOURS.

SPLENETIC, a Perſon affected with Oppilations and Obſtructions of the *Spleen*.

In *Splenetic* People, the *Spleen* is ſwell'd beyond the natural Bulk, or harden'd, ſo as to ſhew a Schirrous Tumour thereon. *Splenetic* People are diſtinguiſhed by a Livid, Lead-coloured Complexion; their Character is to be very prone to Laughter; which is an Expedient Nature is ſuppoſed to make uſe of, to evacuate the too redundant Humour the *Spleen* is charged withal, whence it is that the Ancients made the *Spleen* the Organ of Laughter; and hence that popular Saying of a Perſon laughing heartily, *That he vents his Spleen*.

SPLENIC *Veſſels*, a large Artery, and a Vein of the *Spleen*. See SPLEEN.

The *Splenic Artery*, is a Trunk of the left Cœliac, ſerving to bring the Blood from that Artery to the *Spleen*, to be there ſecreted, prepared, *&c.* its Progreſs is very much contorted; and after its Arrival at the Surface of the *Spleen*, it is diffuſed through the Subſtance thereof in ſmall Branches, which ſeem to terminate in the Cells.

The *Splenic Vein* is form'd out of the ſeveral minute Veins of the *Spleen*, uniting as they quit the Surface thereof. It carries the Blood ſecreted, *&c.* in the *Spleen*, to the Left Branch of the *Vena Porta*, to be thence convey'd to the Liver, there to be further prepared and converted into Bile.

The *Splenic* Vein and Artery manifeſtly communicate with each other: For Water being poured into one of them, preſently diſcharges itſelf by the other. See SPLEEN.

SPLENII, in Anatomy, a Pair of Muſcles, called alſo from their Form *Triangulares*.

They ariſe from the four upper Spines of the Vertebræ of the Back, and from the two lower of the Neck, and aſcending obliquely, adhere to the upper tranſverſe Proceſſes of the Vertebræ of the Neck, and are inſerted into the upper Part of the Occiput. They pull the Head backwards to one Side. They are call'd *Splenii*, from a ſuppoſed Reſemblance to an Ox's *Spleen*.

SPLENT, or SPLINT, among Farriers, a callous, inſenſible Excreſcence; or kind of hard Griſtle, that ſometimes ſticks to an Horſe's Shank-Bone, and generally comes upon the Inſide: If there be one oppoſite thereto on the Outſide, it is called a *Pegg'd* or *Pinn'd Splent*, becauſe it doth, as it were, pierce the Bone, and is extremely dangerous.

SPLENTS, in Surgery, Pieces of Wood uſed in binding up broken Limbs. See FERULA.

The Word is alſo uſed for the Pieces of a fractured Bone.

SPLICE; at Sea they ſay, a Cable or Rope is *Spliced*, when the Ends of two Pieces being untwiſted, the ſeveral Strands are wrought into one another by a Fidd. Alſo when an Eye is to be made at the End of a Rope, the Ends of the Strands, are, by a Fidd, drawn into the Ends of the other Ropes Strands; and this is call'd a *Splice*.

To *Splice* among Gardeners, is to graft the Top of one Tree into the Stock of another, by cutting them ſloping, and faſtening them together. See ENGRAFTING.

SPODIUM, in Pharmacy, a kind of Calx or Aſhes, eſteem'd an excellent Cardiac, and held to have the ſame Virtues with Coral.

The *Spodium* of the ancient *Greeks*, was a kind of Aſhes found on the Hearths of Furnaces wherein Braſs was made; call'd by them σποδιον, *q. d. Cinis*.

That of the *Arabian* Phyſicians, as *Avicenna* and others, was made of the burnt Roots of Ruſhes and Reeds.

The Moderns make their *Spodium* of Ivory burnt and calcined to a Whiteneſs. 'Tis ſometimes counterfeited, by burning Bullocks or Dogs-bones; but theſe are of no Value.

The *Anti-Spodium*, which the Ancients ſubſtituted for their *Spodium*, was made of Myrtle-Leaves, Galls and ſome other Ingredients, calcined.

SPOILS, whatever is taken from an Enemy in War.

Among the *Greeks*, the *Spoils* were divided in common among the whole Army; only the Generals Quota was the biggeſt.

By the Military Diſcipline of the *Romans*, the *Spoils* belong'd to the Republick; particular Perſons had no Title to them; and each of the Generals, as valuing themſelves on their Probity, always carried them to the Publick Treaſury. Sometimes, indeed, the Pillage was diſtributed by the General among the Soldiery, to encourage them, or to reward them: But this was not done without a world of Prudence and Reſervedneſs, otherwiſe it came under the Crime of *Peculatus*.

The Conſuls *Romulus* and *Veturius*, were condemn'd for having ſold the *Spoils* taken from the *Æqui*. *Livy*, *lib.* 8.

SPONDAULES, in Antiquity, a Player of the Flute, or other Wind Inſtrument of that Kind, who, during the Offering of Sacrifice, performed ſome ſuitable Air in the Prieſt's Ear to prevent the hearing of any Thing that might diſtract him, or leſſen his Attention. See SACRIFICE.

The Word is form'd from the *Greek* σπονδη, *Libation*, and αυλη, *Flute*.

SPONDEE, SPONDÆUS, in the *Greek* and *Latin* Proſody, a Foot of a Verſe conſiſting of two long Syllables; as *Vertunt*. See FOOT and QUANTITY.

The *Spondee* is a grave Meaſure: All *Greek* and *Latin* Hexameters end with a *Spondee*. See VERSE and MEASURE.

There are alſo *Spondee* or *Spondaic Verſes*; that is, Verſes compoſed wholly of *Spondees*, or at leaſt that end with Two *Spondees*, as,

Conſtitit atque oculis Phrygia agmina circumſpexit.

SPONDYLUS, a Term anciently uſed for a Vertebra of the *Spina Dorſi*. See VERTEBRA, &c.

SPONGE. See SPUNGE.

SPONGIOSA, in Anatomy, an Epithet given to ſeveral Parts of the Body, from their Texture, which is Porous and Cavernous, like that of the *Spunge*; as

Corpora Spongioſa Penis, call'd alſo *Corpora Cavernoſa* and *Nervoſa*. See CAVERNOSA CORPORA.

Oſſa Spongioſa of the Noſe, called alſo *Oſſa Turbinata*, and *Cribriformia Oſſa*. See TURBINATA *Oſſa* and CRIBRIFORME.

SPONTANEOUS, in the Schools, a Term applied to ſuch Motions of the Body and Mind as we perform of our ſelves, without any Conſtraint.

Thus, in Morality, thoſe Actions preform'd from an inward and natural Principle, conformable to the Inclination of Nature, excluding all Conſtraint, but not excluding Neceſſity, are called *Spontaneous Actions*. See NECESSITY.

In Medicine, an Evacuation effected without any Application for that purpoſe, is call'd a *Spontaneous Evacuation*. And a Laſſitude or Wearineſs, not occaſioned by any preceding Fatigue, is call'd a *Spontaneous Wearineſs*.

The Word is form'd from the *Latin* Adverb, *Sponte*, of one's own accord.

'Tis held a grievous and dangerous Error, with regard both to Religion and Morality, to hold that human Liberty only conſiſts in a *Spontaneity*: *M. le Clerc* has been very harſhly treated, for making St. *Auguſtin* of this Opinion. See LIBERTY.

SPONTANEOUS *Generation*. See EQUIVOCAL *Generation*.

SPOONING: In the Sea Language, when a Ship being under Sail, in a Storm at Sea, cannot bear it; but is forced to put right before the Wind; then the Seamen ſay, ſhe *Spoons*; and when in ſuch a Caſe, there is Danger leſt ſhe ſhould bring her Maſts by the Board, with her rolling about, or feel under Water, and ſo founder, they uſually ſet up the Fore-ſail to make her go the ſteadier, eſpecially if there be Sea-room enough; and this they call *Spooning with the Fore-ſail*.

SPORADES, in Aſtronomy, a Name the Ancients gave to ſuch Stars as were not included in any Conſtellation. See STAR.

Theſe, the Moderns more uſually call *Informes*. See INFORMES.

Many of the *Sporades* of the Ancients have been ſince form'd into new Conſtellations, *E. gr.* Of thoſe between *Leo* and *Urſa Major*, *Hevelius* has form'd a Conſtellation, call'd *Leo Minor*; of thoſe between *Urſa Minor* and *Auriga*, another Conſtellation called *Lynx*; of thoſe under the Tail of *Urſa Major*, another call'd *Canis venatics*, &c. See CONSTELLATION.

SPORADIC, in Medicine, an Epithet given to ſuch Diſeaſes as have ſome ſpecial or particular Cauſe, and are diſperſed here and there, regarding particular Conſtitutions, Ages, or other Circumſtances. See DISEASE.

Sporadic ſtand in Oppoſition to *Epidemic* Diſeaſes, which are thoſe ariſing from a general Cauſe, and that are common to all Kinds of Perſons, of what Complexion and Quality ſoever. See EPIDEMIC.

The Word is form'd from the *Greek* σπορας, diſperſed, ſpread, &c.

SPORTULA, in Antiquity, a Dole, or Largeſs, either of Meat or Money, given by Princes or great Men, to the People, or the Poor.

