

M. Perrault, Rainssant, &c. defend the Modern Beer; urging, that the Hops used with us, and which the Antients were Strangers to, having a Faculty of purifying the Blood, and removing Obstructions, serve as a Corrector, and free the Drink from the Inconveniences laid at the door of that of the Antients. For the Manner of preparing Beer, see BREWING; for its Qualities, see MALT-LIQUOR. The Word comes from the old German, *Biere*: *Vossius* derives it from the Latin, *bibere*, to drink; others from the Hebrew, *Bar*, Corn; others from *Bion*, a Drink mentioned by *Pliny*.

BEER-MEASURE. See MEASURE.

BEGLERBEG, a Turkish Title for a Governor of a Province, who has under him several *Sangiacks*, or Sub-Governors. There are 28 *Beglerbegs* in the Ottoman Empire. *Dins-Beglerbeg* is the *Basha* of the Sea, or the Admiral of the *Turks*. *Beg*, in the Turkish Language, signifies Lord; and *Beglerbeg*, or *Beglerbeghi*, Lords of Lords.

BEGUARD, or BEGGHARD, the Name of an Heretical Sect in Germany, which sprung up towards the End of the 13th Century. Their Head was one *Dulcinus*. Their principal Tenets were, that Man, in this Life, might be impeccable; and, that he might arrive to a Degree of Perfection not to be exceeded; that this State was as happy as Heaven, which when once obtain'd, they were no longer obliged to observe the Fasts of the Church, nor obey their Superiors; that every intellectual Creature is self-happy; that it stands in need of nothing but the Light of Glory to raise it to the Vision and Enjoyment of God; that none, but the Imperfect, apply themselves to practise virtuous Actions; that *Jesus Christ* should not be adored in the Elevation of the Host, nor the Mysteries of his Incarnation be regarded: They condemn'd good Works, and spread abroad impure Doctrines. These Fanaticks, who wore the Habits of Monks, without paying regard to any Rule, or observing Celibacy, were condemn'd under Pope *Clement V.* at the Council of *Vienna*, in 1311.

BEGUINES are devout Societies of young Women, establish'd in several Parts of *Flanders*, *Picardy*, and *Lorraine*. They maintain themselves by the Work of their own Hands; they lead a middle kind of Life, between the Laick and Religious; but make no Vows. These Societies began at *Nivelle*, in *Flanders*, A. D. 1226, and soon spread into *France*. Their Habit was particular, but modest; they lived in common, and had Men of great Piety for their Governors. Some of them giving into absurd Opinions, Pope *Clement V.* abolished their Institution; upon which they ceas'd in *France*: But, *John XXII.* Successor to *Clement V.* explain'd that Decree, and declar'd only those Societies of the *Beguines* extinct, who had fallen into Heresy.

BELAY on board a Ship, signifies the same as *fasten*; thus they say, *belay the Sheet*, or *Tack*, that is, fasten it to the Kannel, &c.

BELCHING. See RUCTATION.

BELL, a popular Machine, rank'd by Musicians among the number of Musical Instruments of *Percussion*. Its Form needs no Description; its Parts are the *Body*, or *Barrel*, the *Clapper* with-in-side, and the *Ear* or *Cannon*, whereby it is hung to a large Beam of Wood; its Matter is a Metal compounded of twenty Pounds of Pewter to an hundred of Copper, call'd *Bell-Metal*. The Thickness of its Edges is usually  $\frac{1}{3}$  of the Diameter, and its Height twelve times its Thickness. The *Bell-Founders* have a *Diapason*, or *Bell-Scale*, wherewith they measure the Size, Thickness, Weight, and Tone of their *Bells*. The Uses of *Bells* are summ'd up in the Latin Distich:

*Laudo Deum verum, Plebem voco, congreco Clerum,  
Defunctos ploro, Pestem fugo, Festa decoro.*

For the Method of Casting *Bells*, &c. see *FOUNDRY*. Mr. *Hauksbee*, and others, find by Experiment, the Sound of a *Bell* struck under Water, to be a fourth deeper than in the Air: But *Merfenne* says, 'tis of the same Pitch in either Element. *Bells* are observ'd to be heard further, placed on Plains, than on Hills; and still further in Vallies, than on Plains: the Reason of which is not difficult to assign, if it be considered, that the higher the sonorous Body is, the rarer is its Medium; consequently, the less Impulse it receives, and the less proper Vehicle it is to convey it to a Distance.

The first *Bells* are said to have been made at *Nola*, in *Campania*, whereof *St. Paulinus* was Bishop; at least, 'tis said, he was the first who brought 'em into the Church. And hence, 'tis added, they had their Latin Names, *Nolæ* and *Campanæ*: But others say, they take these Names, not from their being invented in *Campania*, but because 'twas here the manner of hanging and balancing of 'em, now in Use, was first practis'd; at least, that they were ballanced and hung on the Model of a Ballance invented or used in *Campania*. For, in Latin Writers we find *Campana Statera*, for a Counter-poise, and in Greek *καμπανίζειν*, for *ponderare*, to load or weigh. *Polydore Virgil* ascribes the Invention of *Bells* to Pope *Sabinian*, *St. Gregory's* Successor;

but by Mistake; for *St. Jerome*, Cotemporary with *Paulinus*, makes mention of a *Bell*. In effect, Pope *Sabinian* did not invent *Bells*; but he was the first who appointed the Canonical Hours to be distinguish'd by 'em. We even find mention made of *Bells* in *Ovid*, *Tibullus*, *Martial*, *Statius*, and *Manilius*, and the Greek Authors, under the Titles of *Tintinnabula*, and *Sounding Brass*. *Suetonius*, *Dion*, *Strabo*, *Polybius*, *Josephus*, and others, mention 'em under the Names of *Petalus*, *Tintinnabulum*, *Aramentum*, *Crotalum*, *Signum*, &c. But these appear to have been little else but Baubles, and little like the huge *Bells* in use among us.

*Hieronymus Magius*, who has a Treatise express on *Bells*, (wrote, when in Chains, in *Turkey*, and which is accounted very remarkable, purely from his Memory, without the Assistance of any Books) makes large *Bells* a modern Invention. Indeed, we don't hear of any before the sixth Century: In 610, we are told, *Loup*, Bishop of *Orleans*, being at *Sens*, then besieg'd by the Army of *Clotbarius*, frighted away the Besiegers by ringing the *Bells* of *St. Stephen's*. The first large *Bells* in *England* are mention'd by *Bede* towards the latter End of that Century. The *Greeks* are commonly said to have been unacquainted with 'em till the ninth Century, when their Construction was first taught them by a *Venetian*. Indeed, 'tis not true that the Use of *Bells* was entirely unknown in the antient Eastern Churches, and that they call'd the People to Church, as at present, with wooden Mallets. *Leo Allatius*, in his *Dissertation of the Greek Temples*, proves the contrary from several antient Writers. 'Tis his Opinion, that *Bells* first began to be disused among 'em, after the taking of *Constantinople* by the *Turks*; who, it seems, prohibited 'em, lest their Sounds should disturb the Repose of Souls, which, according to them, wander in the Air. He adds, that they still retain the Use of *Bells* in Places remote from the Commerce of the *Turks*; particularly, very antient ones in *Mount Athos*: *F. Simon* thinks the *Turks* rather prohibited the *Christians* the Use of *Bells*, out of political, than religious Reasons; inasmuch as the Ringing of *Bells* might serve as a Signal for the Execution of Revolts, &c. See *MINARET*. The City *Bourdeaux* was deprived of its *Bells* for Rebellion; and when 'twas offer'd to have 'em restored, the People refus'd it, after having tasted the Ease and Conveniency of being freed from the constant Din and Jangling of *Bells*.

*Matthew Paris* observes, that antiently the Use of *Bells* was prohibited in Time of Mourning; tho at present they make one of the principal Ceremonies of Mourning. *Mabillon* adds, that 'twas an antient Custom to ring the *Bells* for Persons about to expire, to advertise the People to pray for 'em; whence our *Passing-Bells*. *Lobineau* observes, that the Custom of ringing *Bells*, at the Approach of Thunder, is of some Antiquity; but that the Design was not so much to shake the Air, and so dissipate the Thunder, as to call the People to Church, to pray the Parish may be preserved from that terrible Meteor.

The Custom of baptizing, or blessing *Bells*, is very antient. Some say 'twas introduced by Pope *John XIII.* in 972; but 'tis evidently of an older standing; there being an express Prohibition of the Practice in a Capitulary of *John XIII.* *Alcuin* says 'twas establish'd long before Pope *John XIII.* Yet this is only to be understood of an Order of that Pope, for restoring the Practice which had been disused. See *BAPTISM*.

*Nankin*, a City of *China*, was antiently famous for the Largeness of its *Bells*; but their enormous Weight having brought down the Steeple, the whole Building fell to Ruin, and the *Bells* have ever since lain on the Ground. One of these *Bells* is near 12 English Foot high, the Diameter  $7\frac{1}{2}$ , and the Circumference 23; its Figure almost Cylindric, except for a Swelling in the middle; and the Thickness of the Metal about the Edges, seven Inches. From the Dimensions of this *Bell*, its Weight is computed at 50000 Pounds, which is more than double the Weight of that of *Erfort*, said by *Father Kircher* to be the greatest *Bell* in the World. These *Bells* were cast by the first Emperor of the preceding Dynasty, about 300 Years ago. They have each their Name, the Hanger *Schouei*, the Eater *Che*, the Sleeper *Choui*, the Will *Fi*. *Father le Compte* adds, that there are seven other *Bells* in *Pekin*, cast in the Reign of *Youlo*, each of which weighs 120000 Pounds. But the Sounds even of their biggest *Bells*, are very poor; being struck with a Wooden in lieu of an Iron Clapper. The *Egyptians* have none but wooden Clocks, except one brought by the *Franks* into the Monastery of *St. Anthony*.

BELL: The Sound of a *Bell* consists in a vibratory Motion of the Parts thereof, much like that of a Musical Chord. The Stroke of the Clapper, 'tis evident, must change the Figure of the *Bell*, and of round, make it oval: But the Metal having a great degree of Elasticity, that Part which the Stroke drove furthest from the Centre will fly back again, and that even somewhat nearer to the Centre than before: So that the two Points which before

were the Extremes of the longer Diameter, now become those of the shorter. Thus the Circumference of the *Bell* undergoes alternate Changes of Figure, and by means thereof gives that tremulous Motion to the Air wherein Sound consists. See SOUND.

M. *Perrault* maintains, that the Sound of the same *Bell*, or *Chord*, is a Compound of the Sounds of the several Parts thereof; so that where the Parts are homogeneous, and the Dimensions of the Figure uniform, there is such a perfect Mixture of all these Sounds, as constitutes one uniform, smooth, even Sound; and the contrary Circumstances produce Harshness. This he proves from the *Bell's* differing in Tune according to the Part you strike; and yet strike it any where, there is a Motion of all the Parts. He therefore considers *Bells* as composed of an infinite Number of Rings, which, according to their different Dimensions, have different Tones, as Chords of different Length have: And when struck, the Vibrations of the Parts immediately struck, determine the Tone; being supported by a sufficient Number of consonant Tones in other Parts. See TUNE.

BELLOWS, a Machine used to give a brisk Agitation to the Air, by enlarging and contracting its Capacity by Turns. *Bellows* are of various Kinds, as *Domestick Bellows*, *Enamellers Bellows*, *Smiths Bellows*. See FORGE. The *Bellows* of an Organ are six Foot long, and four broad; each having an Aperture of four Inches, that the Valve may play easily. There should likewise be a Valve at the Nose of the *Bellows*, that one mayn't take the Air from the other. To blow an Organ of 16 Feet there are required four Pair of *Bellows*. There are some *Bellows* triangular, which only move on one Side. Others call'd *Lantern-Bellows*, from their resembling a Paper Lantern: These move each way, and yet still continue parallel to each other. The *Hessian Bellows* are a Contrivance for driving Air into a Mine for the Respiration of the Miners. This M. *Papin* improved, changing its Cylindrical Form into a Spiral one; and with this, working it only with his Foot, he could make a Wind to raise two Pound Weight. See the *Philos. Transact.*

BELOMANCY, a kind of Divination by Arrows; (from βέλῳ, an Arrow, and μαντῖα, Divination,) practised in the East, but chiefly among the *Arabians*. 'Twas performed in different manners: One was to mark a Parcel of Arrows, and put eleven, or more of 'em, into a Sack; these were afterwards drawn out, and according as they were mark'd, or not, they judged of future Events. Another way was to have but three Arrows, upon one of which was wrote, *God orders it me*; upon another, *God forbids it me*; and upon the third was wrote nothing at all. These were put into a Quiver, out of which they drew one of the three at random; if it happen'd to be that with the first Inscription, the Thing they consulted about was done; if it chanced to be that with the second Inscription, 'twas let alone; but if it proved that without an Inscription, they draw'd over again. This was an antient Practice, and probably that which *Ezekiel* mentions, *ch. xxi. 21*. At least *St. Jerome* understands it so, and observes that the Practice was frequent among the *Affyrians* or *Babylonians*. Something like it is also mentioned in *Hosea*, *ch. iv.* only that *Rods* are there mentioned instead of *Arrows*, which is rather *Rhabdomancy* than *Belomancy*. *Grotius*, as well as *Jerome*, confounds the two together, and shews that it prevail'd much among the *Magi*, *Chaldeans* and *Scythians*; whence it pass'd to the *Slavonians*, and thence to the *Germans*, whom *Tacitus* observes to make use of it. See RHABDOMANCY.

BELTS, in Astronomy, two *Fasciæ*, or Girdles, observ'd in *Jupiter's* Body, more lucid than the rest, and terminated by Parallel Lines, being sometimes broader and sometimes narrower; nor do they constantly take up the same Places in his Disk. *Huygens* observ'd a *Belt* in *Mars* in 1656, much broader than those of *Jupiter*, and possessing the middle Part of his Disk, but very obscure. See JUPITER, &c.

BEN, or *Behen*, a Name given to a Medicinal Root, rank'd among the *Cardiacs* and *Counter-Poisons*; and to an Oil express'd from this Root, used by Perfumers, &c. The Root of *Ben* is divid'd into white and red: The first is insipid, leaving only a little Bitterness behind it on the Tongue; the red is fibrous, brown without, and reddish within. They are both brought from *Syria*, and have the same Virtues, being substituted for each other; they must be chosen dry, and are of an aromattick, affringent Taste.

BENCHERS in an Inn of Court, the Seniors of the House, who have the Government and Direction thereof; and out of whom is yearly chosen a Treasurer, &c.