The *Sportula* was properly the Panier, or Basket wherein the Meat was brought, or wherewith the Poor went to beg it; thence the Word was transferred to the Meat itſelf; and thence to Money ſometimes given in lieu of it.

Sportula was frequently uſed in Oppoſition to *Recta cœna*, a plentiful Meal; as in *Martial*,

Promiſſa eſt nobis Sportula *recta data.*

St. *Cyprian* calls *Sportulantes Fratres*, ſuch Clergymen as then received Gifts for their Maintenance, like our Prebends.

SPOTS, in Aſtronomy, dark Places, obſerved on the Disks or Faces of the Sun and Moon. See SUN and MOON.

The *Spots* in the Sun are only viſible through a Teleſcope: Some diſtinguiſh them into *Maculæ* or dark *Spots*, and *Faculæ* or bright *Spots*; but there ſeems little Foundation for any ſuch Diviſion. See MACULÆ and FACULÆ.

The *Solar* SPOTS have not been long obſerved. They are very changeable, as to Number, Form, &c. are ſometimes in a Multitude, and ſometimes none at all.

Some imagine they may become ſo numerous, as to hide the whole Face of the Sun; at leaſt the greateſt part of it; And to this, aſcribe what *Plutarch* tells us, *viz.* That in the Firſt Year of the Reign of *Auguſtus*, the Sun's Light was ſo faint and obſcure, that one might look ſteadily at it with the naked Eye. See ECLIPSE.

To which *Kepler* adds, That in 1547, the Sun appeared reddiſh, as when viewed through a thick Miſt; and hence conjectures, That the *Spots* in the Sun are a kind of dark Smoaks or Clouds floating on the Surface thereof. Others will have them Stars or Planets tranſiting the Body of the Sun. But 'tis much more probable they are opake Bodies, in manner of Cruſts, form'd like the Scums on the Surface of Liquors. See SUN.

The *Lunar* SPOTS are fix'd. Some will have them the Shadows of the Mountains, or uneven Places of the Moon's Body; but their Conſtancy diſcredits this Opinion. The more general and probable Opinion is, That the *Spots* in the Moon, are Seas, Lakes, Moraſſes, &c. which abſorbing Part of the Sun's Rays reflect the fewer to us; ſo as to appear in form of dark *Spots*: Whereas the earthy Parts, by reaſon of their Solidity, reflect all their Light, and thus appear perfectly bright. M. *Hartſoeker* has another Opinion, and takes the *Spots* in the Moon, many of them at leaſt, for Foreſts, Groves, &c. the Leaves and Branches whereof, intercept the Rays reflected from the Ground, and ſend them elſewhere.

The Aſtronomers reckon about 48 *Spots* on the Moon's Face; to each whereof, they have given Names. The 21ſt is one of the moſt conſiderable, and is called *Tycho*.

Planetary SPOTS: Aſtronomers find that the Planets are not without their *Spots*. *Jupiter*, *Mars* and *Venus*, when viewed through a Teleſcope, ſhew ſeveral very remarkable ones; and it is by the Motion of theſe *Spots*, that we conclude the Rotation of the Planets round their Axes, in the ſame Manner as that of the Sun is deduced from the Motion of his *Maculæ*. See PLANET, SUN, &c.

SPOUT, or *Water*-SPOUT, in Natural Hiſtory, an extraordinary Meteor, or Appearance, at Sea, and ſometimes at Land, very dangerous to Ships, &c. oftenеſt obſerved in hot, dry Weather; call'd by the *Latins*, *Typho*, and *Sipho*, by the *French*, *Trompe*, &c. See METEOR.

Its firſt Appearance is in form of a deep Cloud, the upper Part whereof is White, and the lower Black. From the

lower

lower Part of this Cloud hangs, or rather falls down, what we properly call the *Spout*, in manner of a Conical Tube, biggeſt a-top. Under this Tube is always a great boiling, and flying up of the Water of the Sea, as in a *Jet d'Eau*. For ſome Yards above the Surface of the Sea, the Water ſtands as a Column or Pillar; from the Extremity whereof, it ſpreads and goes off, as in a kind of Smoak. Frequently, the Cone deſcends ſo low, as to touch the Middle of this Column, and continue for ſome time contiguous to it; though ſometimes it only points to it, at ſome Diſtance, either in a perpendicular or oblique Line.

Frequently 'tis ſcarce diſtinguiſhable, whether the Cone or the Column appear the firſt, both appearing all of a ſudden againſt each other. But ſometimes the Water boils up from the Sea to a great Height, without any Appearance of a *Spout* pointing to it, either perpendicularly or obliquely. Indeed, generally, the boiling or flying up of the Water, has the Priority, this always preceding its being form'd into a Column.

Generally, the Cone does not appear hollow, till towards the End; when the Sea-water is violently thrown up along its Middle, as Smoak up a Chimney. Soon after this, the *Spout* or Canal breaks and diſappears; the boiling up of the Water, and even the Pillar, continuing to the laſt, and for ſome time afterwards; ſometimes till the *Spout* form itſelf again and appear anew; which it ſometimes does, ſeveral times in a Quarter of an Hour.

M. *de la Pyme*, from a near Obſervation of two or three *Spouts* in *Yorkſhire*, deſcribed in the *Philoſophical Tranſactions*, gathers, that the *Water-Spout*, is nothing but a Gyration of Clouds by contrary Winds, meeting in a Point or Centre; and there, where the greateſt Condenſation and Gravitation is, falling down into a Pipe or great Tube, ſomewhat like *Archimedes*'s Spiral Screw; and in its working and whirling Motion, abſorbing and raiſing the Water in the ſame Manner as the Spiral Screw does; and thus deſtroys Ships, *&c.*

Thus, *June* the 21ſt, he obſerved the Clouds mightily agitated above, and driven together; upon which they became very black, and were hurried round, whence proceeded a moſt audible whirling Noiſe, like that ordinarily heard in a Mill. Soon after, iſſued a long Tube or *Spout*, from the Centre of the congregated Clouds, wherein he obſerved a ſpiral Motion, like that of a Screw; by which the Water was raiſed up. Again, *Auguſt* 15, 1687, the Wind blowing at the ſame Time out of ſeveral Quarters, created a great Vortex and Whirling among the Clouds; the Centre whereof, every now and then, dropt down, in Shape of a long, thin, black Pipe, wherein he could diſtinctly behold a Motion like that of a Screw, continually drawing upwards and ſcrewing up, as it were, where-ever it touch'd. In its Progreſs it moved ſlowly over a Grove of Trees, which bent under it like Wands in a circular Motion. Proceeding, it tore off the Thatch from a Barn, bent a huge Oak Tree, broke one of its greateſt Branches, and threw it to a great Diſtance. He adds, That whereas 'tis commonly ſaid, the Water works and riſes in a Column, e'er the Tube comes to touch it; this is certainly a Miſtake, owing to the Fineneſs and Tranſparency of the Tubes, which do moſt certainly touch the Surface of the Sea, e'er any conſiderable Motion can be raiſed therein; but which do not become opake and viſible, till after they have imbibed a conſiderable Quantity of Water.

The Diſſolution of *Spouts*, he aſcribes to the great Quantity of Water they have glutted; which by its Weight impeding their Motion, whereon their Force, and even Exiſtence, depends, they break and let go their Contents; which uſed to prove fatal to whatever is found underneath.

A notable Inſtance hereof, we have in the *Philoſophical Tranſactions*, related by Dr. *Richardſon*. A *Spout* in 1718, breaking on *Emott-moor* nigh *Coln* in *Lancaſhire*, the Champaign was immediately overflow'd, a Brook, in a few Minutes, roſe Six Feet perpendicularly high; and the Ground whereon the *Spout* fell, which was Sixty-ſix Feet over, was tore up to the very Rock, which was no leſs than Seven Feet deep; and a deep Gulf made for above half a Mile; the Earth being raiſed on either ſide in vaſt Heaps.

In *Pliny*'s Time, the Seamen uſed to pour Vinegar into the Sea, to aſſuage and lay the *Spout*, when it approached them: Our Modern Seamen think to keep it off, by making a Noiſe with filing and ſcratching violently on the Deck; or, by diſcharging great Guns to diſperſe it.

SPRING, in Natural Hiſtory, a *Fountain* or Source of Living Water ariſing out of the Ground. See WATER.

The Origin of *Springs* or Fountains, is a Thing much controverted among our lateſt Naturaliſts.

Meſſieurs *Mariotte* and *Perrault* aſcribe it to Rains. Their Doctrine is, That the Rain-water penetrates the Earth till ſuch time as it meets a Clayey Soil or Stratum; which proving a ſufficient ſolid Bottom, to ſuſtain and ſtop their Deſcent, they glide along it that way to which the Earth declines, till they meet with a Place or Aperture in the Surface of the Earth, through which they may eſcape, and make the Head of a River. See STRATUM.

Now, that the Rain is ſufficient for this Effect, appears hence; that upon calculating the Quantity of Rain and Snow that falls yearly on the Tract of Ground, that is to furniſh, for Inſtance, the Water of the *Seine*; 'tis found, that River does not take up above one ſixth Part of it. *Springs* ordinarily ariſe at the Feet of Mountains: The Reaſon, ſay they, is, That Mountains collect the moſt Waters, and give them the greateſt Deſcent towards the ſame Side: and that if we ſometimes ſee Springs on high Grounds, and even on the Tops of Mountains; they muſt be brought from other remoter Places, conſiderably higher, along on Beds of Clay or clammy Ground, as in their natural Channels. If then, there happen to be a Valley between a Mountain, on whoſe Top is a *Spring*, and the Mountain that is to furniſh it with Water, the *Spring* muſt be look'd on as a Water conducted from a Reſervoir of a certain Height through a ſubterraneous Channel, to make a Jet of an equal or ſomewhat leſs Height. See RAIN.