BEND, in Heraldry, one of the eight honourable Ordinaries; containing a fifth when uncharged, but when charged a third part of the Escutcheon: It is made by two Lines drawn thwartways from the Dexter-Chief to the Sinister-Base Point; thus he beareth Or, a *Bend Sable*. A *Bend* is subdivided into a

*Benlet* which is the sixth part of the Shield, a *Garter* which is the Moiety of a *Bend*, a *Cost* which is the fourth part of a *Bend*, and a *Ribbon* which is the Moiety of a *Cost*. There is also a *Bend-Sinister*, which is drawn from the *Sinister Chief Point* to the *Dexter-Base*, and this is subdivided into the *Scrape*, or *Scarp*, and the *Battoon*; which latter is the fourth part of the *Bend*. This *Battoon* is the most usual Mark of Illegitimacy; but then it never extends itself quite athwart the Shield, but is cut off a little at each End: When two streight Lines drawn within the *Bend* run nearly parallel to the outward Edges of it, that is called *Voiding*; and he that bears it, is said to bear a *Bend voided* thus: He beareth Ermine, a *Bend voided Gules*.

BEND: At Sea they say *bend the Cable*, when it is to be made fast to the Ring of the Anchor; and to *bend two Cables*, is the same as to tie them together. To *unbend the Cable*, is to loosen it from the Ring of the Anchor; which is done when a Ship designs to be long at Sea. To *bend a Main-Sail*, is to make it fast to the Yard in its proper Place. The *Bends* in a Ship are the same with the *Wailes*, or *Wales*, which are the outermost Timbers of a Ship, on which Men set their Feet in climbing up: They are reckoned from the Water the first, second, and third *Bend*: They help much to strengthen the Ship, and have the Beams, Knees, and Foot-Hooks bolted into them.



BENDY, the Term in Blazonry for an Escutcheon's being divided *Bend-ways* into an even Number of Partitions; but if they are odd, the *Field* must first be named, and then the Number of the *Bends*.

BENEDICTINES, a Set of Religious, who profess to live by the Rule of *St. Benedict*. The *Benedictines* are divided into several Congregations. They wear a loose black Gown, with large wide Sleeves, and a Capuche on their Heads, ending in a Point behind. In the Canon Law they are called *Black Friars*, distinguishing them from the other Orders by their Habit, and not by the Name of their Patriarch *St. Benedict*. There is only this Difference between the antient *Monks* and the *Benedictines*, in that the former were mere *Monks*, without any Attachment to a particular Order. The List of Saints of the *Benedictin* Order is very ample; but they are accused by *Baronius*, and many other Writers, of putting those in the List who were never of that Order.

BENEFICE, in an Ecclesiastical Sense, a Church endow'd with a Revenue for the Performance of Divine Service; or, that Revenue itself, assign'd to an Ecclesiastical Person for Life, in return for the Service he is to do to that Church. All Church-Preferments, except *Bishopricks*, are called *Benefices*; and all *Benefices* are, by the Canonists, sometimes called *Dignities*: But we now ordinarily distinguish between *Benefice* and *Dignity*, using the Word *Dignity* for *Bishopricks*, *Deanaries*, *Arch-Deaconries*, and *Prebends*; and *Benefices* for *PARSONAGES*, *VICARAGES*, or *DONATIVES*; which see.

*Benefices* are divided by the *Canonists* into *Simple* and *Sacerdotal*: In the first there is no Obligation but to read Prayers, sing, &c. as *Canons*, *Chaplains*, *Chantors*, &c. The second is charg'd with a Cure of Souls, or the Direction and Guidance of Consciences, as *Vicarages*, *Rectories*, &c. The *Canonists* make three manners of vacating a *Benefice*, viz. *de Jure*, *de Facto*, and *by the Sentence of a Judge*. A *Benefice* is vacated *de Jure*, when the Person enjoying it is guilty of Crimes express'd in those Laws, as *Heresy*, *Simony*, &c. A *Benefice* is vacated *de Facto*, as well as *de Jure*, by the natural Death, or the Resignation of the Incumbent; and that Resignation may be either express, or tacit, as when he engages in a State, &c. inconsistent with it; as among the *Romanists* by Marrying, Entering a Religious Order, &c. A *Benefice* is vacant by the *Sentence of a Judge*, by way of Punishment for certain Crimes, as *Concubinage*, *Perjury*, *Sorcery*, &c. The *Romanists*, again, distinguish *Benefices* into *Regular* and *Secular*. *Regular*, or *Titulary Benefices*, are those held by a *Religious*, or a *Regular*, who has made Profession of some Religious Order, as an *Abby*, *Priory*, *Conventual*, &c. Or rather, a *Regular Benefice* is such as can't be conferr'd on any but *Religious*, either by its Foundation, by the Institution of a Superior, or by Prescription: For Prescription, 40 Years Possession by a *Religious*, without a Dispensation, makes the *Benefice Regular*. *Secular Benefices* are those that are only to be given to *Seculars*; of which kind are almost all their Cures. All *Benefices* are reputed *Secular*, till the contrary is made appear. They are called *Secular Benefices*, because held by *Secular Priests*, i. e. by such as live in the World, and are not engaged in any Monastick Order. Some *Benefices*, *Regular* of themselves, are *secularized* by the *Pope's Bull*. See REGULAR and SECULAR.

A *Benefice in Commendam* is that, the Direction and Management whereof, upon a Vacancy, is given or commended to an Ecclesiastick for a certain Time, till it may be conveniently provided for. See *COMMENDAM*.

The Term *Benefice* comes to us from the old *Romans*, who using to distribute part of the Lands they had conquered on the Frontiers of the Empire to their Soldiers, those who enjoy'd such Rewards were call'd *Beneficiarii*, and the Lands themselves *Beneficia*, as being held on the pure Beneficence and Liberality of the Prince. These *Benefices* at first were given for Life only, but afterwards became Hereditary and Patrimonial. From the *Romans* both the Name and the Thing pass'd into *France* and *England*, with this Difference, as Mr. *Blount* observes, that *Benefices* were not given as mere Gratuities for past Services, but as Warrants for future ones, and were accordingly held by the Tenure of serving, on occasion, in the Wars, &c. So that what was before a *Benefice*, became now converted into a *Fee*. Hence, doubtless, came the Term *Benefice* to be applied to Church-Livings; for, besides that the Ecclesiasticks held for Life, like the Soldiers, the Riches of the Church arose from the *Beneficence* of Princes.

As to the Origin of *Ecclesiastical Benefices*, 'tis hard to determine when the Effects of the Church were first divided; 'tis certain, till the fourth Century all the Revenues were in the Hands of the Bishops, who distributed them by their *Oeconomi*; they consisted principally in Alms and voluntary Contributions. As the Church came to have Inheritances, Part thereof was assign'd for the Subsistence of the Clergy, and call'd a *Benefice*, for which we find some footing in the fifth and sixth Century; but then there does not appear to have been any certain Partition, nor any precise Quota allotted to each Particular, but the Allotments were absolutely discretionary till about the twelfth Century. At first each was contented with a single *Benefice*, but Pluralities were, by degrees, introduced, on pretence of Equity: For, a single *Benefice* being sometimes scarce thought a Competency, the Priest was allow'd two: As his Quality, or Occasions, increas'd, so the Number of *Benefices* that were to support 'em were increas'd too. Hence some affecting to equal Princes in Quality, pretend to Revenues answerable thereto.

*V. Ferrier* observ'd, that in his Time there were five *Cases* by which *Benefices* were acquir'd: By the *Nominative*, as in royal Nominations; by the *Genitive*, as where the Children of Great Men, &c. are provided of *Benefices* by their Birth; by the *Dative*, as when speaking of a *Benefice*, 'tis said, *Date, & dabitur vobis*; by the *Accusative*, as where by virtue of an Accusation, either true or false, an Incumbent is dispossest, and another admitted; by the *Ablative*, as when *Benefices* are taken away by Force from the poor and helpless: but the *Vocative Case*, which is the most just and legitimate, is out of use. The *Nominative* is for the King; the *Genitive* for the Great; the *Dative* for the Rich; the *Accusative* for the Cunning; and the *Ablative* for the Ambitious; but the *Vocative* is reserved for the *Holy Ghost* alone.

*BENEVOLENCE* is used, both in our Statutes and Chronicles, for a voluntary Gratuity given by the Subjects to their Sovereign. The first *Benevolence*, *Stow* observes in King *Edward* the IV's Days, was granted that Prince in regard of his great Expences in Wars, &c. There was one given by Act of Parliament to King *Charles* II. In other Nations this is called *Subsidium Charitativum*, given sometimes by Tenants to their Lords, by the Clergy to their Bishops, &c.

*BENJOYN*, or, as 'tis commonly called, *Benjamin*, an excellent kind of Resin, imported from the Kingdom of *Lao*, and other Parts of the *East-Indies*. 'Tis procur'd by a Wound or Incision in a Tree, whose Leaves resemble those the Lemmon-Tree. 'Tis of a yellowish Colour, of an agreeable Scent, and easy to melt. There are three Sorts of it: The first is call'd *Amygdaloides*, because of its being interspers'd with several white Spots which resemble broken Almonds: This comes from *Siam*. The second is black and very odoriferous; it drops from young Trees, and comes from *Sumatra*; 'tis call'd *Benzoinum de Boninas*. The third Sort is also black, but less odoriferous; this is found in the Islands of *Java* and *Sumatra*. 'Tis used in Physick, as a Pectoral and Anti-Asthmatick; and thrown on live Coals, it serves to perfume Houses, &c.

*BERENGARIANS*, a Religious Sect who adher'd to the Opinions of *Berenger*, Archdeacon of *Angiers*, who oppos'd the Doctrine of Transubstantiation and the real Presence, a considerable time before *Luther*. He is further charged by the *Romanists* with decrying Marriage, and maintaining the common Use of all sorts of Women, and asserting Infant-Baptism of no effect. His Followers were divided on the Head of the Eucharist: Tho' they all agreed that the Bread and Wine were not essentially chang'd, yet some allow'd it to be chang'd in effect, tho' under an Impanation,

which was the Opinion of *Berenger* himself: Others deny'd any Change at all, and resolv'd all into Figure; others again allow'd a Change in part; and others an entire Change, with this Restriction, that to those who presented themselves unworthily it was chang'd back again.

*BERENICES Hair*, or *Coma Berenices*, a Constellation in the Northern Hemisphere, consisting of Stars near the *Lion's Tail*.

*BERGAMOT* is a kind of Essence, drawn from a Fruit, produc'd by ingrafting the Lemon-Tree on the *Bergamot-Pear* Stock. 'Tis no more than the oily Fluid of these Lemons express'd by the Fingers. There is likewise a kind of Snuff of the same Name, which is only clean Tobacco, with a little of the Essence rubb'd into it.

*BERGHMOTH*, vulgarly call'd *Barmote*, a Court held on a Hill for deciding Pleas and Controversies among the *Derbyshire* Miners. From the *Saxon Berg, Mons*, and *Mote, Conventus*.

*BERLIN*, a particular kind of Vehicle of the Chariot-kind, much used of late; taking its Name from the City *Berlin* in *Germany*; tho' some attribute the Invention of it to the *Italians*. 'Tis a very convenient Machine to travel in, being lighter, and less apt to be overturn'd, than a Chariot. The Body of it is hung high by Shafts to leathern Braces; there being a kind of Stirrup or Footstool for the Convenience of getting into it: Instead of Side-Windows, there are Sheds to let down in bad Weather, and draw up in good.

*BERME*, in Fortification, is a small Space of Ground, four or five Foot wide, left without between the Foot of the Rampart and the Side of the Moat, to receive the Earth that rolls down from thence, and to prevent its falling into the Moat. Sometimes, for more Security, the *Berme* is pallisadoed.

*BERNARDINE*, the Name of a religious Order extended over great part of *Europe*. This Order is an Improvement of that of *St. Benedict*, made by *Robert Abbe de Moleine*; and again by *St. Bernard Abbe de Clervaux*. Their usual Habits a white Gown, with a black Scapulary; but when they officiate, they put on a large white Coull with great Sleeves, and a Hood of the same Colour.

*BERIL*, or *BERYL*, a precious Stone, much like Chrystal, brought from the *Indies*; there are some also found on the Banks of the *Euphrates*. There are several Kinds of *Berils*. Lapidaries reckon ten: The most esteemed are the *Beril*, the *Chrysoberil*, and the *Chrysoprasim*. The *Beril* borders much on the Sea-green; whence the *Latins* call it *Aqua Marina, Sea-Water*. To give it a Lustre, it must be cut Facet-wise: Polishing does not give it any Brilliant, if cut any other way. The *Chrysoberil* is somewhat paler, and partakes more of the yellow. *Chrysoprasim* partakes most of the green. Some Authors take the *Beril* to be the Diamond of the Antients: This is certain, the ablest modern Jewellers sometimes mistake the one for the other. The *Beril* is sometimes found in Pieces large enough to form fine Vales. 'Tis said, there are many of 'em at *Cambaye, Marraban, Pegu*, and *Ceylon*.

The Properties of the *Beril* were very wonderful in the Opinion of the antient Naturalists: It kept People from falling into Ambuscades of Enemies, excited Courage in the fearful, cured Diseases of the Eyes and Stomach. It does none of these things now; because People are not simple enough to believe it has the Virtue to do 'em.

*BERRY*, a Grain, Fruit, or Seed, produced by several Trees and Shrubs for the Conservation, and Re-production of their Kind. *Berries* are of various Sizes, Forms, Properties, and Uses, according to the Plants whereon they grow: Some used in Medicine, as *Juniper-Berries, Buckthorn-Berries*, &c. Others in Dying, as *French* or *Yellow Berries*, &c. See *GRAIN* and *SEED*.

*BESANT*, a sort of Coin struck at *Constantinople*, in the Time of the Emperors, antiently called *Bisance*; 'twas pure Gold, or 24 Carats fine. Its Value is not determin'd. Hence the Gold offer'd by the King at the Altar, and on Festivals, is still call'd *Besant*, or *Bisant*.

*BES*, or *BESSIS*, the Mark, or eight Ounces, Part of the *As*; *Bes* for *Bis*, which is two *Triens*, which are each four in Value. See *As*.

*BESTIARII*, among the antient *Romans*, those who combated with Beasts, or were expos'd to 'em. We usually distinguish two Kinds of *Bestiarii*: The first were those condemn'd to the Beasts, either as being Enemies, taken Prisoners, or as being Slaves, and guilty of some enormous Crime. These were all expos'd naked, and without Defence to the Beasts; nor did it ought avail to conquer and kill the Beast, fresh ones being continually let loose on 'em, till they were dead. The *Christians* were *Bestiarii* of this Kind, even some of 'em who were *Roman* Citizens, tho' 'twas the Privilege of such to be exempt from it: But it seldom happen'd that two were requir'd for the same Man; on the contrary, one Beast frequently dispatch'd several Men. *Cicero* mentions

a Lion, which alone dispatch'd 200 *Bestiarii*. Those who succeeded the first were call'd *ἑσπεδοί*, and the last *ἑσπεδοί*. See MERIDIANI.

The second Kind of *Bestiarii*, *Seneca* observes, consisted of young Men, who, to become expert in managing their Arms; fought sometimes against Beasts, and sometimes against one another; and of Bravo's, who, to shew their Courage and Dexterity, expos'd themselves to this dangerous Combat. *Augustus* encourag'd this Practice in young Men of the first Rank; *Nero* expos'd himself to it; and 'twas for the killing Beasts in the Amphitheatre, that *Commodus* acquir'd the Title of the *Roman Hercules*. *Vigener* to these adds two Kinds of *Bestiarii* more: The first were those who made a Trade of it, and fought for Money; the second was where several *Bestiarii* armed, were let loose at once against a Number of Beasts.

BEVEL, in Masonry, and among Joiners, a kind of Square, one Leg whereof is frequently crooked, according to the Sweep of an Arch or Vault. 'Tis moveable on a Point or Centre, and so may be set to any Angle. Its Make and Use are pretty much the same as those of the common Square and Mitre, except that those are fix'd; the first at an Angle of 90 Degrees, and the second at 45; whereas the *Bevil* being moveable, may, in some measure, supply the Office of both, and yet, which 'tis chiefly intended for, supply the Deficiencies of both; serving to set off, or transfer, Angles either greater or less than 90 or 45 Degrees. Hence a *Bevil* Angle is used to denote any other Angle but those of 90 or 45 Degrees.



BEVILE, a Term in Heraldry signifying Broken, or opening like a Carpenter's Rule. Thus he beareth Argent a chief *Bevil* Vert, by the Name of *Beverlis*.

BEY, a Term used for a Governour of a maritime Country or Town in the Turkish Empire. The *Turks* write the Word *Begh*, or *Bek*, but pronounce it *Bey*. Properly it signifies *Lord*, but is particularly applied to a *Lord of a Banner*, whom in the same Language they call *Sangiak-beghi*, or *Bey*: *Sangiak*, which among them signifies *Banner*, or *Standard*, being the Badge of him who commands in a considerable Place of some Province, having under him a considerable Number of *Spahi's*, or *Horse*. Each Province in *Turkey* is divided into seven of these *Sangiacks*, or *Banners*, each of which qualifies a *Bey*; and these are all commanded by the Governour of the Province, whom they also call *Beghiler-Beghi*, or *Beyler-bey*, i. e. *Lord of the Lords*, or *Bey of the Province*. These *Bey's* are in a great measure the same that *Bannerets* formerly were in *England*.

BEZOAR, or BEZOARD, a Medicinal Stone, esteem'd a Sovereign Counter-Poison, and an excellent Cardiac. 'Tis also given in Vertigo's, Epilepsies, Palpitation of the Heart, Jaundice, Cholick, and so many other Diseases, that were its real Virtues answerable to its reputed ones, it were doubtless a *Panacea*. Indeed, its Rarity, and the peculiar Manner of its Formation, have, perhaps, contributed as much to its Reputation, as any intrinsic Worth. At present it begins to be prized less, and a great many able Physicians discard it, as of no Use or Efficacy at all.

There are several Kinds of *Bezoar*; the Chief are the *Oriental*, the *Occidental*, and that of *Germany*. The *Oriental* is in the most Esteem, and is brought from several Parts of the *East-Indies*, chiefly *Golconda* and *Cananor*: 'Tis there found mingled with the Dung of an Animal of the Goat Kind call'd *Pazan*; in the Belly whereof this Stone is found: The Buds of a certain Shrub which the Animal uses to brouze, are usually found in the middle of it, and supposed to be the Seed whence it arises. The *Bezoar* ordinarily grows of the Bigness of an Acorn, sometimes of that of a Pigeon's Egg. It is composed of several shining Skins, or Coats, like an Onion, sometimes of a Blood-Colour, sometimes a pale yellow, a brownish red, and Honey-Colour. The Number of *Bezoards* produced by each Animal is various, some yielding one, two, &c. to six, and others none at all. The larger the Stone the more valuable, its Price increasing like that of the Diamond. A Stone of one Ounce is sold in the *Indies* for 100 Franks, and one of four Ounces for 2000 Livres. *Oriental Bezoar* must be chose shining, of a Smell like that of Ambergreese, smooth to the Touch, and in large Pieces; its Figure is indifferent, its Colour usually Olive. *Bezoar* is easily sophisticated, and the Deceit as easily discover'd. The Methods of proving it are, 1<sup>st</sup>, to steep it three or four Hours in lukewarm Water; if the Water ben't ting'd, nor the *Bezoar* lose of its Weight, 'tis pure. 2<sup>dly</sup>, To try it with a sharp, red hot Iron; if it enters the Stone, and the Heat makes it fry and shrivel, 'tis factitious. 3<sup>dly</sup>, To rub it over a Paper smear'd with Cerusse; if it leave a yellow Teint, 'tis good.

*Occidental Bezoar*, or *Bezoar of Peru*, is very different from the first. 'Tis found in the Belly of several Animals, peculiar to the Country: In some 'tis the Bigness of a Nut, in others of a Puller's Egg; in some 'tis oval, in others flat, in others round; 'tis usually of an Ash-Colour, sometimes dusky; and form'd of Scales, like the *Oriental*, but much thicker; 'tis smooth and even without-side, but when broke, looks as if it had been sublimated, by reason of the little shining Needles whereof it appears to be composed. The Animals that produce it are the *Guanaco's*, *Jacho's*, *Vicunna's*, and *Taragua's*; the *Bezoar* of which last is the most esteem'd, this Animal being much like the Goat that produces the *Oriental*.

The *German Bezoar*, which some call *Cow's Eggs*, is found in the Stomach of some Cows, but more frequently in that of the *Chamois* or *Isard*. These are supposed to be nothing else but the Hair of those Animals, which being occasionally lick'd off by the Tongue, is swallow'd down, and being impregnated with the Saliva, &c. is condens'd into Balls. Some of these *Bezoars* weigh 18 Ounces, but they are not much esteem'd, tho they are used in some Medicines, and by the Painters in Miniature, to make their yellow Colours.

Besides these three Kinds of *Bezoar* which the Shops afford, there are three other Kinds much rarer, viz. the *Stone of the Hog*, that of *Malacca* or *Porcupine*, and that of the *Ape*. The first call'd by the *Dutch*, *Pedro de Porco*, and by the *Portuguese*, who first brought it into *Europe*, *Pedro de Vaparis*, found in the Gall-Bladder of a Boar in the *East-Indies*. In Figure and Size it resembles a Filbert, tho more irregular; its Colour not fix'd, but most commonly white with a Teint of blue; it is smooth and shining. The *Indians* attribute infinite Virtues to this *Bezoar*: They call it *Mastica de Sobo*, and prefer it to the *Oriental Bezoar*; not so much on account of its being supposed the best Preservative in the World against Poisons, as on account of its being Sovereign in the Cure of the *Mardoxi*, a Disease they are very liable to, and which is not less dangerous than the Plague in *Europe*. The other Properties they ascribe to it are, that 'tis admirable against malignant Fevers, Small-Pox, and most Diseases of Women not with Child; Experience shewing, that it promotes Abortion in those who use it indiscreetly. To use it, they infuse it in Water, or Wine, till it has communicated a little Bitterness to it. To facilitate the Infusion, and at the same time preserve so precious a Stone, they usually set it in a gold Case pierced with Holes.

*Bezoars of Porcupines* and *Monkeys* only differ from those of the *Hog*, in that they are found in the Gall-Bladders of those Animals; unless we say with *Tavernier*, that these two, which he calls *Malacca-Stones*, are not taken from the Gall-Bladders, but the Head of the Monkey and Porcupine; and that they are held in such Esteem by the Natives of *Malacca*, that they never part with 'em, unless as Presents to Ambassadors, or the greatest Princes of the East. Some add, that they are likewise found in *Siam*. Indeed, the Form, Colour and Properties of these three *Bezoars* are so near a-kin, that 'tis more than probable, that 'tis the same Stone under three different Names.

*Bezoar* is applied by the Chymists, to several of their Preparations, on account of the *Bezoardick* Qualities they are suppos'd to have.

ANIMAL BEZOAR is the Heart and Lungs of the Viper pulverized together.

MINERAL BEZOAR is an Emetick Powder of Antimony correct'd with Spirit of Nitre, and softened by repeated Lotions, which carry off the purgative Virtue of the Antimony, and substitute a Diaphoretick one. It promotes Sweat like the Stone of that Name.

BEZOARDICUM *Joviale*, or *Bezoar of Jupiter*, a Regulus made by melting three Ounces of Regulus of Antimony and two of Block-Tin, which, powder'd and mix'd with six Ounces of Corrosive Sublimate, and distill'd off in a kind of Butter, and that dissolv'd in Spirit of Nitre, the Solution is distill'd three times; the *Bezoar* remaining at bottom, to be powder'd, wash'd, and mingled with Spirit of Wine, till it grow insipid.

BEZOARDICUM *Lunale*, or of the Moon, is made by mixing eight Ounces of rectified Butter of Antimony with one of fine Silver. This is dissolv'd in Spirit of Nitre, by gently pouring it on, fresh and fresh, till the Ebullition cease; when, the Spirit is drawn off by a gentle Heat, and the *Bezoar* manag'd as the former.

BEZOARDICUM *Martiale*, a Dissolution of *Crocus Martis* by Reverberation in Butter of Antimony, with Spirit of Nitre pour'd on it; the rest as in the first.

BIBITORY *Muscle*. See ADDUCENS OCULI, which is the same.

BIBLE, a Book by way of Eminence so call'd, containing the Scriptures, i. e. the *Old and New Testament*. Bibles are distinguish'd according to their Language, into *Hebrew*, *Greek*, *Latin*, *Chaldee*, *Syriack*, *Arabick*, *Coptick*, &c. an

Acquaintance with which making a considerable Article in Theological Criticism; we shall here subjoin some Account thereof.

*Hebrew BIBLES* are either Manuscript or Printed. The best Manuscripts are those copied by the *Jews of Spain*. Those copied by the *Jews of Germany*, are less exact, but more common: The two Kinds are easily distinguish'd from each other; the former being in beautiful Characters, like the *Hebrew Bibles* of *Stephens* and *Plantin*; the latter in Characters like those of *Munster* and *Grypheus*. *F. Simon* observes, that the oldest Manuscript *Hebrew Bibles* are not above 6 or 700 Years old; nor does *Rabbi Menahem*, who quotes a vast Number of 'em, pretend any of 'em exceed 600 Years.

The most antient printed *Hebrew Bibles* are those published by the *Jews of Italy*, especially of *Pesaro* and *Bresse*. Those of *Portugal* also printed some Parts of the *Bible* at *Lisbon*, before their Expulsion. This may be observ'd in the general, that the best *Hebrew Bibles* are those printed under the Inspection of the *Jews*; there being so many *Minutiae* to be observ'd, that 'tis scarce possible for any other to succeed in it.

In the beginning of the sixth Century *Dan. Bombergua* printed several *Hebrew Bibles* in *Folio* and *4to* at *Venice*, most of which are esteem'd both by the *Jews* and *Christians*: The first in 1517, which is the least exact, and generally goes by the Name of *Felix Pratensis*, the Person who revised it: The second in 1526, with the *Maffora* and the *Commentaries* of several *Rabbins*, and a *Hebrew Preface* by *Rabbi J. Benchajim*. In 1548 the same *Bombergua* printed the *Folio Bible* of *Rabbi Benchajim*, which is the best and most perfect of 'em all: 'Tis distinguish'd from the first of the same *Rabbi*, by the *Comment* of *Rabbi D. Kimchi* on the *Paralipomena*, which are not in the preceding. From this Edition it was, that *Buxtorf*, the Father, printed his *Hebrew Bible* of the *Rabbins* at *Basil*, in 1618; but in this are several Faults, especially in the *Commentaries* of the *Rabbins*, where that learned Man corrected some places that were against the *Christians*. In the same Year appear'd at *Venice* a new Edition of the *Bible* of the *Rabbins* by *Leo de Modena*, a *Rabbin* of that City, who pretended to have corrected a great Number of Faults in the former Edition; but, besides that 'tis much inferior to the other *Hebrew Bibles* of *Venice*, with regard to Paper and Print, it has pass'd thro the Hands of the *Inquisitors*, who have alter'd many Passages in the *Commentaries* of the *Rabbins*.

For *Hebrew Bibles* in *4to*, that of *R. Stephens* is esteem'd for the Beauty of the Characters; but 'tis very incorrect. *Plantin* also printed several beautiful *Hebrew Bibles* at *Antwerp*; the best is that of 1566, in *4to*. *Manasseh Ben Israel*, a learned *Portuguese Jew*, published two Editions of the *Hebrew Bible* at *Amsterdam*, the one in *4to*, the other in *8vo*; the first has two Columns, and for that reason is commodious for the Reader. In 1634, *R. Jac. Lombroso* publish'd a new Edition in *4to* at *Venice*, with small literal Notes at the bottom of each Page, where he explains the *Hebrew Words* by *Spanish Words*. This *Bible* is much esteem'd by the *Jews* at *Constantinople*: In the Text they have distinguish'd between Words where the Point *Camets* is to be read with a *Camets-batuph*, that is, by an *o* and not an *a*.

Of all the Editions of the *Hebrew Bible* in *8vo*, the most beautiful and correct are the two of *Jo. Athia*, a *Jew* of *Amsterdam*. The first, of 1661, is the best Paper; but that of 1667, the most exact: That however, publish'd since at *Amsterdam* by *Vander Hoocht* in 1705, is preferable to any of 'em.

After *Athia*, three *Hebraising Protestants* engaged themselves in revising and publishing the *Hebrew Bible*, viz. *Clodius*, *Jablonski*, and *Opius*. *Clodius's* Edition was publish'd at *Frankfort* in 1677, in *4to*: At the bottom of the Page it has the various Readings of the former Editions; but the Author does not appear sufficiently vers'd in the Accenting, especially in the Poetical Books; besides that not being publish'd under his Eye, many Faults have crept in. That of *Jablonski* in 1699, in *4to*, at *Berlin*, is very beautiful, as to Letter and Print: but, tho the Editor pretends he made use of the Editions of *Athia* and *Clodius*, some Criticks find it scarce different in any thing from the *4to* Edition of *Bombergua*. That of *Opius* is also in *4to*, at *Keil* in 1709; the Character is large and good, but the Paper bad: 'Tis done with a great deal of Care; but the Editor made use of no MSS. but those of the *German Libraries*; neglecting the *French* one, which is an Omission common to all three. They have this Advantage however, that besides the Divisions used by the *Jews*, both general and particular, into *Parasches* and *Pesukim*, they have also those of the *Christians*, or of the *Latin Bibles*, into Chapters and Verses; the *Keriketib* or various Readings, *Latin Summaries*, &c. which make 'em of considerable Use, with regard to the *Latin Editions* and the *Concordances*.

The little *Bible* of *R. Stephens* in 1610; is much priz'd for the Beauty of the Character. Care, however, must be taken; there being another Edition of *Geneva* exceedingly like it, excepting, that the Print is worse, and the Text less correct. To these may be added some other *Hebrew Bibles* without Points, in *8vo* and *24to*, which are much covet'd by the *Jews*; not that they are more exact, but more commodious than the rest, and are used in their Synagogues and Schools: of these there are two beautiful Editions, the one of *Plantin*, in *8vo*, with two Columns, and the other in *24to*, reprinted by *Raphaenge* at *Leiden*, in 1610. There is also an Edition of them by *Laurens* at *Amsterdam*, in 1631, in a larger Character; another in *12mo* at *Frankfort*, in 1694, full of Faults, with a Preface of *M. Leusden* at the head of it.