This Theory M. *de la Hire* has taken under Examination, in its moſt eſſential Article, and that where the Authors ſeem to have been the leaſt diſtruſtful.

He has endeavour'd to find, by Experiment, whether Rain or Snow-water could penetrate the Earth as low as the clayey Stratum: The Reſult of his Inquiry, is, That they don't penetrate even 16 Inches deep, in a Quantity ſufficient to form the ſmalleſt Collection of Water on a Solid Bottom. Nay, this he found when the Earth he made his Experiment on, was quite naked of all Herbs and Plants; but aſſoon as ever any of theſe came up, and were grown to any Bulk, ſo far was the Rain that fell, from being able to gather itſelf at the Depth of 16 Inches, that it was not ſufficient even to feed the Plants, but there was a Neceſſity for watering them. For the Quantity of Water expended in the ordinary Support of Plants, ſee VEGETATION.

Dr. *Halley* refers the Origin of *Springs* meerly to Vapours, rais'd by the Heat of the Sun, or of Subterraneous Fires from the Sea, Lakes, Rivers, *&c.* Theſe Vapours, thus rais'd, he ſuppoſes, are by the Winds, carried over the Low-lands, to the ſeveral Mountains and Ridges of Mountains, and are there compell'd, by the Stream of Air, to mount with it to the Tops, where the Atmoſphere being very rare and cold, retains but a ſmall Part of them; the reſt is condenſed into Dew, which preſently precipitates, gleeting down by the Crannies of the Stones, and part of it entering the Caverns of the Hills, is gather'd therein, as in an Alembic, which being once full, the Overplus muſt run down at the loweſt Part of the Reſervoir, and breaking out by the Side of the Hills, forms *ſingle Springs*, many of which running down by the Vallies or Guts between the Ridges of the Hills, and at length uniting, form *Rivulets*, and many of theſe meeting in a common Channel, form Rivers. See RIVER.

Now, to ſhew that Vapour is a ſufficient Fund, to ſupply all our *Springs*, Rivers, *&c.* The ſame excellent Author makes an Eſtimate of the Quantity of Vapour raiſed from the Sun, by the Action of the Sun: The Reſult of an Experiment he made to that Purpoſe was, That the Thickneſs of Water evaporated from the Surface of the Sea, in the Space of Two Hours, in Summer-time, is one Fifty-third Part of an Inch; which for the Eaſe of Calculation, being only ſuppoſed to be $\frac{1}{40}$; the Quantity of $\frac{1}{1000}$ of an Inch will be found exhaled in 12 Hours. On this Principle, every Mile ſquare will be found to evaporate, in 12 Hours, 6914 Tuns of Water, and every ſquare Degree, Thirty-three Millions of Tuns. The Area of the *Mediterranean* then being eſtimated at 160 Square Degrees, it will loſe in Vapour, in a Summer's Day 5280 Millions of Tuns.

Yet the Quantity of Vapour thus raiſed, great as it is, is only the Remains of what is rais'd another Way, *viz.* by the Winds, which ſometimes ſweep the Water off, faſter than the Sun takes it up.

To find now, the Quantity of Water the *Mediterranean* receives, allow the moſt conſiderable Rivers it receives, *viz.* the *Iberus*, *Rhone*, *Tyber*, *Po*, *Danube*, *Neiſter*, *Boriſthenes*, *Tanais* and the *Nile*, each to furniſh Ten Times as much Water as the *Thames*; not that any of them are, in reality, ſo great, but ſo to allow for the leſſer Rivulets: But the *Thames* is found, by Calculation, to evacuate 20300000 Tuns of Water daily. All the Nine Rivers abovementioned, therefore, will only evacuate 1827 Millions of Tuns in a Day, which is little more than a Third of what is rais'd in that Time in Vapour. See VAPOUR.

After all that can be ſaid in Favour, both of Rain and Vapour, it muſt be owned, they are both ſtill preſs'd with great Difficulties; and there is ſtill Room to look out for a better Theory.

The Perennity of divers *Springs*, always yielding the ſame Quantity of Water, when the leaſt Rain or Vapour is afforded, as well as when the greateſt, is a ſtrong Objection to both. Mr. *Derham* mentions one in his own Pariſh of *Upminſter*, which he could never perceive by his Eye to be diminiſh'd in the greateſt Droughts, even when all the Ponds in the Country, as well as an adjoining Brook, have been dry for ſeveral Months together; nor ever to be increaſed in the moſt rainy Seaſons, excepting perhaps, for a few Hours, or at moſt

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for a Day, from ſudden and violent Rains. Had this *Spring* its Origin from Rain or Vapour, there would be found an Increaſe and Decreaſe of its Water, correſponding to thoſe of its Cauſes; as we actually find in ſuch temporary *Springs*, as have undoubtedly their Riſe from Rain and Vapour: Add to this, another conſiderable Thing in this *Upminſter Spring*, and Thouſands of others, *viz.* That it breaks out of ſo inconſiderable a Hillock or Eminence, as can have no more Influence in the Condenſation of the Vapours or ſtopping the Clouds, than the lower Lands about it have. The very higheſt Ground in the County, he finds is not above 133 Yards above the Level of the Sea; and what is ſuch an inconſiderable Riſe of Land, to a Perennial Condenſation of Vapours, fit to maintain ſo inconſiderable a *Spring*? Or the high Lands of the whole County, to the maintaining all its Fountains and Rivulets?

Other Naturaliſts, therefore, have Recourſe to the Sea, and derive the Origin of *Springs* immediately thence; but how the Sea-water ſhould be rais'd up to the Surface of our Earth, and even to the Tops of the Mountains, is a Difficulty they can't agree upon.

Some fancy a kind of hollow, ſubterranean Rocks to receive the watery Vapours from the Bottom of the Earth, and to act the Part of Alembics, in condenſing and converting them into Waters. Others, as M. *de la Hire*, &c. ſet aſide the Neceſſity of Alembicks, and think it enough that there be large ſubterranean Reſervoirs of Water at the Height of the Sea, whence the Warmth of the Bottom of the Earth, or even the central Fire (if there be ſuch a Thing) may raiſe Vapours, which pervading not only the Intervals and Fiſſures of the Strata, but the Bodies of the Strata themſelves, at length arrive near the Surface; where, being condenſed by the Cold, they glide along on the firſt Bed of Clay they meet withal, 'till an Aperture in the Ground lets them out. M. *de la Hire* adds, That the Salts of Stones and Minerals may contribute to the detaining and fixing the Vapours, and the converting them into Water.

But we have a ſtill more natural and eaſy Way of exhibiting the Riſe of the Sea-water up into Mountains, &c. by putting a little Heap of Sand, Aſhes, a Loaf of Bread, or the like, in a Baſon of Water: In which Caſe, the Sand, &c. will repreſent the dry Land, or an Iſland; and the Baſon of Water the Sea about it. Here, the Water in the Baſon will riſe to, or near, the Top of the Heap, in the ſame Manner, and from the ſame Principle, as the Water of the Sea, Lakes, &c. riſe in the Hills. The Principle of Aſcent in both, is, doubtleſs, the ſame with that of the Aſcent of Liquids in Capillary Tubes, or between contiguous Planes, or in a Tube fill'd with Aſhes; all which are now generally accounted for from the Doctrine of *Attraction*; ſee ASCENT, CAPILLARY, ATTRACTION, &c.

SPRING, in Coſmography, one of the Seaſons of the Year; commencing, in the Northern Parts of the World, on the Day the Sun enters the Firſt Degree of *Aries*, which is about the 10th Day of *March*, and ending when the Sun leaves *Gemini*. See SEASON.

Or, more ſtrictly, and generally, the *Spring* begins on the Day, when the Diſtance of the Sun's Meridian Altitude from the Zenith, being on the Increaſing Hand, is at a Medium between the greateſt and leaſt. The End of the *Spring* coincides with the Beginning of *Summer*. See SUMMER.

SPRING, in Phyſicks, a natural Faculty, or Endeavour, Bodies have of returning to their firſt State, after having been violently put out of the ſame, by compreſſing, bending them, or the like: This Faculty the Philoſophers uſually call the *Elaſtic Force*, or *Elaſticity*. See ELASTIC.

Fleas only jump to thoſe exceſſive Heights, by means of a *Springy* Membrane, eaſily viſible by a Microſcope, and whereof we have a curious Figure in Dr. *Hook*'s Micrography. By the elaſtic Force of this *Spring*, they are enabled to leap 200 times the Height of their own Body. See FLEA.

Nature has provided for the regular ſowing of the Seeds of ſeveral Kinds of Plants, by furniſhing them with a *Spring*, which is wound ſometimes round the Outſide, and ſometimes round the Inſide of the Caſe wherein the Seeds are contained. This *Spring*, when ſtretch'd to a certain Pitch, by the full Growth and Maturity of the Seed, ſuddenly, either breaks in two, as when on the Outſide, and tears the Caſe along with it; or elſe, by its vehement Effort to unbend itſelf, as when in the Inſide, it burſts the Caſe into Two Parts like Cups, and diſperſes the Seed. See SEMINATION.