*Greek BIBLES*. There are a great Number of Editions of the *Bible* in *Greek*; but they may be all reduced to three or four principal ones, viz. that of *Complutum*, or of *Alcala de Henares*, that of *Venice*, that of *Rome*, and that of *Oxford*. The first was publish'd in 1515 by Cardinal *Ximenes*, and inserted in the *Polyglot Bible*, usually call'd the *Complutensian Bible*. This Edition is not just, the *Greek* of the *Seventy* being alter'd in a great many places according to the *Hebrew Text*. This Edition has been reprinted in the *Polyglot Bible* of *Antwerp*, in those of *Paris*, and in the *4to Bible* commonly call'd the *Bible of the Vatable*.

The second *Greek Bible* is that of *Venice* in 1518. Here the *Greek Text* of the *Septuagint* is reprinted just as it stood in the MS. full of Faults of the *Copists*, but easily amended. This Edition has been reprinted at *Strasburg*, *Basil*, *Frankfort*, and other Places, with some Alterations, to bring it nearer the *Hebrew*. The most commodious is that of *Frankfort*, there being added to this, little *Scholia* where are shewn the different Interpretations of the old *Greek Translators*: The Author of this Collection has not added his Name; but 'tis commonly ascribed to *Junius*.

The third *Greek Bible* is that of *Rome* in 1587; with *Greek Scholia* collected from the MSS. in the *Roman Libraries* by *Pot. Morin*. This fine Edition has been reprinted at *Paris* in 1628, by *J. Morin*, Priest of the Oratory, who has added the *Latin Translation*, which in the *Roman* was printed separately, with *Scholia*. The *Greek Edition* of *Rome* has been reprinted in the *Polyglot Bible* of *London*; to which are added, at bottom, the various Readings of the *Alexandrian MS*. This has been also reprinted in *England* in *4to* and *12mo*, with some Alterations. It has been again publish'd at *Frankfort* in 1709, by *Boz*, who has added all the various Readings he cou'd find.

The fourth *Greek Bible* is that done from the *Alexandrian MS*. begun at *Oxford* by *Dr. Grabe* in 1707. In this the *Alexandrian MS*. is not printed such as it is, but such as 'twas thought it should be, i. e. 'tis alter'd wherever there appear'd any Fault of the *Copists*, or any Word inserted from any particular Dialect: This, some think a piece of Merit, but others a Fault; urging that the MS. should be given absolutely and entirely of itself, and all Conjectures, as to the Readings, to be thrown into the Notes.

*Latin BIBLES*, how numerous soever, may be all reduc'd to three Classes, viz. the *Antient Vulgate*, made from the *Greek Septuagint*; the *Modern Vulgate*, the greatest part of which is done from the *Hebrew Text*; and the *New Latin Translations*, done also from the *Hebrew Text* in the 16th Century. We have nothing remaining of the *Antient Vulgate* used in the Primitive Times in the *Western Churches*, but the *Psalms*, *Wisdom*, and *Ecclesiastes*. *Nobilis* has endeavour'd to retrieve it from the Works of the antient *Latin Fathers*; but 'twas impossible to do it exactly, in regard most of the Fathers did not keep close to it in their Citations.

As to the *Modern Vulgate*, there are a vast Number of Editions very different from each other. Cardinal *Ximenes* has inserted one in the *Bible of Complutum*, corrected and alter'd in many Places. *R. Stephens*, and the *Doctors of Louvain*, have took a world of Pains in correcting the *Modern Vulgate*. The best Edition of *Stephens's Latin Bible* is that of 1540, reprinted in 1545; in which are added, on the Margin, the various Readings of several *Latin MSS*. which he had consulted. The *Doctors of Louvain* revised the *Modern Vulgate* after *R. Stephens*; and added the various Readings of several *Latin MSS*. The best of the *Louvain Editions* are those, at the End of which are added the Critical Notes of *Francis Luke*, of *Bruges*.

All these Reformatations of the *Latin Bible* were made before the Time of Pope *Sixtus V.* and *Clement VIII.* Since which, People have not dared to make any Alterations, excepting in Comments, and separate Notes. The Correction of *Clement VIII.* in 1592, is now the Standard throughout all the *Roman Churches*: That Pontiff made two Reformatations; but 'tis the first of 'em that is follow'd. From this the *Bibles of Plantin* were done, and from those

of *Plain* all the rest; so that the common *Bibles* have none of the After-Corrections of the same *Clement VIII.* publish'd at *Rome* in 1592. 'Tis a heavy Charge that lies on the Editions of *Pope Clement*, viz. that they have some new Texts added, and many old ones alter'd, to countenance and confirm what they call the *Catholick Doctrine*: Witness that celebrated Passage of *St. John*, *Tres sunt in unum*. See *VULGATE*.

There are a great Number of *Latin Bibles* of the third Class, comprehending the Versions from the Originals of the Sacred Books made within these 200 Years: The first is that of *Pagninus*, a *Dominican*, printed at *Lions* in 4to, much esteem'd by the *Jews*. This the Author improv'd in a second Edition: In 1542, there was a beautiful Edition of the same at *Lions* in *Folio*, with *Scholia*, publish'd under the Name of *Michael Villanovanus*, i. e. *Michael Serretus*, Author of the *Scholia*. Those of *Zurich* have likewise publish'd an Edition of *Pagninus's Bible* in 4to. And *R. Stephens* reprinted it in *Folio*, with the *Vulgate*, in 1557, pretending to give it more correct than in the former Editions. There is also another Edition of 1586, with four Columns, bearing the Name of the *Vatable*: And we find it again in the *Hamborough* Edition of the *Bible*, in four Languages. In the Number of *Latin Bibles* is also, usually, rank'd the *Version* of the same *Pagninus* corrected, or rather render'd literal, by *Arias Montanus*; which Correction being approv'd of by the Doctors of *Lowain*, &c. was inserted in the *Polyglot Bible* of *Philip II.* and since in that of *London*. There have been various Editions of it in *Folio*, 4to, and 8vo; to which have been added the *Hebrew* Text of the *Old Testament*, and the *Greek* of the *New*. The best of 'em all is the first, which is in *Folio*, 1571.

Since the Reformation, there have been several *Latin* Versions of the *Bible* from the Originals by *Protestants*. The most esteem'd are those of *Munster*, *Leo de Juda*, *Castalio*, and *Tremellius*: The three last whereof have been reprinted various times. *Castalio's* fine *Latin* pleases most People; but there are some who think it too much affected: the best Edition thereof is that in 1573. *Leo de Juda's* Version, alter'd a little by the Divines of *Salamanca*, was added to the ancient *Latin* Edition, as publish'd by *R. Stephens* with Notes, under the Name of *Vatable*. That of *Junius* and *Tremellius* is prefer'd especially by the *Calvinists*, and has undergone a great Number of Editions.

One may add a fourth Class of *Latin Bibles*, comprehending the *Vulgate* Edition corrected from the Originals. The *Bible* of *Isidorus Clarius* is of this Number: That Author not being contented with restoring the ancient *Latin* Copy, has corrected the Translator in a great number of places, which he thought ill render'd. Some *Protestants* have follow'd the same Method; and among others, *Andrew* and *Luke Osiander*, who have each publish'd a new Edition of the *Vulgate*, corrected from the Originals.

*Oriental Bibles*. At the head of the *Oriental* Versions of the *Bible*, must be placed that of the *Samaritan*, that being the most antient of all, and admitting no more for *Holy Scripture* but the *Pentateuch*, or *Five Books of Moses*. This Translation is made from the *Samaritan Hebrew* Text, which is a little different from the *Hebrew* Text of the *Jews*. This Version has never been printed alone; nor any where but in the *Polyglots* of *London* and *Paris*.

*Chaldee Bibles* are no more than the Glosses made by the *Jews* in the Time when they spake the *Chaldee* Tongue. These they call by the Name of *Targumim*, or *Paraphrases*, as not being any strict Version of the Scripture. They have been inserted entire in the large *Hebrew Bibles* of *Venice* and *Basil*; but are read more commodiously in the *Polyglots*, being there attended with a *Latin* Translation.

*Syriack Bibles*. In the Year 1562, *Widmanstadius* printed the whole *New Testament* in *Syriac* at *Vienna*, in a beautiful Character: After him there were several other Editions; and it was inserted in the *Bible* of *Philip II.* with a *Latin* Translation. *Gabriel Sionita* also published a beautiful *Syriack* Edition of the *Psalms* at *Paris* in 1525, with a *Latin* Interpretation. The whole *Bible* is printed in *Syriack* in the *Polyglots* of *London* and *Paris*.

*Arabick Bibles*. In the Year 1516, *Aug. Justinian*, Bishop of *Nebio*, printed at *Genoa* an *Arabick* Version of the *Psalter*, with the *Hebrew* Text and *Chaldee* Paraphrase, adding *Latin* Interpretations. There are *Arabick* Versions of the whole *Scriptures* in the *Polyglots* of *London* and *Paris*; and we have an Edition of the *Old Testament* entire, printed at *Rome* in 1671, by Order of the Congregation de *propaganda Fide*; but 'tis of little Esteem, as having been alter'd by the *Vulgate* Edition. The *Arabick Bibles* among us, are not the same with those used by the *Christians* in the *East*. Some learned Men take the *Arabick* Version of the *Old Testament*, printed in the

*Polyglots*, to be that of *Saadias*: at least, in the main. Their Reason is, that *Aben Ezra*, a great Antagonist of *Saadias*, quotes some Passages of his Version, which are the same with those in the *Arabick* Version of the *Polyglots*; yet others are of opinion, that *Saadias's* Version is not extant. In 1622, *Erpenius* printed an *Arabick Pentateuch*, call'd also the *Pentateuch of Mauritania*, as being made by the *Jews of Mauritania*, and for their Use. This Version is very literal, and esteem'd very exact. The *four Evangelists* have also been publish'd in *Arabick*, with a *Latin* Version, at *Rome* in 1591, *Folio*. These have been since reprinted in the *Polyglots* of *London* and *Paris*, with some little Alterations of *Gabriel Sionita*. *Erpenius* publish'd an *Arabick New Testament*, entire, as he found it in his MS. Copy, at *Leyden*, in 1616.

*Coptick Bibles*. We have no Part of the *Bible* printed in *Coptick*; but there are several Manuscript Copies in the good Libraries, especially in that of the *French King*.

*Æthiopic Bibles*. The *Æthiopians* have also translated the *Bible* into their Language. There have been printed separately, the *Psalms*, *Canticles*, some Chapters of *Genesis*, *Ruth*, *Joel*, *Jonas*, *Sophonias*, *Malachias*, and the *New Testament*; all which have been since reprinted in the *Polyglot* of *London*. For the *Æthiopic New Testament*, which was first printed at *Rome* in 1548, 'tis a very unaccurate Piece, and is printed in the *English Polyglot* with all its Faults.

*Armenian Bibles*. There is a very antient *Armenian* Version of all the *Bible*, done from the *Greek* of the *Seventy*, by some of their Doctors, about the Time of *St. Chrysostom*. This was first printed entire in 1664, by one of their Bishops at *Amsterdam*, in 4to; with the *New Testament* in 8vo.

*Persian Bibles*. Some of the Fathers seem to say, that all the *Scripture* was formerly translated into the Language of the *Persians*; but we have nothing now remaining of the antient Version, which was, doubtless, done from the *Septuagint*. The *Persian Pentateuch* printed in the *London Polyglot*, is, doubtless, the Work of Rabbi *Jacob*, a *Persian Jew*. In the same *Polyglot* we have likewise the *four Evangelists* in *Persian*, with a *Latin* Translation; but this appears very modern, incorrect, and of little Use.

*Gotlick Bibles*. 'Tis generally said, that *Wlphilas*, a *Gotlick* Bishop, who lived in the fourth Century, made a Version of the whole *Bible*, excepting the Book of *Kings*, for the Use of his Country-men. That Book he omitted, by reason of the frequent Mention of the Wars therein; as fearing to inspire too much of the military Genius into that People. We have nothing remaining of this Version, but the *four Evangelists*, printed in 4to at *Dort*, in 1665, from a very antient MS.

*Muscovite Bibles*. An entire *Bible* in the *Sclavonick* Tongue, was printed at *Ostravia* in *Volhania*, in the Year 1581; and this is what we commonly call the *Muscovite Bible*. 'Twas printed at the Expence of *Con. Basil*, Duke of *Ostravia*, for the common Service of all *Christians* who speak the *Sclavonick* Language, whereof the *Muscovitish* is a Dialect.

*Bibles in Vulgar Tongues* are too numerous to be here rehearsed. See *F. Simon's* CRITICAL HISTORY. See also the WORD POLYGLOT, PENTATEUCH, &c.

*BICEPS*, in Anatomy, a Name common to several Muscles, from their having two Heads. Such is the

*Biceps Cubiti*, a Muscle of the Arm, one of whose Heads arises from the upper Edge of the Cavity of the Head of the *Scapula*, and is round and tendinous, and inclos'd in the Channel in the Head of the *Humerus*. The other arises from the *Processus Coracoideus*; it is broad and tendinous: and both unite about the Middle and Fore-part of the Arm, and make one Belly, which is inserted by a strong and round Tendon into the Tuberosity, at the upper end of the *Radius*. Some of the Fibres of this Tendon form a large and thin *Aponeurosis*, which covers all the Muscles of the *Radius* and *Fingers* externally. Care ought to be taken in *Blood-letting*, not to cut a-crofs, but according to the Length of the Fibres of this *Aponeurosis*. This, with the *Brachiius internus*, bend the Arms.

*Biceps externus*. See *GEMELLUS*.

*Biceps Tibiæ*, a Muscle of the Leg with two Heads; the one coming from the Tuberosity of the *Ischium*, and the other from the middle of the *Linea aspera*; both which join together, and are inserted by one Tendon into the superior and external Part of the *Perone*. Its Use is to help to bend the *Tibia*, and is likewise employ'd in turning the Leg, together with the Foot and Toes, outward, when we sit down.

*BIDENTALES*, Priests among the antient *Roman*, instituted for the Performance of certain Ceremonies, on occasion of a Thunderbolt's falling in any Place. The first and principal Part of their Office was, the sacrificing of a Sheep of two Years old, which in their Language was call'd *Bidens*, as having Teeth on each Side; whence also the Place struck

struck with a Thunderbolt, was call'd *Bidental*. This was not allow'd to be walk'd over; but was encompass'd with a Wall, or Pallisade, and an Altar erected over it; whence also the Priests, who officiated at it to perform the prescribed Expiation, took the Name *Bidentales*.