SPRING, is particularly uſed for a Piece of temper'd Steel put in ſeveral Machines to give them Motion, by the Endeavour it makes to unbend itſelf.

In Watches, 'tis a fine Piece of well-beaten Steel, coil'd up in a cylindrical Caſe or Frame, which by ſtretching itſelf forth, puts the Wheels and the whole Movement in Motion. See WATCH

The *Spring* of a Lock, Piſtol or the like, is a Piece of Steel violently bent, which beats back the Bolt, or ſtrikes down the Cock, when ſet at Liberty. See LOCK.

SPRING *of the Air*, or its Elaſtick Force. See AIR and ELASTICITY.

SPRING *a Maſt*; ſo the Sea-men call it, when a Maſt is crack'd, but not quite broken in any Part.

SPRING-*Tide*, is the increaſing of a *Tide* after a dead Neip. See TIDE.

The *Spring-Tides* happen about Three Days before the Full or Change of the Moon; but the Top or Higheſt of the *Spring-Tides*, is three Days after the Full or Change: then the Water runs higheſt with the Flood, and loweſt with the Ebb, and the *Tides* run more ſtrong and ſwift, than in the Neips. See NEIP, FLUX, EBB, &c.

SPRINGE, a Snare or Device made of twiſted Wire, to catch Birds or ſmall Beaſts.

SPRINGY, or *elaſtic* Bodies, are ſuch, as having had their Figure changed by the Stroke or Percuſſion of another Body, can recover again their former Figure; which Bodies, that are not Elaſtic, will not do. Thus if a Piece of Steel be bent any way, it will recover again its former Straitneſs; but a Piece of Lead will ſtand bent in any Form. See ELASTIC *Bodies*.

SPUNGE or SPONGE, a kind of Sea-Fungus or Muſhroom found adhering to Rocks, Shells, &c. on the Sea-ſhore. See MUSHROOM.

The Ancients diſtinguiſh'd two Kinds, *Male* and *Female*: But the Moderns make only one Kind; which, however, they diſtinguiſh with regard to to its Texture, into *Coarſe* and *Fine*.

The Naturaliſts have been embaraſs'd in all Ages, whether to range *Spunges* in the Animal, Mineral or Vegetable Family. Some wou'd have it a Concretion form'd of the Sea-mud; and others an Animal, from its Motion of Contraction and Dilatation.

The greateſt Part of our *Spunges* are brought from the *Mediterranean*; though there are conſiderable Quantities from *Vicaria*, an Iſland on the Coaſt of *Aſia*.

The Diving or Fiſhing for *Spunges* is there reckoned the top Qualification in the Youth, who all get the better Wives as they excel more herein. To this Proof, the Maids refer the Preference among ſeveral Suitors; placing themſelves on the Brink of the Sea, to be Witneſſes of the Addreſs of each; and giving themſelves as a Prize to the Conqueror. See DIVING.

The fine or ſmall *Spunges* are the moſt eſteem'd; and uſually come to us from *Conſtantinople*. Their Goodneſs conſiſts in their being very white, light, and the Holes ſmall and cloſe; the larger and coarſer come from the Coaſts of *Barbary*, particularly *Tunis* and *Algier*.

The *Spunge* is a very uſeful Matter in the Arts. In Phyſic it ſerves to foment Parts inflamed. By Analyſis, it yields a deal of volatile, ſharp Salts, like other Sea-Plants. Taken inwardly it choaks; and is for that Reaſon cut ſmall, and fried or dipt in Honey, and given to Quadrupeds to kill them, which it ſeldom fails to do, by ſwelling and preventing the Paſſage of the Food into the Inteſtines.

In *Spunges* are found a kind of Stones call'd *Cyſthoelithres*, held good for the Worms in young Children, and taken in Powder.

Pyrotechnical SPUNGES, are made of the large Muſhrooms or fungous Excreſcences growing on old Oaks, Aſhes, Firs, &c. which being boil'd in common Water, then dried and well beaten, are put in a ſtrong Lye, prepared with Salt-peter, and again dried in an Oven.

Theſe make the black Match or Tinder brought from *Germany*, uſed to receive and ſuſtain the Fire ſtruck from a Flint and Steel, &c.

SPUNGE, in Gunnery, a Rammer or Staff, with a Piece of Sheep or Lamb-skin about its End; to ſerve for ſcouring of great Guns when diſcharged, e'er they be charged with freſh Powder. See CHARGE.

SPUNGING, in Gunnery, the clearing a Gun's Inſide with a *Spunge*, in order to prevent any Parts of Fire from remaining in her; which would endanger the Life of him, who ſhould load her again. See GUN.

SPUN-*Yarn*, among Sailors, the *Yarn* of untwiſted Ropes, whoſe Ends are ſcraped and beaten thin, in order to be let into the Ends of other Ropes, and ſo made long as Occaſion ſhall require.

SPUR, was anciently a Piece of the Armour of a Cavalier, faſten'd to the Talary, that is, the hind of that Part of the compleat Armour which cover'd the Legs and Feet.

At preſent, the *Spur* is a Piece of Iron or other Metal, conſiſting of two Branches incompaſſing the Cavalier's Heel, and a Rowel in form of a Star, advancing out behind to prick the Horſe.

Louis le Debonnaire forbad Eccleſiaſticks the profane Faſhion of wearing *Spurs*.

Anciently the Difference between the Knight and Eſquire was, that the Knight wore gilt *Spurs*, whence the Appellation of *Eques Auratus*, and the 'Squire ſilver'd ones. See KNIGHT and ESQUIRE.

The Word is derived from the *German*, *Sporen* or *Sporn*.

SPURIOUS *Diſeaſes*, are ſuch as in ſome Symptoms cannot be brought under any diſtinct Head, and therefore are call'd by the Name of ſome, with which they moſt agree; and hence, alſo, they are often denominated Baſtards, *Nothi*; as a *ſpurious* or *baſtard Pleuriſy*, a *baſtard Quinſy*, and the like. See PLEURISY, *&c.*

SPURIOUS *Fleſh*, among Anatomiſts, that which is of a Conſtitution quite different from all the reſt; as the *Fleſh* of the Lips, Gums, Glans, *&c.* See FLESH, GUMS, GLANS, *&c.*

SPUR-*Way*, a Horſe-way through a Man's Grounds, through which one may ride, by Right of Cuſtom.

SPUTUM, in Medicine, *&c.* the Spittle, or Excrement voided at the Mouth. See SALIVA.

An Examen of the *Sputum*, is of great Conſequence in Phthiſical Caſes; and *Bennet*, in his *Theatrum Tabidorum*, applies himſelf in a particular Manner thereto. See PHTHISIS.

The *Sputum Sanguinis*, is a very dangerous Symptom in that Diſeaſe.

SPY, a Perſon paid to watch the Actions, Motions, *&c.* of another; particularly as to what paſſes in an Army.

When a *Spy* is found in a Camp, he is immediately hanged. *Wicquefort* ſays, an Embaſſador is an Honourable *Spy*, under Protection of the Law of Nations. See EMBASSADOR.

SQUADRON *of Ships*, a Diviſion, or Part, of a Fleet, commanded by a Vice or Rear Admiral, or ſome other Commander or Commadore. See FLEET, ADMIRAL, *&c.*

The Number of Ships in the *Squadron* is not fix'd: A ſmall Number of Veſſels, if they be in a Body, and have the ſame Commander, may make a *Squadron*.

If there be a great Number, they are uſually divided into Three *Squadrons*. And if the *Squadrons* be numerous, each *Squadron* is divided into Three Diviſions.

The Word is form'd from the *Italian Squadrone* of the *Latin*, *Squadro*, uſed by Corruption for *Quadro*: In regard, at firſt, the *Squadrons* were always Square, and called alſo by the *Latins*, *Agmina Quadrata*.

SQUADRON is alſo a Body of Horſe, whoſe Number is not fixed; but is uſually from One hundred to Two hundred Men, according to the General's Pleaſure, the Strength of the Army, or as Occaſion ſerves.

It uſually conſiſts of Three Troops, each of Fifty Men, and it never exceeds Two hundred; becauſe a greater Number can't be advantageouſly poſted, nor have Room to act in narrow Grounds, Woods, Marſhes, Defiles, *&c.* See TROOP.

The Eldeſt Troop takes the Right of the *Squadron*, and the Second the Left, the Youngeſt being in the Centre.

A *Squadron* is always drawn up Three deep, or in Three Ranks, with the Length of an Horſe between each Rank.

The Standard is always in the Centre of the firſt Rank.

SQUAMMOUS, in Anatomy, an Epithet given to the Spurious or falſe Sutures of the Skull; becauſe compoſed of *Squammæ* or Scales like thoſe of Fiſhes, or like Tyles laid ſo as to reach over one another. See SUTURE.

The *Suturæ Squammoſæ*, are alſo call'd *Temporales*, from their terminating the Temples, or *Oſſa Temporis*

SQUARE, in Geometry, a quadrilateral Figure, both Equilateral and Equiangular. See FIGURE, QUADRILATERAL, EQUIANGULAR, *&c.*

To find the Area of a Square: Seek the Length of one Side; multiply this by itſelf; the Product is the Area of the *Square*.