**BIGA**, a Chariot drawn by two Horses. The *Bigæ* and *Quadrigæ* were the Chariots that run in the List. The *Bigæ* are of a very antient standing: all the Heroes in *Homer*, *Hesiod*, *Virgil*, &c. fought in 'em. Hence *Bigats*, or *Begats*, a kind of Coin whereon was represented Victory drawn in a Chariot by two Horses. Many of the antient Medals call'd *Consular*, are *Bigats*. The Word comes from the *Latin Bijuga*, of *bis* and *jugum*, double Yoke.

**BIGAMY**, a double Marriage, or the possessing of two Wives at the same time. Among the antient *Romans*, those convicted of *Bigamy* were branded with a Note of Ignominy; and in *France*, were antiently punish'd with Death.

**BIGAMY**, in the Canon Law, is where a Person has espous'd two Women successively, or simply, espous'd a Widow: Each of which the *Canonists* account Impediments to be a Clerk, or to hold a Bishoprick without a Dispensation. This Point of Discipline they found on that of *St. Paul*, *A Bishop must be the Husband of one Wife*. *Bigamy* they make of two Kinds; *Real*, as where the Party actually marries twice; and *Interpretative*, where he marries a Widow, or a Woman debauch'd before, which is esteem'd a kind of double Marriage. Here *F. Doucin* distinguishes and observes, that *Ireneus* having been married twice, must in this Sense have been guilty of *Bigamy*, and therefore made Bishop of *Tyre* contrary to the Canons. He therefore thinks with *St. Jerom*, &c. that those only who married two Wives after Baptism, came under the Incapacity of *Bigamy*: But *St. Ambrose*, *Augustin*, &c. are express, that 'tis *Bigamy*, whether the first Wife were married or contracted before, or after Baptism. By a Statute of *Edward I.* those guilty of *Bigamy* were excluded the Benefit of the Clergy; but this is since repeal'd. The *Romanists* make a third kind of *Bigamy* by *Interpretation*; as, when a Person in holy Orders, or that has taken on him some Monastick Order, marries: This the Bishop can dispense withal, at least on some Occasions. There is also a kind of spiritual *Bigamy*; as, when a Person holds two incompatible Benefices, *v. g.* two Bishopricks, two Vicarages, two Canonries, &c. *sub eodem Tecto*.

**BIGNESS**. See **MAGNITUDE**.

**BIGOT**, a Person foolishly obstinate, or perversely wedded to an Opinion. The Word comes from the *German Bey* and *Gott*, or the *English by God*. *Camden* relates, that the *Normans* were first call'd *Bigots*, on occasion of their Duke *Rollo*, who receiving *Gissa*, Daughter of King *Charles*, in Marriage, and with her the Investiture of the Dukedom, refus'd to kiss the King's Foot in token of Subjection, unless he would hold it out for that purpose: And being urged to it by those present, answer'd hastily, *No by God*; whereupon the King turning about, call'd him *Bigot*; which Name pass'd from him to his People.

**BILARIUS PORUS**, or *Hepatick Duct*, a considerable Appendage of the Liver, form'd after the manner of a Vein, from the Concurrence of infinite small Ramifications springing from the Glands of the Liver, which unite into several Trunks, equal in Magnitude to the Branches of the *Hepatick Arteries*, which accompany 'em Branch for Branch thro the whole Substance of the Liver, and are wrapp'd up in the same *Capsula* with the *Porta*. These Branches are about the Size of a Wheat-Straw, the biggest large enough to admit the little Finger; and are distinguishable from the *Porta* by their Contents, being always full of *Bile*. Besides the *Capsula* common to this and the *Porta*, it has a thick white Coat proper to itself, like the Musculous Coat of an Artery. On the concave Side of the Liver the several Ramifications meet, and form one Trunk, or Channel, properly call'd the *Biliary Pore*, about the Bigness of a Goose-Quill, which descending about two Inches, meets with the *Cystick Duct*, and together with it forms what we call the *Ductus communis*; which descending in a right Line, about four Inches, discharges itself into the *Duodenum*, by an oblique Insertion, oftentimes at the same Aperture with the *Pancreatick Duct*. The *Porus Bilarius* communicates with the Gall-Bladder, by a *Duct* first described by *Dr. Glisson*, and afterwards by *M. Perrault*, who gave it the Name of the *Cyst-Hepatick Duct*. *Verheyen*, in *Oxen*, found two, three, or four of these *Cyst-Hepatick Ducts*; and the like has been observ'd in a Dog and a Man. See **CYST-HEPATICK DUCT**.

**BILDGE** of a Ship, is the Bottom of her Floor: *Bildge-Water* therefore is that, which by reason of the Flatness of the Ship's Bottom, lies on her Floor, and cannot go to the Well of the Pump; and consequently the *Dutch*, whose Ships are often of this Form, do much use a sort of Pumps call'd *Bildge-Pumps*; or, as we call them, *Burr-Pumps*, to carry off the *Bildge-Water*. Also when a Ship strikes

on a Rock, they say, she is *bilged*. And *Billage* is the Breadth of her Floor when she lies a-ground.

**BILE**, a yellow, bitter Juice, separated from the Blood in the Liver, collected in the *Porus Bilarius*, and Gall-Bladder, and thence discharged by the Common *Duct* into the *Duodenum*. The *Bile* is of two Kinds, *Hepatick* and *Cystick*: The first, properly call'd *Bile*, separated immediately from the Glands of the Liver into the *Porus Bilarius*: The second, call'd *Gall*, separated likewise from the Glands of the Liver into the Gall-Bladder, by Roots or *Ducts* proper to itself. The *Cystick Bile* is thicker, a deeper yellow, and bitterer; is not evacuated continually, but only when its Receptacle is replete; in which Case the Contraction of the irritated *Fibres* propels it into the *Duodenum*. The *Hepatick* is thinner, more mild and pellucid, and is continually oozing out; being expell'd by the sole Actions of the neighbouring Humours. The *Cystick Bile*, or *Gall*, resists Acids, and, mix'd with other Fluids, gives 'em the like Property: It absterges like *Sope*, and renders Oils capable of mixing with Water; it resolves and attenuates Resins, Gums, and other tenacious Bodies, rendering 'em homogeneous to itself. 'Tis neither alcalious nor acid, but seems a Concretion of Oil, Salt, and Spirits diluted with Water. By a Chymical Analysis *Dr. Drake* observes it affords some Sulphur, or Oil, some volatile Salt, a good deal of fix'd Salt, (in which particularly it differs from all other animal Liquors) and a pretty Quantity of *Caput Mortuum*, or Earth: the Basis is Phlegm. The Effect of the *Bile* is, by mixing with the Chyle and the *Fæces*, to attenuate, resolve, absterge, and stimulate the *Fibræ motrices*, to mix together things very different, to bruise and blunt those that are sharp and saline, to divide those that are coagulated, to open the Passages for the Chyle, to excite Appetite, to act the Part of a Ferment, and to assimilate crude things to things concocted. These Effects the *Cystick Bile* has in a greater, the *Hepatick* in a less Degree. *Dr. Quincy* thinks their principal Use is to sheath and blunt the Acids of the Chyle, entangling them with its Sulphurs, so as to prevent their being sufficiently diluted in the *Pancreatick Juice* to enter the *Lacteals*: Which he thinks confirmed by this, that notwithstanding the great Quantity of acid Salts in the Aliment in the Stomach, there are never any found in the Chyle after it has pass'd the *Duodenum*, and been impregnated with the Chyle continually oozing out from the *Porus Bilarius*.

*Borelli* asserts, that Part of the *Bile* discharged into the Intestines, re-enters the *Mesaraick Veins*, and mixing with the Blood of the *Vena Porta*, is again percolated thro the Liver; and *Boerhaave* seems of the same Opinion. Some will have the *Cystick Bile* brought to its Receptacle three different Ways, and that 'tis even compos'd of three different Kinds of *Bile*, whence its new Properties. *Boerhaave* takes those Properties to result from its stagnating in the Gall-Bladder; and, with *Malpighi*, thinks the bitter Part may probably take that Property in the Glandules between the Coats of the Gall-Bladder, which are furnish'd from the *Cystick Arteries*; whence it proceeds bitter, and mixes with the rest in the Bladder.

The *Bile* is a Juice of very great Importance, with regard to the good or ill Habitude of the Animal. *Dr. Woodward* has traced its Effects throughout the Body very minutely, and makes no Scruple to ascribe most of the Diseases thereof to some Disorder of the *Bile*. This he takes to be the chief Spring in the Animal Machine, and from this accounts for most of the Phænomena of a Body, whether healthy or diseas'd: And yet the Antients took it to be no more than an Excrement, for which they could not find any Use. Many of the Moderns, from the small Quantity of *Bile* secret'd, have been led into a Mistake, that this Secretion is not the sole End of so considerable a Viscus as the Liver. *Dr. Keil* observes, that in a Dog whose common *Duct* was near as big as that of a Man, he gather'd at the Rate of about two Drams an Hour; tho in a human Body, there is Reason to think the Quantity secreted to be greater.

Sometimes the *Bile* from yellow becomes greenish, like *Verdigreese*, and frequently pale, like the Yolks of Eggs, and that without any other apparent Cause than a little Motion, a Convulsion, or a violent Passion of the Mind. This occasions many and terrible Diseases, as *Nausea's*, an Abhorrence of Food, Anxiety, Sighing, *Cardialgia's*, Wind, *Diarrhea's*, *Dysenteries*, acute Diseases, Fevers, and Convulsions. Sometimes it becomes black, and takes the Name of *Choler*: In this Case it sometimes tastes like a very sharp Vinegar; sometimes like putrified Blood, gnawing, burning, dissolving, consuming, occasioning Inflammations, Gangrenes, Mortifications, violent Pains, and terrible Fermentations. Of *black Bile*, *Boerhaave* distinguishes three Kinds: First, the mildest, arising from the Matter of the Blood, put in too great Motion, which hence takes the Name of *Adust*: The second is an Aggravation of the first arising from the same Causes, only heighten'd: The third is a cor-

rupt, parch'd *Bile*, which, if it arose from a greenish, or palish *Bile*, is still worse. Too great an Evacuation of the *Bile*, either upwards or downwards, robs the Chylefaction of its main Instrument; hence it prevents Digestion, Secretion, Excretion of the Fæces, produces an acid Temperature, Cold, Weakness, Paleness, Swoonings, &c. If when prepared it be prevented its Discharge into the Intestines, it produces a Jaundice.

For the Manner in which the Secretion of the *Bile* in the Liver is effected, there are various Opinions. Some maintain, that the Pores of the Secretary Glandules of the Liver, have a certain Configuration and Magnitude, to which the Particles of the *Bile* floating in the Blood being just answerable, both in Bulk and Figure, are admitted in, and all the rest excluded. Others, with *Silvius* and *Lifter*, not allowing any Difference in the Configuration, as knowing that the Pores of all the Vessels are Circular, and that Particles of all Kinds will be admitted, if small enough, have recourse to a Ferment which they suppose to reside in the Liver, by means whereof the Particles of the Blood, in their Passage thro the Secretary *Ducts*, assume the Form of *Bile*. But as this is little else than begging the Question, others have recourse to another Hypothesis; maintaining, that the Fluids contain'd in the Blood of the *Vena Porta*, while that enters the Substance of the Liver in its way to the Extremities of the *Vena Cava*, indifferently apply to the Apertures of the Secretary Tubules contiguous to the extreme Branches of the *Porta*, which are wide enough, and to the Roots of the *Cava*, which are not wide enough, to receive 'em; by which means being separated from the Society and the intestine Motion of the other and the essential Parts of the Blood, and being no longer agitated by the Vital Action of the Blood-Vessels, and expos'd to the Action of the *Biliary* Vessels, they constitute a new Humour distinct from the Blood, call'd *Bile*, &c.

Lastly, *Dr. Keill* accounts for this Secretion of the *Bile* from the strong Attraction between the Particles whereof the *Bile* is compos'd. He observes, that the Heart and Liver being so near each other; were the *Celiac* Artery to have carried all the Blood to the Liver, considering the Velocity of the Blood, so viscid a Secretion as the *Bile* could never have been effected. Nature therefore forms a Vein for the purpose, *viz.* the *Porta*, and by it sends the Blood from the Branches of the *Mesenterick* and *Celiac* Arteries to the Liver; by which the Blood is brought a great way about, passing thro the Intestines, Stomach, Spleen, and Pancreas, e'er it arrives at the Liver: Thus its Velocity is exceedingly diminish'd, and the Particles that are to form the Gall have a sufficient time to attract one another, and unite before they come to their secreting Vessels. But, as if this Diminution of Velocity were not sufficient for the purpose, Nature has gone further; having made the Cavities of all the Arteries increase as they divide: thus the Sum of the Branches arising from the *Aorta*, is to the *Aorta* itself as 102740 to 100000. And yet, as if that Proportion were too little for the present Purpose, Nature has here taken a further Step, and increas'd the Branches springing from the *Mesenterick* Artery in a greater Ratio. Thus, in a Body which he examined, he found the Sum of the Branches more than double that of the Trunk; and therefore the Velocity of the Blood in the former, must be less than half that of the latter. He further shews, from a just Calculation, that the Time the Blood now takes in its Passage from the *Aorta* to the Liver is at least 26 Minutes: whereas, had an Artery gone directly from the *Aorta* to the Liver, it would have pass'd in little more than half a Second, *viz.* in 2437 times the Space it now takes up in its Passage. Whence it appears, that the Blood was not in a State fit to yield *Bile*, had it gone directly from the *Aorta* to the Liver; and that a longer Time, and more languid Motion, was necessary to have the *Bilious* Particles in a readiness to be separated. He adds, that were the Humours separated by the Glands at all Times and Places the same in the Blood, and not form'd after this manner, Nature would not have been at so much expence to retard the Blood's Velocity: Besides that, the *Bile* has another Advantage from the Use of the *Porta*; for, by running thro so many Parts e'er it reach the Liver, it leaves behind it most of its Lympha; by which means the Particles being brought nearer each other, are, by their mutual Attraction, sooner united. For the Parts concern'd in the Secretion of the *Bile*, see LIVER, BILARY PORE, GALL-BLADDER, &c. See also SECRETION.

The Word *Bile* comes from the *Latin Bilis*, which some fetch further from the *Greek Bia*, Violence, because *Bilious* People are inclined to Anger. Others fetch it from the *Latin bullire*, to boil. The *Bile* is a Part found in all Animals: even Pigeons, &c. which have no Gall-Bladder, yet have *Bile*; their Liver being found very bitter. *M. Tawry* observes, that the *Bile* becomes one of the principal Causes of Thirst, by mixing with the Salival Juice.

BILINGUIS, in Law, the Name of the Jury which pass'es in any Case betwixt an *Englishman* and an *Alien*; whereof one Moiety to be *Natives*, the other *Foreigners*, if required. The Word in the *Latin* signifies *double-tongued*.

BILL, an Edge-Tool, fitted to a Handle, used to lop Trees, &c. When short, it is call'd an *Hand-Bill*; when long, an *Hedging-Bill*.

BILL is also a *Declaration* in Writing, expressing the Wrong and Grievance the Complainant hath suffer'd by the Party complain'd of; or else some Fault committed by him against some Law or Statute of the Realm. This *Bill* is commonly address'd to the *Lord Chancellor*; especially for unconscionable Wrongs done sometimes to others having Jurisdiction, according as the Law they are grounded on, directs. It contains the Facts complain'd of, the Damages sustain'd, and the Petition of Process against the Defendant for Redress.

BANK-BILLS: Instruments whereby private Persons become entitled to a Part in the *Bank-Stock*. They are form'd on the Model of the *Lombard-Bills*.

BILL of Entry, an Account of Goods enter'd at the *Custom-House*, both Inward and Outward; wherein is express'd, the Merchant importing or exporting, the Quantity of Goods, and the Sorts, and from whence imported, or to what Place exported.

BILL of Exchange, a Writing ordering the Payment of a Sum of Money in one Place, to any Person assign'd by the Remitter, in consideration of the like Value paid the Drawer in another Place. The whole Estate and Effects of Merchants usually consist in *Bills of Exchange*. There is some Dispute about the Nature and Sanction of a *Bill of Exchange*: Some take it to be the Contract of an Exchange; but the more general Opinion is, that it is a mere Contract of Buying and Selling; that the Money given the Person who gives the *Bill*, is the Price of Sale; and that paid at the appointed Place, the Thing bought and sold.

*Bills of Exchange* were unknown in the antient *Roman Jurisprudence*. According to the common Opinion, they are the Invention of the *Jews*; who being banish'd *France*, for some enormous Crimes charg'd on 'em, retired into *Lombardy*, about the 12th Century, and found means to withdraw their Effects, which they had lodg'd in the Hands of Friends, by secret *Letters* and *Bills*, conceiv'd in short, precise Terms, like the modern *Bills of Exchange*; and this by the Assistance of Merchants and Travellers. The Faction of the *Gibellins*, being expell'd *Italy* by the *Guelphs*, retired to *Amsterdam*, and used the same Means, for the Recovery of their Effects in *Italy*, as the *Jews* had done: Hence the *Dutch* Merchants took the Hint of negotiating *Bills of Exchange*; and soon spread the Practice throughout all *Europe*. The same *Gibellins* are said to be the Inventors of the *Rechange*, on account of Damages and Interests, when *Bills of Exchange*, which they call'd *Polizza di Cambio*, were not paid, but return'd on Protest.

That which gives the Essence, and Form to a *Bill of Exchange*, is the Cession, or Vendition of a Sum of Money made by the Drawer, to him, on whose Account it is drawn, to be receiv'd of his Correspondent in another Place; which Cession, or Vendition, is made, in the Mercantile Terms, for Value receiv'd, i. e. for a like Sum given by the Person for whose Sake the *Bill* is drawn, to the Drawer, in Money, Merchandize, or other Effects. So that there are three things necessary to establish the Quality of a *Bill of Exchange*; 1<sup>st</sup>, That it be drawn by one City to another; 2<sup>dly</sup>, That there be three Persons concern'd, the Drawer, the Person for whom 'tis drawn, and he on whom 'tis drawn; 3<sup>dly</sup>, That it make mention, that the Value which the Drawer has receiv'd, is in another *Bill of Exchange*, in Money, Merchandize, or other Effects, which are to be express'd; otherwise 'tis no *Bill of Exchange*. When a *Bill of Exchange* is conceiv'd for Value in my self, 'tis not supposed the Drawer has receiv'd the Sum; but the Person, for whom 'tis drawn, stands Debtor to him for it: When a *Bill of Exchange* bears, for which Sum I promise to furnish *Bills of Exchange* to such a Place, the Person for whom the *Bill* is drawn, may compel him to give the *Bills*, or to return the Money.

BILL of Lading, an Instrument sign'd by the Master of a Ship, acknowledging the Receipt of the Merchant's Goods, and obliging himself to deliver them, at the Place to which they are consign'd, in good condition; of which *Bills* there are usually three: the first the Merchant keeps; the second is sent to the Factor to whom the Goods are consign'd; and the third is kept by the Master of the Ship.

BILL, in Law, a Security for Money under the Hand and Seal of the Debtor, without any Condition, or Forfeiture, in case of Non-Performance; in which it is distinguish'd from a Bond or Obligation.

BILL of Parcels, an Account of the particular Sorts and Prices of the Goods bought, given by the Seller to the Buyer.



**BILL**, in Parliament, a Paper containing Propositions offer'd to the Houses, to be pass'd by them, and then presented to the King to pass into an Act or Law. See PARLIAMENT.

**BILL of Sale**, is when a Person wanting a Sum of Money, delivers Goods as a Security to the Lender, to whom he gives this *Bill*, empowering him to sell the said Goods, in case the Sum borrow'd is not repaid, with Interest, at the Time appointed.

**BILL of Store**, a kind of Licence granted at the *Custom-House* to Merchants, to carry such Stores and Provisions as are necessary for their Voyages, Custom-free.

**BILL of Sufferance**, a Licence granted at the *Custom-House*, to a Merchant, to suffer him to trade from one *English* Port to another, without paying Custom.

**BILLA VERA**, *the Bill is true*. The Grand Inquest impannell'd and swore before the Justices of Eyre, &c. endorsing a *Bill* whereby any Crime punishable in that Court is presented to 'em, with these two Words, signify thereby, that the Presenter has furnished his Presentment with probable Evidence, and worthy further Consideration; whereupon the Party presented is said to stand indicted of the Crime, and bound to make an Answer thereto, either by confessing or traversing the Indictment. If the Crime touch his Life, it is yet refer'd to another Inquest, call'd the *Inquest of Life and Death*, by whom if he be found guilty, he stands convict of the Crime, and is condemn'd by the Judge. See INQUEST, INDICTMENT, &c.

**BILLET**, in Heraldry, a Bearing in form of a long Square. *Billets* are said to be couch'd, or inverted, when their longest Side is parallel to the Top of the Shield, and the shortest perpendicular. These were anciently Pieces of Cloth of Gold, or Silver, longer than broad, placed at a distance by way of Ornament, on Clothes, and afterwards translated to their Coat-Armour. *Greillim* mistakes, when he says a *Billet* represents a Letter seal'd up. A Coat is said to be *billeted*, when it is charg'd with *Billets*. Thus, he bears *Argent-Billette*, a *Cross engrail'd Gules*, by the Name of *Heath*. *Bloom* says, the *Billets* must be number'd when they are not above ten.

**BILLIARDS**, a very ingenious Game play'd on an oblong Table, with little ivory or wooden Balls, which are driven by crooked Sticks, made on purpose, into Hazards, or Holes, on the Edge and Corners, according to certain Laws, or Conditions of the Game. The Word comes from the *French Billard*; of *Billa* the Balls made use of, and that from the *Latin Pila*, a Ball.

**BILLON**, in Coinage, a kind of base Metal, either of Gold or Silver, in whose Mixture Copper predominates. According to *M. Boutheroue*, *Billon of Gold* is all Gold beneath Standard, or 21 Carats; and *Billon of Silver*, all below ten Pennyweights. But, according to others, and among the rest *M. Boizard*, Gold and Silver beneath the Standard, as far as twelve Carats, and six Pennyweights, are properly base Gold and Silver; and all under those, *Billon of Gold*, and *Billon of Silver*, in regard Copper is the prevailing Metal. The Word is *French*, form'd, according to *Menage*, from the *Latin, Binus Denarius*. We don't find 'tis naturaliz'd among us; but the Necessity we are frequently under of using it in the Course of this Work, requir'd its being explain'd.

**BIMEDIAL**, a Term in Mathematicks: when two Medial Lines, as A B and B C, commensurable only in Power, and containing a Rational Rectangle, are compounded, the whole A C shall be irrational, and is call'd a first *Bimedial Line*.

**BINARY ARITHMETICK**. A kind of *Arithmetick* first propos'd by *M. Leibnitz*; wherein, in lieu of the ten Figures in the common *Arithmetick*, and the Progression from 10 to 10, he has only two Figures in all his *Arithmetick*, and uses a more simple Progression from two to two; shewing it of considerable Advantage in the Sciences. All his Characters are 0 and 1. And the Cypher, here, multiplies every thing by 2, as in the common *Arithmetick* by 10: Thus, 1 is one; 10, two; 11, three; 100, four; 101, five; 110, six; 111, seven; 1000, eight; 1001, nine; 1010, ten, &c. which is built on the same Principles with the common *Arithmetick*.

Hence immediately appears the Reason of a celebrated Property of the Duplicate Geometrical Proportion in whole Numbers, *viz.* that one Number of each Degree being had, one may thence compose all the other whole Numbers above the double of the highest Degree. It being here, *v. g.* as if one should say, 111 is the Sum of 4, 2, and 1. Which Property may serve Effays to weigh all kinds of Masses with a little Weight; and may be used in Coins, to give several Values with little Pieces. This Method of expressing Numbers once establish'd, all the Operations will be easy: In Multiplication particular-

100	4
10	2
1	1
111	7

ly, there will be no need for a Table, or getting of any thing by heart.

He does not recommend this Method for common Use, because of the great Number of Figures used to express a Number: Adding, that if the ordinary Progression was from 12 to 12, or from 16 to 16, it would be still the more expeditious; but its Use is in discovering the Properties of Numbers, in making Tables, &c. What makes the *Binary Arithmetick* the more remarkable is, that it appears to have been the same with that used 4000 Years ago among the *Chinese*, and left in *Ænigma* by *Fohy*, the Founder of their Empire, as well as of their Sciences.

*M. Lagri* has propos'd a new System of *Logarithms*, on the foot of the *Binary Logarithms*; which he finds shorter, more easy, and natural, than the common ones.

**BINARY NUMBER**, that compos'd of two Units.

**BINARY MEASURE**, in Musick, is that wherein you beat equally, or the Time of Rising is equal to that of Falling. See TIME.

**BINDING of Books**. See BOOK-BINDING.

**BINOCLE**, or **BINOCULE**, in Opticks, a double Telescope, *i. e.* consisting of two Tubes join'd together, by which a remote Object may be viewed with both Eyes at once. It was invented by *F. Rheita*, a *Capuchin*, who describes it in a Book call'd, *Oculus Henoc & Elie*. Since which *F. Cherubin* has wrote a large Volume thereon. See TELESCOPE.

**BINOMINAL**, in Algebra, a Number produced by the Addition of two Numbers of incommensurable Magnitudes, or a Root consisting of two Parts, or Members, connected by the Sign +: Thus  $a + c$ , or  $5 + 3$ , is a *Binominal*, consisting of the Sum of those two Quantities: if it have three Parts, as  $a + b + c$ , it is call'd a *Trinominal*; if it have four Members, it is call'd a *Quadrinomial*; if more, a *Multinomial*. See NUMBER.

**BIOGRAPHER**, an Author who writes the History, or Life of any Person, or Persons, as *Plutarch*, *Corn. Nepos*, &c. From the *Greek Bi*, *vita*, and *γρῆν, scribe*.

**BICUADRATICK**, the next Power above the Cube, or the Square of a Cube Root. See EXTRACTION, POWER, and ROOT.

**BICUINTILE**, an Aspect of the Planets, when they are 144 Degrees distant from each other.

**BIRDLIME**, a viscid Substance, prepar'd various Ways, and from various Materials. The best used among us, is made from Holly-Bark, boil'd 10 or 12 Hours; when, the green Coat being separated from the other, 'tis cover'd up a Fortnight in a moist Place, pounded into a tough Paste, that no Fibres of the Wood be left, and wash'd in a running Stream till no Motes appear, put up to ferment four or five Days, skimm'd as often as any thing arises, and laid up for Use. To use it, a third part of Nut-Oil is incorporated with it over the Fire. The *Birdlime* brought from *Damascus* is suppos'd to be made of *Sebastens*, their Kernels being frequently found in it; but this does not endure either Frost or Wet: that brought from *Spain* is of an ill Smell; that of the *Italians* is made of the Berries of Mistleto, heated, mix'd with Oil, as before; to make it bear the Water, they add Turpentine. 'Tis said, the Bark of our Lantone, or way-faring Shrub, makes *Birdlime* as good as the best.

**BIRDS** are distinguish'd as they belong to Land or Water: Of *Land Fowl*, some have crooked Beaks and Talons; and of these some are carnivorous and rapacious call'd *Birds of Prey*; some frugivorous, call'd by the general Name of *Parrots*. Of *Birds of Prey*, some prey in the Day-time; and of these are reckon'd a greater and lesser Sort: The greater are either of a more bold and generous Nature, as the *Eagle-kind*; or of a more cowardly and sluggish, as the *Vulture*: The lesser diurnal *Birds of Prey*, are the *Hawk-kind*, which are wont to be reclaim'd and mann'd, for Fowling, and call'd *Hawks*; and by the Falconers distinguish'd into *long-winged*, as the *Falcon*, *Lanner*, &c. whose Wings reach almost as far as the End of their Train; or *short-wing'd*, as the *Goff-Hawk* and *Sparrow-Hawk*, whose Wings, when closed, fall much short of the End of their Trains: Those of the *Hawk-kind* which are of a Nature more cowardly, and sluggish, or else indocile, are neglected by our Falconers, and so live at large; and of these also there is a greater Sort, as the *Buzzard-kind*; and a lesser, as the *Butcher-kind*, or *Shrike*, (about the Bigness of a *Blackbird*, and found in *England*.) The *Bird of Paradise* is Exotick. Of *Birds of Prey* with crooked Beaks and Talons, some are Nocturnal, as the *Owl-kind*, which prey by Night; and these are either horned, or eared, as the *Eagle-Owl*, *Horn-Owl*, &c. or without Horns, as the *Brown-Owl*, *Grey-Owl*, &c. There is a Sort of *Land Birds* with crooked Beak and Talons, call'd frugivorous, because tho they do sometimes eat Flesh, yet they eat Fruits too; and these are known by the general Name of *Parrots*, and are distinguish'd into three Sorts, according to their Bigness; the greatest Size being call'd *Maccaws*; the middle-sized, and most common, *Parrots*,

*rots*, and *Poppinjays*; and the least Sort, *Parrakeets*: and all this Kind make use of their Beak in climbing, and move the upper Jaw. *Land Birds* that have their Bill and Claws more streight, are distinguish'd into three Sizes; the greatest Kind are, such as by reason of the Bulk of their Bodies, and Smallness of their Wings, cannot fly at all; these are *Exotick Birds* of a singular Nature; such as the *Ostrich*, the *Cassowary*, and the *Dodo*: The middle-sized Kind are divided, by their Bills, into such as have large, thick, strong, and long ones; some of which feed promiscuously on Flesh, Insects, and Fruits, as the *Crow-kind*, which are wholly black; and the *Pic-kind*, which are party-colour'd: Some feed on Fish only, as the *Kingsfisher*; and some on Insects only, as the *Wood-pecker*: And into such as have a smaller and shorter Bill; whose Flesh is either white, as the *Poultry-kind*; or blackish, as the *Pigeon* and *Thrush-kind*. The least sized Kind of *Land Birds*, with streight Bills and Claws, are called *Small-Birds*; and these are of two Kinds; *soft-beaked*, which have slender, streight, and pretty longish Bills, most of them, and feed chiefly upon Insects; and *hard-beaked*, which have thick and hard Bills, and feed mostly on Seeds.