Thus, if the Length of a Side be 345, the Area will be 119025: And if the Side of a *Square* be 10; the Area will be 100.

Since, then, a Decempeda contains 10 Feet, a Foot 10 Digits, *&c.* a *ſquare* Decempeda contains 100 *ſquare* Feet, a *ſquare* Foot 100 *ſquare* Digits, *&c.*

The Properties of a Square, are, that its Angles are all Right, and, conſequently, its Sides Perpendicular; that it is divided into two equal Parts, by a Diagonal; that the Diagonal of a *Square*, is incommenſurable to the Side. See DIAGONAL, *&c.*

For the Ratio of Squares; they are to each other in a duplicate *Ratio* of their Sides. *E. gr.* a *Square* whoſe Side is double another, is quadruple the *Square* of the ſingle Side.

SQUARE *of the Cube*
SQUARE *of the Surdeſolid* } See POWER.

SQUARE *Number*, the Product of a Number multiplied by itſelf: Thus 4, the Product of 2 multiplied by 2; or 16 the Product of 4 multiplied by 4, are *Square* Numbers. See NUMBER.

Such Number is called a *Square Number*, becauſe it may be ranged into the Form of a *Square*, by making the Root, or Factor the Side of the *Square*. See ROOT.

The Difference of Two *Square* Numbers, whoſe Roots are not Unity, is an uneven Number, equal to double the Root of the leſs, increas'd by Unity.

Hence we have an eaſy Method of conſtructing *Square* Numbers for a Number of Roots proceeding in the natural Series; the double of the Root of the Antecedent increas'd by Unity, being continually to be added to the preceding *Square*.

Thus, if $n=1$; $2n+1=3$: If $n=2$; then will $2n+1=5$: If $n=3$; then will $2n+1=7$: If $n=4$; then will $2n+1=9$, *&c.* Thus by a continual Addition of the uneven Numbers, ariſe the *Square* Numbers.

SQUARE *Root*, a Number conſider'd as the Root of a Second Power or *Square* Number; or a Number by whoſe Multiplication into itſelf, a *Square* Number is generated. See ROOT.

Thus the Number 2, being that by whoſe Multiplication into itſelf, the *Square* Number 4 is produced; is, in reſpect hereof, call'd a *Square Root*, or the *Square Root of* 4.

Since, as Unity is to the *Square* Root, ſo is the Root to the *Square* Number; the Root is a mean Proportional between Unity and the *Square* Number.

A *Square* Root conſiſting of 2 Parts, is call'd a *Binomial*; as $20+4$. See BINOMIAL.

If it conſiſts of Three, a *Trinomial*, as $6+2-1$. See TRINOMIAL.

Now, every *Square* Number of a Binomial Root, is demonſtrated to be compounded of the *Square* of the firſt Part, the Product of double the firſt into the ſecond, and of the *Square* of the other Part.

To extract the SQUARE *Root out of any given Number*; ſee EXTRACTION *of Roots*.

SQUARE, is alſo an Inſtrument made of Wood or Metal, ſerving to deſcribe and meaſure Right Angles withal; ſuch is AEF, (Tab. Geometry Fig. 42.).

It conſiſts of two Rules or Branches faſten'd perpendicularly at one of their Extremes. When the two Branches are moveable on a Joint, it is call'd a *Bevel*. See BEVEL.

To examine whether or no a *Square* be exact, deſcribe a Semi-circle AEF, of any Length, at Pleaſure; and therein, from each Extreme of the Diameter A and F, draw Right Lines to a Point taken at Pleaſure in the Periphery, as E: To the Sides of the Angle AEF, apply the *Square*, ſo as its Vertex may fall on F. If this be poſſible, that *Square* is juſt.

Geometrical SQUARE, a Compartiment frequently added on the Face of the Quadrant, called alſo *Line of Shadows* and *Quadrat*. See QUADRAT.

Magic SQUARES. See MAGIC *Square*.

SQUARE *Battle*, or *Battalion* of Men, is one that hath an equal Number of Men in Rank and File. See BATTALION.

To form any Number of Men into a *Square Battle*, as ſuppoſe 500, extract the neareſt *Square* Root of 500, which is in Integers 22, and that will give the Number of Men for Rank and File. There will be a Remainder of 16 Men, who may be diſpoſed of, as the Commander thinks beſt.

SQUARE *Hollow*, or *hollow* SQUARE, in the Military Art; is a Body of Foot drawn up with an empty Space in the Middle, for the Colours, Drums and Baggage; faced and covered by the Pikes every way, to keep off Horſe.

SQUARING. See QUADRATURE.

SQUILLITIC. See SCILLITIC.

SQUILLÆ. See SCILLÆ.

SQUINANCY or *Eſquinancy*, by the *Latins*, *&c.* call'd *Angina*, and by us, popularly *Quinzy*, a Diſeaſe which ſtops the Freedom of Reſpiration and Deglutition. See RESPIRATION.

The *Squinancy* conſiſts in an Inflammation of the Throat; and particularly of the Muſcles of the Larynx or Pharynx, which exactly cloſing the Chinks thereof, prevent the Air from paſſing in and out of the Trachea, and the Food from being ſwallowed and convey'd into the Stomach.

The *Squinancy* is divided into *true* and *ſpurious*; the *true Squinancy* is always accompanied with a Fever; the *baſtard* or *ſpurious Squinancy* is free from it.

They are cauſed by a Defluxion of Blood, either pure or bilious, from the Branches of the Carotid Arteries; and there cauſing a Phlegmon, either a Simple or an Ereſypetalous one. See ANGINA.

The Word is form'd from the *Greek* συνάγχειν, to *Suffocate*.

The *Squinancy* is of all others the moſt dangerous, when the Tumour is neither perceivable on the inſide nor the out. That appearing on the outſide is the moſt curable. In violent *Squinancies*, recourſe ſhould be had to Laryngotomy or Bronchotomy, which though rarely practiſed, may yet be uſed with Safety. See LARYNGOTOMY, *&c.*

SQUINTING. See STRABISMUS.

ST, an indeclinable Term, chiefly uſed to command Silence. See SILENCE.

The *Romans* had theſe two Characters wrote over the Doors of their Eating Rooms, as who ſhould ſay *Sed tace*, or *Silentium tene*.

Porphyry obſerves, the Ancients made a Point of Religion of it, not to ſpeak a ſingle Word in paſſing in or out of the Doors.

STABLE-*Stand*, in the Foreſt Law, is when a Perſon is found at his *Stand* in the Foreſt, with a Croſs-Bow, or Long-Bow, ready to ſhoot at a Deer, or elſe ſtanding cloſe by a Tree with Grey-hounds ready to ſlip: It is one of the Four

Evidences or Presumptions, by which a Man is convicted of intending to steal the King's Deer; the other Three being Back-berond, Bloody-hand, and Dog-draw. See FOREST.

STACK *of Wood*, among Husbandmen, is a Pile of Wood three Foot long, as many broad, and twelve Foot high.

STACTE, in Pharmacy, a fatty Matter drawn from fresh Myrrh, pounded or press'd with a little Water. See MYRRH.

This Liquor is very Odoriferous, and held mighty precious; making, alone, the Perfume, called by *Dioscorides*, *Stacte*, and which smells finely, though very bitter to the Taste.

We have none of it now, but what is sophisticated; and what the Apothecaries call *Stacte*, is no more than liquid Storax. See STORAX.

STADHOUDER, STADTHOLDER, STADHOLDER, or STATHOLDER, a Governor or Lieutenant of a Province, in the *United Netherlands*; particularly that of *Holland*; where the Word is most used, by reason of the superior Importance of the Government of that Province.

The *Stadtholder*, *i. e.* the *Stadtholder* of *Holland*, is the first Member of the Republick: He is chief of all the Courts of Justice; and may preside therein when he pleases. All Sentences, Judgments, &c. are dispatch'd in his Name. When an Office becomes vacant in any of the Courts, the States propose three Persons to the *Stadtholder*, who is to chuse one of them. He can even pardon Criminals, which is a Right of Soveraignty; and has the Choice of Sheriffs, or chief Magistrates in each City; to which end the Council of the City present him two Persons, one of which he appoints.

In several Cities, he has the same Right, with regard to the Bourgher-masters and Counsellors; as at *Rotterdam*, *Dort*, &c. He has also a Right to Casheer the Magistrates, and put others in their Room, when he finds it necessary for the public Good; upon giving a Reason for the same.

By Article VI. of the Union of *Utrecht*, the States constitute him Arbiter of all the Differences that may arise between the States of the several Provinces; or between the Cities and the Members of the States of the Province. To the Dignity of *Stadtholder*, is inseperably annex'd, that of Captain and Admiral General of the Province; in which Quality, he names all the Officers, and disposes of all the Military Charges. 'Tis he, takes care of the Execution of the Ordinances of the States; and his Authority gives him a Right to receive and hear Embassadors from foreign Princes, and even to send Embassadors on his own private Affairs.

The Office of *Stadtholder* is very Ancient: The Counts not being able to reside in *Holland*, appointed *Stadtholders* to command in their Absence, in the several Provinces; besides a Governor General of all the Seventeen Provinces of the *Netherlands*.

William I. Prince of *Orange*, was *Stadtholder* of *Holland* and *Zeeland*, at the Time when the *Dutch* shook off the *Spanish* Yoak; which enabled him to contribute greatly to that happen Event.

In 1567, the States thought fit to suppress the Office of *Stadtholder*, by Edict; and resolved it should never be confer'd on any Person for the future; but in 1672, *William* III. Prince of *Orange*, afterwards King of *England*, being elected Captain and Admiral General by the States; some Months afterwards, they revoked the Edict of Suppression in favour of that Prince, who was declared *Hereditary Stadtholder*; an Honour never confer'd before.

Menage derives the Word from *Stat*, State, and *houder*, holding, *q. d.* Lieutenant of the States; but he is mistaken in the Etymology: The Word being compounded of *Stad* or *Stede*, Place, and *houder*, holding, in regard the Governor held the Place of the Counts, and represented them in their Absence.

STADIUM, an ancient *Greek* long Measure, containing 125 Geometrical Paces, or 625 Feet; corresponding to our Furlong. See FURLONG.

Eight of them make a Geometrical or *Italian* Mile; and 20, according to M. *Dacier*, a *French* League; according to others 24 make the League.

Guilletiere computes that the *Stadium* was only 600 *Athenian* Feet, which amount to 566 *French* Royal Feet, or 604 *English* Feet; so that the *Stadium* should only have been 113 Geometrical Paces.

It must be observed however, That the *Stadium* was different in different Times and Places. See MEASURE.

The Word is form'd from the *Greek*, στάσις, *Station*; and, 'tis said, on this Occasion, that *Hercules*, after running so far at one Breath, stood still.

The *Greeks* measured all their Distances by *Stadia*, which they call'd σταδιαξειν.

STADIUM was also the Course or Career, wherein the *Greeks* run their Races. See GYMNASIUM.

Vitruvius describes it as an open Space 125 Paces long, terminated at the two Extremes with two Posts, called *Carcer* and *Meta*.

Along it was an Amphitheatre, where the Spectators were placed to see the *Athletæ* Exercise, Running, Wrestling, &c.

There were *Stada* likewise, covered over, and encompassed with Colonnades and Porticoes, serving for the same Exercises in ill Weather. Captive Children used to run the *Stadium*. Ablanc.

A more natural Derivation of the Word *Stadium*, from στάσις, or *Statio*, than that popular one mentioned in the last Article, is drawn from the *Athletæ* stopping and resting, when at the End of this Course: Whence the Name might be applied to the same Distance, measured in any other Place.

STAFF, an Instrument ordinarily used to rest on, in walking.

Cardinal *Bona* observes, in his Treatise of *Liturgies*, that anciently, those who used a *Staff* in the Church to lean on, were obliged to lay it by, and to stand alone, firm and upright, while the Gospel was a reading; to testify their respect, by their Posture, and to shew they were ready to obey *Jesus Christ*, and to go whereseever he should command them.

The *Staff* is also frequently used, as a kind of natural Weapon, both of Offence and Defence. The *Lacedemonians* never wore any Swords in Time of Peace; but contented themselves with a thick, crooked *Staff*, which was peculiar to them. Among the *Romans*, Mr. *St. Evremond* observes, Blows with a *Staff* were the gentlest Correction they gave their Slaves; inasmuch as they received them over their Cloaths.

Among the Masters of Honour and Arms, 'tis held a greater Affront to be beaten with a *Staff* than with a Sword; because the Sword is the Instrument of War, the *Staff* the Instrument of Outrage.

Blows with a *Staff* are very severely punished by the *French* Laws: By a Regulation of the Marshals of *France*, in 1653, for Reparations and Satisfactions of Honour, 'tis adjudged, That a Person who shall strike another with a *Staff*, shall be Imprison'd a whole Year; unless Six Months be moderated, upon paying 3000 Livres, applicable to the nearest Hospital: Beside which, the Offender is to ask Pardon of the Offended on his Knees, &c. ready to receive a like Number of Blows with a *Staff*; which on some Occasions one may oblige him to give; if he have too much Generosity, not to do it of himself. By another Regulation of the Marshals in 1679, he who strikes with a *Staff*, after receiving Blows with the Fist, in the Heat of a Fray, is condemn'd to Four Years Imprisonment; and to Four, if he even struck first with the Fist.

Pastoral STAFF, *Augural* STAFF, *Jacob's* STAFF } See { CROSIER. LITUUS. RADIUS *Astronomicus*.

STAFF, in Music, five Lines, on which, with the intermediate Spaces, the Notes of any Song or Piece of Music are mark'd. See MUSIC.

Guido Aretin, the great Author of the Modern Music, is said to be the first who introduced the *Staff*; marking his Notes, by setting Points (.) up and down them, to denote the Rise and Fall of the Voice; and each Line and Space he mark'd at the beginning of the *Staff* with *Gregory*'s Seven Letters, *a*, *b*, *c*, *d*, *e*, *f*, *g*. See NOTE.

But others will have the Artifice of an older Date; and *Kircher* particularly affirms, That in the *Jesuites* Library at *Messina*, he found an old *Greek* MS. Book of Hymns, above 700 Years old; wherein some Hymns were written on a *Staff* of eight Lines, mark'd at the beginning with Eight *Greek* Letters. The Notes or Points were on the Lines, but no use made of the Spaces. See SCALE, GAMUT, SOLFAING, &c.

STAFF, in Heraldry. See BATTOON.

STAFF, in Surveying, a kind of Stand, whereon to mount a Theodolite, Circumferentor, plain Table, or the like, for Use. It consists of Three Legs of Wood, joyned together at one End, whereon the Instrument is placed; and made peeked at the other, to enter the Ground. Its upper End is usually filled with a Ball and Socket. See BALL and SOCKET.

STAGE, in the Modern Drama, the Place of Action and Representation; included between the Pit and the Scenes.

The *Stage* answers to the *Proscenium* or *Pulpitum* of the ancient Theatre. See THEATRE, PULPITUM, PROSCENIUM.

Laws of the STAGE, are the Rules and Decorums to be observed, with regard to the Oeconomy and Conduct of a Dramatic Performance to be exhibited on the *Stage*. These relate, principally, to the Unities, the Disposition of the Acts and Scenes, the Unravelling, &c. See UNITY, ACT, SCENE, CATASTROPHE, &c.

STAGGERS, or *Stavers*, in the Manage. See STAVERS.

STAIRS, in Building, the Steps whereby we ascend and descend, from one Story of a House to another. See STORY.

The

The Dimenſions of *Stairs* are differently aſſigned by different Authors: In this however they agree, that they muſt not be more than Six, nor leſs than Four Inches high; not more than 18, nor leſs than 12 Inches broad; not more than 16, nor leſs than 6 Foot long, each Stair. But theſe Meaſures have only regard to fine Buildings; ordinary Houſes are excepted: Yet even in theſe, the *Stairs* are not to exceed Eight Inches in Height; nor leſs than Nine Inches in Breadth; nor Three in Length.

To reduce the Dimenſions of *Stairs* to ſome natural, or at leaſt geometrical Standard, *Vitruvius* borrows the Proportions of the Sides of a rectangle Triangle, which the ancient School expreſs'd by the Numbers 3, 4 and 5. The firſt for the perpendicular Height; the ſecond for the horizontal Breadth; and the third for the whole Slope or Inclination, from the Edge of one *Stair* to that of another.

But this Rule is ſet aſide, and with good Reaſon, by the modern Builders. For, on this Principle, the lower the *Stairs*, the narrower they muſt be; and *Stairs*, for Inſtance, Four Inches high (ſuch as we find mentioned in ancient Architects) muſt be but $5\frac{1}{3}$ Inches broad.

One Rule to be regarded in the making of *Stairs*, is, That they be laid according to the *Italian* Phraſe, *Con un tantino da Scarpa*, i. e. *ſomewhat ſloping*, or a little higheſt behind, that the Foot may, as it were, both aſcend and deſcend at once; which, though obſerved by few, is found a ſecret and delicate Deception of the Pains in mounting.

STAIR-*Caſe*, an Aſcent incloſed between Walls, or a Balluſtrade, conſiſting of *Stairs* or Steps, with Landing-places and Rails; ſerving to make a Communication between the ſeveral Stories of a Houſe. See STAIR.

The Conſtruction of a compleat *Stair-Caſe*, is one of the moſt curious Works in Architecture. The common Rules to be obſerved therein, are as follow;

1° That it have a full, free Light, to prevent Accidents of ſlipping, falling, &c. 2° That the Space over Head be large and airy, which the *Italians* call *un bel Sfogolo*, good Ventilation, in regard a Man ſpends much Breath in mounting. 3° That the Half-paces, or Landing-places, be conveniently diſtributed for repoſing in the Way. 4° That to prevent Rencounters, &c. the *Stair-Caſe* ben't too narrow; but this laſt is to be regulated by the Quality of the Building. 5° That Care be taken in placing the *Stair-Caſe*, ſo as the *Stairs* may be diſtributed, without Prejudice to the reſt of the Building.

The Kinds of *Stair-Caſes* are various: In ſome, the *Stairs* are ſtraight, others winding; in others both Ways.