*Water-Fowl*, are such as frequent Waters and watry Places to seek their Food; and these are all cloven-footed, and generally have long Legs, and those naked, or bare of Feathers, a good way above the Knee, that they may the more conveniently wade in Waters. Of these they reckon two Kinds; a greater, as the *Crane*, *Fabiru*, &c. and a lesser, which are either piscivorous, feeding on Fish, as the *Heron*, *Spoon-Bill*, *Stork*, &c. or Musduckers; or insectivorous, of which some have very long Bills, which are sometimes crooked, as in the *Curlew* and *Whimbrell*; and sometimes streight, as in the *Woodcock* and *Godwit*: others have middle-sized Bills, as the *Sea-Pye* and *Red-Shank*, &c. and a third Sort have short Bills, as the *Lapwing* and *Plover*. Those are reckon'd short Bills, which exceed not an Inch and half; middle-sized Bills, to two Inches and half; and long Bills above two Inches and half. There is another kind of *Water-Fowl*, which swim in the Water; some of which are cloven-footed, as the *Moor-Hen*, and *Coot*, &c. but most are whole footed; and of these some few have very long Legs, as the *Flammant*, the *Avosetta*, and *Corrira*; but mostly they are short-legg'd: Of which some few have but three Toes on each Foot, as the *Penguin*, *Razor-Bill*, &c. but generally they have four Toes on each Foot, and these either all connected together by intervening Membranes, as in the *Pelican*, *Soland-Goose*, &c. or more usually with the Back-Toe loose; and this Kind are either *narrow-bill'd*, or *broad-bill'd*: Those with *narrow Bills* have them either blunt, and hooked at the Tip; of which Sort some are serrate, as in the *Diver-kind*; and some not toothed, as in the *Puffin*; or sharp-pointed and streighter; of which, some Sort have long Wings, as the *Gull-kind*; and some shorter, as those *diving Birds* call'd *Douckers*. Those with broad Bills may be divided into the *Goose-kind*, which are larger; and the *Duck-kind*, which are smaller; and these latter into *Sea-Ducks*, or *River* and *Plash-Ducks*. Most *Water-Fowls* have a short Tail; and none of this Kind have their Feet dispos'd like *Parrots* and *Wood-peckers*, that have two Toes forward, and two backward, none having more than one Back-Toe, and some none at all. See *Willoughby's ORNITHOLOGIA*.

**BIRTH**, of a *Fetus*, its Delivery from the Mother. See **FOETUS**; for the Number of *Births* see **MARRIAGE**: Under which the Proportion of *Births* to *Marriages*, of *Births* to *Burials*, and of *Male-Births* to *Females*, are computed.

**BIRTH**, or *Birthing*, a Term among the Seamen for due Distance observed between Ships lying at an Anchor, or under Sail; and the Raising, or Bringing up the Sides of the Ship: Also the proper Place a-board to put their Chests, &c. is call'd the *Birch*; and a convenient Place to moor a Ship in, is also call'd by this Name.

**BISHOP**, a Prelate, or Person consecrated for the Spiritual Government and Direction of a Diocese. See **DIocese**. 'Tis a long Time that *Bishops* have been distinguish'd from mere *Priests*; but whether that Distinction be of divine or human Right, whether it was settled in the Apostolical Age, or introduced since, is much controverted. On the one Side stands the *New Testament*, wherein 'tis certain the Names *Bishop* and *Priest* are used indifferently: On the other Side is *Tradition*, the *Fathers*, and the *Apostolical Constitutions*. Indeed, there appear no Footsteps of any Institution of *Bishops*, distinct from *Priests* in the Scriptures; neither do the Opposers thereof pretend to shew any Mark of any other Form of Church-Government therein. So that it may seem probable, the Apostles did not settle any thing of this kind at all; but either left the Spiritual Oeconomy in the Hands of the *Priests*, or of those together with the People. Accordingly new Occasions requiring new Measures, in a little Time, the Functions of this *Priesthood* were divided, and the *Priests* distinguish'd into Degrees; the Political Part of Religion being assign'd principally to

*Bishops*, and the Evangelical to the *Priests*, &c. Or rather, as some others will have it, the Functions of *Teaching* and *Preaching* were reserv'd to the *Bishop*, and that of *Ordination* superadded; which was their principal Distinction, and the Mark of their Sovereignty in their Diocese. See **EPISCOPACY**.

The Word comes from the *Saxon* *Bischof*, and that from the *Greek* *Ἐπίσκοπος*, an Overseer, or Inspector; which was the Title the *Athenians* gave those whom they sent into the Provinces subject to 'em, to see whether every thing were kept in Order; and the *Romans* gave the same Title to those who were Inspectors and Visitors of the Bread and Provision. It appears from a Letter of *Cicero*, that he himself had a *Bishoprick*, being *Episcopus Orae & Campaniae*. *Diocese* was also used for the Extent of this Government; and *Cicero* uses it in this Sense, *Διοίκησις*.

*Bishops* are of various Kinds, *Archbishops*, *Bishops*, and *Suffragan-Bishops*, which see; as also *Acephals*, *Metropolitans*, &c.

The Function of a *Bishop*, in *England*, may be consider'd as twofold, viz. what belongs to his *Order*, and what to his *Jurisdiction*. To the *Order* belong the Ceremonies of Dedication, Confirmation, and Ordination: To his *Jurisdiction*, by the Statute Law, belongs the Licencing of Physicians, Chirurgeons, and School-masters, the Uniting small Parishes, (tho this last Privilege is now peculiar to the *Bishop* of *Norwich*) to assist the Civil Magistrate in the Execution of Statutes relating to Ecclesiastical Matters, and to compel the Payment of Tenths, and Subsidies due from the Clergy: by the Common Law, he is to certify the Judges, touching legitimate and illegitimate Births and Marriages; and by that and the Ecclesiastical Law, he is to take care of the Probate of Wills, the Granting Administrations, to collate to Benefices, grant Institutions on the Presentation of other Patrons, command Induction, order the collecting and preserving the Profits of vacant Benefices for the Use of the Successors, defend the Liberties of the Church, and visit his Diocese once in three Years. To the *Bishop* belong Suspension, Deprivation, Deposition, and Degradation; and **EXCOMMUNICATION**, which see.

The *Bishops* of *England* are all *Barons* and *Peers*. *Barons* in a threefold manner, viz. *Feudal*, in regard of Lands and Baronies annex'd to their *Bishopricks*; by *Writ*, as being summon'd by *Writ* to Parliament; and by *Patent*, or *Creation*: Accordingly, they have the Precedence of all other *Barons*, and sit in the Upper House, both as *Barons* and *Bishops*. They have two special Privileges next to *Regal*: The first, that in their Courts they sit and pass Sentence, of themselves, and by their own Authority: The *Bishops* Courts are not like all other Courts; but, *Writs* are sent out in their own Name, *teste* the *Bishop*, not the King's Name, as the Kings Courts do. The second, That, like the King, they can depute their Authority to another, as their *Suffragan*, *Chancellor*, *Commissary*, &c. They have this Advantage over *Lay-Lords*, that in whatever *Christian* Country they come, their *Episcopal* Degree and Dignity is acknowledg'd; and they may, *quatenus Bishops*, ordain, &c. They have their Vote in the Trial and Arraignment of a *Peer*; but e'er Sentence of Death, &c. they withdraw, and vote by *Proxy*. They have several Immunities, as from Arrests, Outlawries, Distress, &c. Liberty to hunt in the King's Forests, &c. to have certain Tuns of Wine Duty-free, &c. Their Persons may not be seiz'd, as *Lay-Peers* may, upon Contempt, but their Temporalties alone. They may qualify as many Chaplains as a *Duke*, viz. Six. By Law, the Crime of *Episcopicide*, which a Clergyman commits by killing his *Bishop*, is equivalent to *Parricide*, viz. *Petty-Treason*. The *Bishops* in *England* are 24, *Archbishops* two, *Suffragans* none.

The Form of Consecrating a *Bishop* is different in different Churches. In the *Greek* Church, the *Bishop* Elect being, by the Assistant *Bishops*, presented for Consecration, and the Instrument of Election put in his Hand, after several Prayers, the first call'd *Diaconique*, the *Bishop* Elect demanding Consecration, makes Profession of his Faith; after which he receives a Benediction: He is then interrogated as to his Belief of the *Trinity*; to which he answers by a long Profession of Faith, and receives a second Benediction. Lastly, he is ask'd what he thinks of the Incarnation; to which he answers in a third Profession of Faith, with the Pastoral Staff: after which he is led up to the Altar; where, after certain Prayers, and three Crosses on his Head, he receives the *Pallium*, if he be an *Archbishop*, or *Patriarch*; he then receives the Kiss of Peace, of his Consecrator and two Assistants; and, sitting down, reads, prays, and gives the Communion to his Consecrator and others.

In the *Romish* Church, the *Bishop* Elect being presented by the Elder Assistant to the Consecrator, takes the Oath: He is then examin'd as to his Faith; and, after several Prayers, the *New Testament* is drawn open over his Head, and he receives the Unction on his Head by *Christma*. The

*Pastoral Staff, Ring, and Gospel*, are then given him; and, after Communion, the *Mitre* put on his Head: Each Ceremony being accompanied with proper Prayers, &c. the Process ends with *Te Deum*.

In *England*, the King being certify'd of the Death of a *Bishop* by the Dean and Chapter, and his Leave requested to elect another, the *Conge d'Elire* is sent to 'em, nominating the Person he would have chosen. The Election is to be within 20 Days after the Receipt of the *Conge d'Elire*; and the Chapter, in case of refusing the Person named by the King, incurs a *Premunire*. After Election, and its being accepted of by the *Bishop*, the King grants a Mandate under the Great Seal for Confirmation; which the *Archbishop* consigns to the Vicar-General; consisting, mostly, in a solemn Citation of such as have any Objections to the *Bishop* Elect, a Declaration of their Contumacy in not appearing, and an Administration of the Oaths of Supremacy, and Canonical Obedience. Sentence being read by the Vicar-General, the Confirmation concludes with a Treat: Then follows the Consecration, by the *Archbishop* and two Assistant *Bishops*. The Ceremony is the same as in the *Romish Church*, save that, having put on the *Episcopal Robes*, the *Archbishop* and *Bishops* lay their Hands on his Head, and consecrate him with a certain Form of Words. After Communion they go to a Banquet.

The Translation of a *Bishop* to another *Bishoprick*, only differs in this, that there is no Consecration. Note, A *Bishop* differs from an *Archbishop* in this, that an *Archbishop* with *Bishops* consecrate a *Bishop*, as a *Bishop* with Priests ordain a *Priest*; that the *Archbishop* visits a Province, as the *Bishop* a Diocese; that the *Archbishop* convocates a Provincial Synod, as the *Bishop* a Diocesan one; and that the *Archbishop* has Canonical Authority over all the *Bishops* of his Province, as the *Bishop* over the Priests in his Diocese.

BISHOP'S-COURT, an *Ecclesiastical Court* held in the Cathedral of each Diocese; the Judge whereof is the *Bishop's Chancellor*, antiently call'd *Ecclesiasticus*, and *Ecclesie Causidicus*, the Church-Lawyer; who judges by the Civil and Canon Law; and, if the Diocese be large, has his Commissaries in remote Parts, who hold what they call Consistory Courts, for Matters limited to him by his Commission.

BISMUTH, a Mineral Body, half Metallick; compos'd of the first Matter of Tin, while yet imperfect; and found in Tin Mines. Its Substance is hard, heavy, sharp, and brittle, of a large Grain, polish'd, white, and shining. 'Tis also call'd *Tin of Glass*; because, when broke, it shews a vast Number of little polish'd Substances like Glass: 'Tis also call'd *Marchasite*, by way of Excellence, because surpassing all others in Whiteness and Beauty. It contains an Arsenical Salt, very dangerous to take inwardly. Its Precipitate is a very white Magistery, which is mix'd with Waters and Pomarums to make a *Fucus* to beautify the Complexion, and preserve the Skin. There are also Flowers prepar'd from it, which take away Spots in the Face; whence 'tis otherwise call'd *Blanc de Perle*. See the Processes in *Charras*.

*Alonso Barba* says, there has been lately found a Mine of *Bismuth* in *Bohemia*; and ranks it among the Metals: But *Bismuth* is properly the *Regulus* of the Stone call'd *Cobalt*; whence is prepar'd *Arsenick*, *Lapis Lazuli*, and *Bismuth*. M. *Stahl*, a German Physician, gives us its Preparation.

There is also an *Artificial Bismuth*, which is that ordinarily used, made by reducing Tin into thin *Laminee*, or Plates, and cementing them by a Mixture of white *Tartar*, *Salt-Petre*, and *Arsenick*, stratified in a Crucible over a naked Fire. The same is also made of a Stone call'd *Zin*, using Lead instead of Tin, and a little *Calamine Stone*.

BISQUET, a Confectioner's Preparation of fine Flower, Eggs, and Sugar, with Anniseeds and Citron Peel, baked in the Oven in Tin or Paper Moulds.

SEA-BISQUET, a *Bread* much dried, by passing the Oven twice, to make it keep: For long Voyages they bake it four times, and prepare it six Months before the Embarkment. The Word comes from the *Latin bis*, and the *French cuit*, q. d. twice baked.

BISSECTION, in Geometry, the Division of any Quantity into two equal Parts; the same with *Bipartition*: Thus, to bisect any Line, is to divide it into two equal Parts.

BISSEXTILE, or *Leap-Year*, in Chronology, a Year consisting of 366 Days, happening once each four Years, by reason of the Addition of a Day in the Month of *February*, to recover the six Hours which the Sun spends in his Course each Year, beyond the 365 Days, ordinarily allow'd for it. The Day thus added, is also call'd *Bissextile*; *Cesar* having appointed it to be the next after the 25th of *March*, which among them was the 7th of the *Calends* of *April*. Thus the 6th of the *Calends* of *March* is this Year reckon'd twice over; whence the *Intercalary Day*, and the Year when it happens, are both call'd by the Name *Bissextile*.

However, the Astronomers concern'd in reforming the *Calendar*, by Order of Pope *Gregory XIII.* observing that

the *Bissextile* in four Years added 40 Minutes more than the Sun spent in returning to the same Point of the *Zodiack*, and computing that these supernumerary Minutes in 133 Years would form a Day; to prevent any Changes being thus insensibly introduc'd in the Seasons, 'twas appointed, that in the Course of 400 Years, there should be three *Bissextiles* retrench'd: Accordingly, in the Year 1700, there was no *Bissextile*, for that reason. By the Statute *de Anno Bissextili*, 21. Hen. III. To prevent Misunderstandings, the *Intercalary Day*, and that next before it, are to be accounted as one Day. See YEAR.