Again, of *ſtraight Stairs*, called alſo *Flyers*, ſome fly directly forwards, others are Square, others Triangular, others call'd *French Flights*. Of *winding Stairs*, call'd alſo *ſpiral* or *cockle Stairs*, ſome are Square, ſome Circular, or ſome Elliptical.

And theſe again, are various; ſome winding round a ſolid and others an open Newel.

Laſtly, of *mix'd Stairs*, ſome are call'd *Dog-leg'd*: Others both wind about a ſolid Newel, and fly about a ſquare, open Newel.

Stair-Caſes are of that Importance in Building, that we can't excuſe the not giving a more particular Account of each kind.

Straight STAIRS, then, are ſuch as always *fly*, that is, proceed in a Right Line, and never wind, whence their Denomination. See FLYERS.

Of theſe there are ſeveral Kinds; as ——*Direct Flyers* or *Plain Flyers*, which proceed directly from one Floor to another, without turning either to the Right or Left; ſeldom uſed, except for Garret or Cellar *Stairs*.—— *Square Flyers*, which fly round the Sides of a Square Newel, either ſolid or open; having at every Corner of the Newel, a ſquare, half Step, taking up $\frac{1}{4}$ of a Circle. So that they fly from one half Step to another, and the Length of the *Stairs* is perpendicular to the Side of the Newel. ——*Triangular Flyers*, which fly round by the Sides of a triangular Newel, either ſolid or open, having at each Corner of the Newel a Trapezial Half-ſtep, taking up $\frac{1}{3}$ of a Circle: So they fly from one Half-ſtep to another; and their Length is Perpendicular to the Side of the Newel.—— *French Flyers*, which fly, firſt directly forwards, till they come within the Length of a *Stair* of the Wall; and then have a ſquare half Pace, from which you immediately aſcend to another half Pace, from which the *Stairs* fly directly back again, parallel to their firſt Flight.

Winding STAIRS, are ſuch as always *wind*, and never fly: Of theſe there is great Variety; as, ——*Circular winding Stairs*, whereof there are four Kinds, *viz.* ſuch as wind about a ſolid Newel, the fore Edge of each being in a Right Line, pointing to the Centre of the Newel; commonly uſed in Church Steeples and great old Houſes. Such as wind round an open Newel, the Fore-ſide of each being in a right Line, pointing to the Centre of the Newel, as thoſe in the *Monument*, *London*. Such as wind round a ſolid Newel, only the Fore-ſide of each, an Arch of a Circle, either concave or convex, pointing near to the Circumference of the Newel. And ſuch as reſemble the laſt, in all other reſpects, ſave that they have an open Newel. Any of theſe *winding Stairs* take up leſs Room than any other Kind. In *Stairs* that wind round a ſolid Newel, Architects make the Diameter of the Newel either $\frac{1}{2}$ or $\frac{1}{4}$, $\frac{1}{5}$ or $\frac{1}{7}$ of that of the *Stair-caſe*, according as that is in Bigneſs. If very ſmall, the Newel is but $\frac{1}{6}$, and if large $\frac{1}{7}$, &c.

In *Stairs* that wind round an open Newel, *Palladio* orders the Newel to be $\frac{1}{2}$ the Diameter of the *Stair-caſe*; though there does not appear any Reaſon why the Newel here ſhould not be proportion'd to the *Stair-caſe*, as in the former. As to the Number of *Stairs* in each Revolution; *Palladio* orders, that in a *Stair-caſe* of 6 or 7 Foot Diameter, the *Stairs* in each Revolution be 12; if the Diameter be 8, the *Stairs* to be 16; if 9 or 10, the *Stairs* to be 20; and if 18, to be 24. ——*Elliptical winding Stairs*, whereof there are two Kinds; the one winding round a Solid, the other round an open Newel. They are much of the ſame Nature as *circular Stairs*, excepting that in the one, the Newel is a Circle, and in the other an Ellipſis. —— *Square winding Stairs*, are ſuch as wind round a ſquare Newel, either Solid or open; the Fore-ſide of each *Stair* being a right Line, pointing to the Centre of the Newel. —— *Triangular winding Stairs*, are ſuch as wind round a triangular Newel; the Fore-ſide of each being a right Line, pointing to the Centre of the Newel. —— *Columnated window Stairs*: *Palladio* mentions a *Stair-caſe* in *Pompey*'s Portico at *Rome*, ſet on Columns, ſo, as that the Light they received from above, might diſtribute itſelf to all Parts alike. ——*Double winding Stairs*, *Scamozzi* mentions a *Stair-caſe* of this Form, made by *Piedro del Bergo*, and *Jean Coſſin*, at *Sciamberg* in *France*, in the King's Palace. They are ſo contrived, as that two Perſons, the one aſcending and the other deſcending, ſhall never meet. Dr *Grew* deſcribes a Model of this kind of *Stair-caſe*, kept in the *Muſæum* of the *Royal Society*. The Foot of one of the *Stair-caſes*, he ſays, is oppoſite to that of the other, and both make a parallel Aſcent, and within the ſame Cylinder. The Newel in the Middle is hollow, and built with long Apertures, to convey Light from Candles placed at the Bottom and on the Sides of the Newel, into both Caſes. —— *Quadruple winding Stairs*, *Palladio* mentions a *Stair-caſe* of this Form, in the Caſtle of *Chambor* near *Bloys*. It conſiſts of four *Stair-caſes*, carried up together, having each its ſeveral Entrance, and going up one over another, in ſuch Manner, as that being in the middle of the Building, the Four ſerve for four Apartments; ſo that the People of the one need not go up and down the *Stairs* of the other; yet being open in the Middle, they all ſee each other paſs.

Mixt STAIRS, are ſuch as partly fly, and partly wind; whence ſome call them *Flyers* and *Winders*. Of theſe there are ſeveral Kinds, as, —— *Dog-leg'd Stairs*, which firſt fly directly forwards, then wind a Semi-circle, and then fly directly backwards, parallel to that.—— *Square Flyers and Winders*, have a ſquare Newel, either Solid or open, and fly by the Sides of the Newel, winding a Quadrant of a Circle at each Corner. —— *Solid and open Newel'd Flyers and Winders*, are of two Kinds; the one winds a Quadrant of a Circle about a Solid Newel, then flies by the Side of a ſquare open Newel; then winds again, by the Side of a ſolid Newel, then flies again, and ſo alternately. The other flies firſt, then winds, and then flies again, alternately.

STALACTITÆ, or STAGONITÆ, in natural Hiſtory, a ſort of ſtony, ſparry Iſicles, which hang down from the Tops or Arches of Grotto's, Caves or ſubterranean Caverns; and from the Roof of the Buildings, and Capitals of the Pillars of ſuch Places, as are built over Thermæ or Hot Springs, &c. See STONE and SPAR.

Of this Kind, are the *Sal Alumen*, and *Vitriolum Stalacticum*; the *Minera Ferri-ſtalactica*, the *Vitriolum Capillare*, the *Alumen Capillare*, &c.

The *Stalactitæ*, which incruſtate or line the Tops and Sides of Caves, &c. are manifeſtly form'd of Exſudations or Extillations of petrifying Juices out of the neighbouring rocky Grounds. Thoſe in the Cave on the Top of *Breedon* Hill, Mr. *Derham* fancies, might be form'd by the Rains ſoaking through, and carrying with it Impregnations from the Stones; the Hill, there, being all rocky.

STALE, the Urine of Cattle. — A *Stale* is alſo a living Fowl, put in any Place to allure other Fowl, where they may be taken: For want of theſe, a Lark or any other Bird ſhot, his Entrails taken out, and dried in an Oven, in his Feathers, with a Stick thruſt through to keep him in a convenient Poſture, may ſerve as well as a live one.

STALK, in Botany. See STEM.

The *Stalk* is diſtinguiſh'd into ſeveral Kinds, *viz.* the *Naked Stalk*; which has no Leaves on: *Creſted Stalk*, that has Furrows or Ridges: *Winged Stalk*, which has Leaves on both Sides. *Striped Stalk*, which is of two or more Colours, &c.

STALKING,

STALKING, a Term of conſiderable Import in Fowling; applied to a kind of Screen or Device to hide the Fowler, and amuſe the Game, while he gets within Shot.

Of ſuch Devices there are ſeveral Kinds, *viz.* —— A *Stalking Hedge*, which is an artificial Hedge, two or three Yards long, and a Yard and half high, made with ſmall Wands, to be light and portable, yet buſh'd out like a real Hedge, with Stakes to ſupport it, while the Fowler takes his Aim.

Stalking Horſe, is an old Jade train'd up for the Purpoſe, which will gently walk up and down as you would have him, in Water, *&c.* beneath whoſe Fore-ſhoulder, the Sportſman ſhelters himſelf and Gun. When thus got within Shot, he takes Aim from before the Fore-part of the Horſe; which is much better than ſhooting under his Belly.

To ſupply the Defect of a real *Stalking Horſe*, an Artificial one is frequently made, of old Canvas, ſhaped in form of a Horſe, with his Head bent down, as if grazing; ſtuff'd with any light Matter, and painted. In the Middle it is fix'd to a Staff ſhod at the Foot, to ſtick into the Ground while Aim is taken.

For Change, when the Fowls begin to be uſed to the *Stalking Horſe*, and to know it, ſome *Stalk* with an Ox, Cow, Deer or the like. Others uſe a *Stalking Tree*, and others a *Stalking Buſh*.

STAMINA, in the Animal Body, are thoſe ſimple, original Parts, which exiſted firſt in the Embryo, or even in the Seed; and by whoſe Diſtinction, Augmentation and Accretion, by additional Juices, the human Body, at its utmoſt Bulk is ſuppoſed to be form'd. See EMBRYO, BODY, *&c.*

All that is eſſential to the Animal, are the *Stamina*, which exiſt, *in ovo*; the reſt being foreign, additional and even accidental.

The *Stamina* ſeem to coincide with the *Solids*, which are ſurprizingly ſmall in Quantity. See SOLID.

The Word is *Latin*, and ſignifies *Threads*.

STAMINA, in Botany, thoſe fine Threads or Capillaments growing up within the Flowers of Tulips, Lillies and moſt other Flowers, around the Style or Piſtil. See FLOWER and PISTIL.

On the Tops of the *Stamina*, grow thoſe little Capſulæ or Knots, call'd *Apices*, which M. *Tournefort* makes eſſential to the *Stamina*; whence M. *Reaumur*, who aſſures us in the Memoirs of the *French* Academy, that he could never diſcover any Apices on the Threads of the *Fucus Marinus*, refuſes to call them *Stamina*; though he adds, one may ſuppoſe that the Apices fall aſſoon as the Threads or *Stamina* begin to be unfolded. See APICES.

In ſome tubular Flowers, as the *Narciſſus*, *Digitalis*, *&c.* M. *Geoffroy* obſerves the *Stamina* are exceedingly ſhort; and in ſome Flowers there are no *Stamina* at all, as in the long *Ariſtolochia*, wherein the Apices are immediately faſten'd on the Capſula, which incloſes the Fruit. In ſome other Flowers, as thoſe of Thiſtles, Lettice, Chicory, *&c.* the Apices are incloſed in the *Stamina*; ſeveral of which uniting, form a little Tube in Manner of a Scabbard, in the Inſide whereof are the Apices, furniſhed with their Farina: The reſt of the Cavity being taken up by the Piſtil, which is a little Thread placed on the Embryo of the Seed.

M. *Tournefort* takes the Uſe of the *Stamina* to be, as it were, ſo many excretory Canals, for diſcharging the growing Embryo of its redundant Juices; and of theſe Excrements of the Fruit, he takes that *Farina* or Duſt, found in the Apices, to be form'd. See FARINA.

But M. *Geoffroy*, Mr. *Bradley*, and other late Writers on Plants, as well as ſome former, aſſign the *Stamina* a nobler Uſe.

Theſe Authors, explaining the Generation of Plants, in a Manner, analogous to that of Animals, maintain the Uſe of the *Stamina* to be to ſecrete, in their fine capillary Canals, a Juice, which being collected, harden'd and form'd into a Farina or Duſt, in the Tips or Apices, is thence, when the Plant arrives at Maturity, diſcharged, by the burſting of the Apices, upon the Top of the Piſtil; whence is a Paſſage for it to deſcend into the *Uterus*, where being received, it impregnates and fecundifies the Plant.

On this Principle, it may be ſaid, that the ſame Flower contains both Sexes, which contribute each their Part to the Generation: That the *Stamina* are the Male-part; and the *Farina*, which is always found of an oily, glutinous Nature, the ſeminal Liquor; and that the Piſtil is the Female Part, which conducts the Semen to the *Ova* or Embryo's. See GENERATION *of Plants*.

STAMINEOUS *Flowers*, among Botaniſts, are ſuch as are ſo far imperfect, as to want thoſe colour'd Leaves, we call *Petalæ*; and which only conſiſt of the *Stylus* and the *Stamina*. See FLOWER.

Such Plants as bear theſe *Stamineous Flowers*, Mr. *Ray* makes to conſtitute a large Genus of Plants, which he calls *Herbæ flore imperfecto, ſive apetalo, Stamineove*. And theſe he divides into ſuch as,

1. Have their Fruit or Seed totally divided from the Flower; which are ſuch Plants as are ſaid to be of different Sexes: The Reaſon of which is, that from the ſame Seed, ſome Plants ſhall ariſe with Flowers, and no Fruit; and others, with Fruit, and no Flowers: As Hops, Hemp, Stinging-nettles, Spinach, Mercurialis and Phyllon.

2. Such as have their Fruit only a little diſjoined from their Flowers; as the Ambroſia Bardana Minor, Ricinus, and the Heliotropium Tricoccon.

3. Such as have their Fruit immediately contiguous, or adhering to their Flower: And the Seed of theſe is either, 1. Triangular; and of this Sort, ſome are lucid and ſhining, as the Lapathum, Rhabarbarum, and Biſtorta, to which alſo may be added the Perſicaria: Others are rough and not ſhining, as the Helleborus Albus, Fegopyrum, Convolvulus Niger, and the Polygonum. 2. Such as have a roundiſh Seed, a little flatted or compreſſed, or of any other Figure but the former Triquetrous or Triangular one; and theſe have their Flower, or the Calyx of the Flower, adhering to the Bottom or Baſis of the Seed or Fruit; as the Potamogiton, Blitum Sylveſtre, Parietaria, Atriplex, Blitum Sativum, Amuranthes, Hoclocerieus, and the Saxifraga Aurea. 3. Such whoſe Flowers adhere to the Top of the Seed; as the Beta, Aſarum, Archimilla. And to theſe kind of Plants, Mr. *Ray* reduces alſo the Kaligeniculatum, Sedum Fruticoſum, the Scoparia or Belvidere of the *Italians*.

STAMP. See PRINT.

STAMPING-*Mill*, or *Knocking-Mill*, an Engine uſed in the Tin-works, to bruiſe the Ore ſmall. See TIN.

STANCHEONS, in Building. See PUNCHINS.

STANDARD, in War, a Banner or Flag, bore as a Signal for the joyning together of the ſeveral Troops belonging to the ſame Body. See BANNER.

The *Standard* is uſed for any Enſign of Horſe; but more uſually for that of the General. See FLAG and ENSIGN.

The ancient Kings of *France* bore St. *Martin*'s Hood for their *Standard*. The *Turks* preſerve a *Green Standard* bore by *Mahomet*, with a world of Devotion; as believing it to have been brought down by the Angel *Gabriel*. Every time 'tis diſplay'd, all who profeſs the Mahometan Faith, are obliged to take Arms; thoſe who refuſe, are to be deem'd as Infidels. *Du Cange* derives the Word from *Standarum* or *Stantarum*, *Standardum* or *Standale*, Words uſed in the corrupt *Latin*, to ſignify the principal *Standard* of an Army. *Menage* derives it from the *German*, *Stander*, or the *Engliſh*, *Stand*.

STANDARD, in Commerce, the Original of a Weight, Meaſure or Coin, committed to the keeping of the Magiſtrate, or depoſited in ſome publick Place, to regulate, adjuſt, and try the Weights uſed by particular Perſons in Traffick. See MEASURE, WEIGHT, *&c.*

The Juſtneſs of Weights and Meaſures, is of that Conſequence to the Security and good Order of Trade, that there is no civiliz'd Nation but makes it a Part of their Policy to preſerve the Equality thereof by means of *Standards*. The *Romans* and *Jews* even ſeem to have affix'd a kind of religious Worſhip to theſe *Standards*, by laying them up in their Temples, as it were under the Eye of their Deities.

The *Standards* of Weights and Meaſures in *England*, are appointed by *Magna Charta*, to be kept in the *Exchequer*, by a ſpecial Officer, called the *Clerk* or *Comptroller of the Market*.

For Coins; the *Standard* of Gold Coin is 22 Carrats of fine Gold and 2 Carrats of Alloy in the Pound weight Troy; and the *French*, *Spaniſh* and *Flemiſh* Gold, are nearly of the ſame Fineneſs. The Pound Weight is cut into Forty-four Parts and a Half, each current for 21 Shillings. See GUINEA.

The *Standard* of Silver is 11 Ounces and two Penny-weight of Silver, and 18 Penny-weight of Alloy of Copper. Whether Gold or Silver be above or below *Standard*, is found by aſſaying. See ASSAY.

STANDARDS, or *Standils*, in Husbandry, are Trees, reſerved at the felling of Woods, for Growth for Timber.

STANNARIES; are the Mines and Works, were Tin is dug and purified; as in *Cornwall*, and elſewhere. See TIN.

There are four Courts of the *Stannaries* in *Devonſhire*, and as many in *Cornwall*; and there are ſeveral Laws about, and Liberties granted to theſe Courts in ſeveral Acts of Parliament, as in the Time of *Edward* I. and as abridged by *Edward* III. and in 17 *Car.* I. *c.* 15.

STANZA, in Poetry, a certain regulated Number of grave Verſes, containing ſome perfect Senſe, terminated with a Reſt.

The Word is *Italian*, and literally ſignifies a *Stand* or *Station*, becauſe of the Pauſe to be made at the end of each *Stanza* or compleat Senſe.

What the *Couplet* is in Songs, and the *Strophe* in Odes, the *Stanza* is in the greater and graver Pieces, as Epic Poems, *&c.* See COUPLET and STROPHE.

Indeed the *Italians* ſcarce write any Poems, but they divide them into *Stanzas*. There are *Stanza*'s of 4, 6, 8, 10, 12 Verſes, and ſometimes of an uneven Number of Verſes, as