BISTER, or BISTRE, among Painters, a Colour made of Chimney-Soot boil'd, and afterwards diluted with Water, serving to wash their Designs. Instead of this some use the Strokes of a Pen, some *Indian Ink*, others a black Stone, &c.

BIT, an essential Part of a *Bridle*; its Form and Use well known; its Parts and Kinds various.

For the several Parts of a *Bit*, those of a *Snaffle* or *Curb-Bit*, are, the *Mouth-Piece*, the *Cheeks* and *Eyes*, *Guard* of the *Cheek*, *Head* of the *Cheeks*, the *Port*, the *Welts*, the *Campanel* or *Curb* and *Hook*, the *Bosses*, the *Bolsters* and *Rabbers*, the *Water-Chains*, the *Side-Bolts*, *Bolts* and *Rings*, *Kirbles* of the *Bit* or *Curb*, *Trench*, *Top-roll*, *Flap* and *Jeive*.

The Kinds of *Bits* are, 1. The *Musroll*, *Snaffle*, or *Watering Bit*. 2. The *Cannon Mouth*. 3. The *Cannon* with a fast Mouth all of a Piece, only kneed in the middle, to form a Liberty or Space for the Tongue. 4. The *Cannon Mouth*, with the Liberty in form of a Pigeon's Neck. 5. The *Cannon* with a Port Mouth and an Upset, or mounting Liberty. 6. The *Scotch Mouth* with an Upset. 7. The *Cannon Mouth* with a Liberty, after M. *Pignatel's* manner. 8. The *Masticadour*, or *Slavering Bit*. 9. The *Cats Foot Bit*. 10. The *Bastonet Bit*, &c.

BITE of a mad Dog. See HYDROPHOBIA.

BITE of a Viper. See VIPER.

BITE of a Tarantula. See TARANTULA.

BITTERNESS, a particular Savour or Sensation, suppos'd to result from this, that all the Particles of the bitter Body are broken, blunted, and diminish'd, so as none of 'em remain long and rigid; which is confirm'd from this, that Foods burnt, and their Particles much comminuted and broken by the Fire, become bitter.

BITUMEN, an inflammable Matter, fat and unctuous. Naturalists distinguish three Kinds of *Bitumens*, hard, soft, and liquid or oily; and each of these they subdivide into several others. Among the hard *Bitumens* are rank'd *yellow Amber*, (some add *Ambergreece*) *Jet*, *Asphaltum* or *Bitumen of Judea*, *Pisaspaltum*, *Pit-Coal*, *Black-Stone*, and *Sulphurs*. The soft are, *Maltha*, *Bitumen of Colao*, of *Sirnam*, and *Copal*. Lastly, The *Naphta* of *Italy*, and *Petroleum*, are rank'd among the liquid *Bitumens*.

Of these *Bitumens* some are fossil, others are found floating on the Surface of certain Lakes, and others spring from the Earth like Fountains. Some *Bitumens* are so hard, that they are used in Forges, instead of Coals; others so glutinous, that they serve instead of Cement, or Mortar in Buildings; of which kind it was, that the famous Walls of *Babylon* were built: and others so liquid, that they are burnt in Lamps instead of Oil. The *Bitumen* in most Esteem is that of *Judea*. See ASPHALTUM; and the other *Bitumens* under their proper Heads. *Strabo* derives the Word from *Πηξια*, Pitch.

BIVALVE, a Term used by the Writers of Natural History, for such Shell-Fish as have two Shells, as Cockles, Muscles, Oysters, &c. which are said to be of the *Bivalve-kind*; and also for the *Siliqua*, or Seed-Pods of such Plants as open all their whole Length to discharge their Seeds; such as Pease, Beans, &c. for those the Botanists say have a *Bivalve Siliqua*.

BIVENTER, in Anatomy, the sixth Muscle of the Jaw, and last of those serving to open it: 'Tis call'd *Biventer*, or *Digastricus*, as having two Bellies for its two Extremities, and a Tendon in the middle. It takes its Origin from a Sciffure between the *Occipital Bone* and the *Mastoidal Apophyses*, whence passing its Tendon thro a Hole in the *Stylohyoideus* and an *Annular Ligament* of the *Os Hyoides*, there arise some Fibres which join its second Belly; whence going fleshy, and returning upwards, it is inserted into the middle of the inferiour Part of the lower Jaw. By this Contrivance it is enabled to draw the Jaw downwards.

BLACK, something opaque and porous, that imbibes all the Light falling on it, reflects none, and therefore exhibits no Colour. See BLACKNESS. There are various Kinds of *Blacks* which pass in Commerce, viz. *Dyers Black*, *German Black*, *Ivory Black*, *Spanish Black*, *Lamp-Black*, &c.

*Dyers Black*, is one of the five Simple and Mother Colours used in *Dying*. 'Tis made differently, according to the different Quality and Value of the Stuffs to be dyed. For Broad-Cloths, fine Ratines, and Druggets, &c. they use *Pastel*, or *Woad*, and *Indigo*; the Goodness of the Colour consists

fits in there not being above six Pounds of Indigo to a Ball of Pastel, when the Pastel begins to cast its blue Flower; and in its not being heated for Use above twice. Thus blued, the Stuff is boil'd with Alum, or Tartar, then madder'd; and, lastly, the *Black* given with Galls, Copperas, and Sumac: To bind it, and prevent its smearing in Use, the Stuffs are well scower'd in the Fulling Mill, when white, and well wash'd afterwards. For Stuffs of less Value, 'tis sufficient they be well *blued* with Pastel, and *black'd* with Galls and Copperas: But no Stuff can be regularly *dyed* from *White* into *Black*, without passing thro the intermediate *Blue*. Yet there is a Colour call'd *cold Black*, or *Jesuits Black*, prepar'd of the same Ingredients as the former, but without being first *dyed Blue*. Here the Drugs are dissolv'd in Water that had boil'd four Hours, and stood to cool till the Hand wou'd bear it; then the Stuff dipp'd in it, and again taken out six or eight times. Some prefer this *Black* to the other, but on weak grounds. This Method of *Dying Black* is said to have been invented by the *Jesuits*, and to be still practis'd in their Houses, where they retain Numbers of *Dyers*. See GRAY. See also DYING.

*German* or *Frankfort Black* is made of the Lees of Wine burnt, then wash'd in Water, and ground in Mills for that Purpose, together with Ivory or Peach-Stones burnt. This *Black* makes the principal Ingredient in the Rolling-Press-Printers Ink. It is ordinarily brought from *Frankfort*, *Mentz*, or *Strasbourg*, either in Lumps, or Pouders. That made in *France* is less valued than that of *Germany*, by reason of the Difference between the Lees of Wine used in the one and the other; tho some prefer that made at *Paris* to that of *Frankfort*.

*Ivory* or *Velvet Black*, is made of *Ivory* burnt, ordinarily, between two Crucibles well luted; which being, thus, render'd perfectly black, and in Scales, is ground in Water, and made into Troches, or little Cakes, us'd by the Painters; as also by the Jewellers, to *blacken* the Bottom or Ground of their Collets, wherein they set their Diamonds to give 'em their Teint or Colour.

*Spanish Black*, so call'd because first invented by the *Spaniards*, and most of it brought from them, is no other than burnt Cork; used in various Works, particularly among Painters.

*Lamp-Black*, or *Smoke-Black*, the Smoke of Rosin, prepar'd by melting and purifying the Rosin in Iron Vessels; then setting fire to it under a Chimney, or other Place made for the Purpose, and lined a-top with Sheep-Skins, or thick Linen Cloth, to receive the Vapour, or Smoke, which is the *Black*: In this manner they prepare vast Quantities of it at *Paris*. In *England* it is, ordinarily, prepar'd from the resinous Parts of Woods, burnt under a kind of Tent, which receives it: It is used on various Occasions, particularly in the Printers Ink; for which it is mix'd with Oils of Turpentine and Linseed, all boil'd together. It must be observ'd, that this *Black* takes fire very readily, and, when on fire, is very difficultly extinguish'd: The best Method of putting it out is, with wet Linen, Hay, or Straw; for Water alone won't do it.

*Earth-Black* is a kind of Coal found in the Ground, which, well pounded, is used by the Painters in *Fresco*.

There is also a kind of *Black* made of Silver and Lead, used to fill up the Strokes and Cavities of Things engrav'd.

*BLACKNESS*, the Quality of a black Body, or a Colour arising from such a Texture and Situation of the Superficial Parts of the Body, as does, as it were, deaden, or rather absorb, the Light falling on it, without reflecting any, or very little, of it to the Eye. In which Sense *Blackness* stands directly oppos'd to *Whiteness*; which consists in such a Texture of Parts, as indifferently reflects all the Rays thrown upon it, of what Colour soever they be. Sir *Isaac Newton*, in his *Opticks*, shews, that for the Production of *black* Colours, the Corpuscles must be less than those which exhibit any other Colours; because, where the Sizes of the component Particles are greater, there is too much Light reflected to constitute this Colour; but, if there be a little less than is requisite to reflect the white, and very faint blue of the first Order, they will reflect so little Light, as to appear intensely black; and yet may, perhaps, reflect it variously to and fro within them so long, till it happen to be stifled and lost; by which means they will appear *black*, in all Positions of the Eye, without any Transparency. And from hence it appears why Fire, and Putrefaction, by dividing the Particles of Substances, turn them *black*; why small Quantities of *black* Substances impart their Colours very freely, and intensely, to other Substances to which they are applied; the minute Particles of these, by reason of their very great Number, easily over-spreading the gross Particles of others: Hence also appears, why Glass ground very elaborately with Sand, on a Copper-Plate, till it be well polish'd, makes the Sand, together with what by rubbing is worn off from the Glass and Copper, become very *black*; and why *black* Substances do, sooner of all others, become hot in the Sun's Light, and

burn, (which Effect may proceed partly from the Multitude of Refractions in a little room, and partly from the easy Commotion of so very small Particles;) and also why *Blacks* are usually a little inclined towards a bluish Colour: for, that they are so, may be seen by illuminating white Paper, by Light reflecting from *black* Substances, where the Paper will usually appear of a bluish white; and the Reason is, that *black* borders on the obscure blue of the first Order of Colours; and therefore, reflects more Rays of that Colour than of any other. It is necessary also, to the Production of *Blackness* in any Bodies, that the Rays be stopp'd, retain'd, and lost in them; and these conceive Heat (by means of a Burning-Glass, &c.) more easily than other Bodies; because the Light which falls upon them is not reflected outwards, but enters the Bodies, and is often reflected and refracted in them, till it be stifled and lost. See LIGHT and COLOUR.

*BLACK ROD*, or Gentleman-Usher of the *Black Rod*, is Chief Gentleman-Usher to the King: He is call'd in the *Black Book*, *Lator Virgæ Nigræ & Hostiaris*, and elsewhere *Virgi-Bajulus*. His Duty is to bear the *Rod* before the King at the Feast of St. *George* at *Windso*: He has also the keeping of the Chapter-House Door, when a Chapter of the Order of the *Garter* is sitting; and, in time of Parliament, attends the House of Peers. His Badge is a *Black Rod*, with a Lion Gold a-top. This *Rod* has the Authority of a Mace. The Office was formerly held by Patent.

*BLACKS*, or *NEGRO's*, a Nation of People, so call'd from the Colour of their Skin: For the Reason of their Colour, and the Commerce made with 'em, see *NEGRO*.

*BLADDER*, in Anatomy, a thin expanded membranous Body found in several Parts of an Animal, serving as a Receptacle of some Juice, or of some liquid Excrement; from whence it takes various Denominations, as *Urinary-Bladder*, *Gall-Bladder*, &c.

*BLADDER*, by way of Eminence, is a large Vessel, which serves as a Receptacle of the Urine of Animals, after its Secretion from the Blood in the Kidneys. It is situated between the Duplication of the *Peritonæum*, and the lower Part of the *Abdomen*, between the *Os Sacrum* and the *Os Pubis*, above the strait Gut in Men, and in the Neck of the Womb in Women. It is tied to the Navel by the *Urachus* degenerated into a Ligament, its Sides to the *Umbilical Arteries*, and its Neck to the *Intestinum Rectum* in Women. It is compos'd of three Coats; the first a Covering of the *Peritonæum*; the second is compos'd of Muscular Fibres, which run irregularly several ways; and the third, which is full of Wrinkles for facilitating its Dilatation, is both glandulous and nervous. Its Glands separate a viscid and slimy Matter, which defends it from the Acrimony of the Salts in the Urine: Around its Neck there goes a small Muscle, call'd *Sphincter Vesicæ*, which contracts the Orifice of the *Bladder*, to prevent the Urine from dripping involuntarily, or till it thrust open the Passage, by the Contraction of the second Coat of the Bladder, which is therefore call'd *Detrusor Urinæ*. The *Bladder* has Blood-Vessels from the *Hypogastricks*; and Nerves from the *Intercostals*. See URINE, &c.

*BLAIN*, a Distemper incident to Beasts, consisting in a Bladder growing on the Root of the Tongue against the Wind-Pipe, which at length swelling, stops the Wind. It comes by great chafing, and heating of the Stomach; whereby, as some judge, it still grows, and increaseth by more Heat.

*BLANCHING*, the Art or Manner of *Bleaching*, or *Whitening*. See BLEACHING.

*BLANCHING of Wax*. See WAX.

*BLANCHING*, in Coinage; the Preparation of the Pieces, given 'em before the striking, to give 'em the Lustre and Brilliant. The *Blanching*, as now practis'd, is perform'd by heating the Pieces in a kind of Peel, with a Wood Fire, in manner of a Reverberatory, so as the Flame pass'd over the Peel. The Pieces being sufficiently heated, and cooled again, are put successively to boil in two other Peels of Copper, wherein are Aqua fortis, common Salt, and Tartar of *Montpellier*; when they have been well drain'd off this first Water in a Copper Sieve, they throw Sand and fresh Water over 'em; and when dry, they are well rubb'd.

The ancient Method of *Blanching* was, by putting the Pieces, after heating, in a large Vessel of common Water, and some Ounces of Aqua fortis; but in different Proportions for Gold and Silver. This Method is now disus'd, partly by reason of its Expensiveness, and partly because it diminishes the Weight of the Metal. See COINING.

*BLANK VERSE*. See VERSE and RHYME.

*BLATA BIZANTIA*, or *Unguis Odoratus*, the upper Part of a Shell call'd by the *Latins* *Conchylium*. These Shells are of different Magnitudes; but the Figure, in all, is that of a Claw of a Wild Beast; whence its second Name; the first being occasion'd by its being usually brought from *Constantinople*, the ancient *Bizantium*. The *Blata Bizantia*

*via* is very thin, of a brown Colour, burns readily; and in burning smells ill. Its Use in Physick is the same with that of *Castoreum*, viz. for Vapours. Instead of the *Blata Bizantia*, which is very rare, is frequently substituted another kind of Shell, of less Virtue, call'd *Solen*.

BLAZE, in the *Manege*. See STAR.

BLAZING-STAR. See COMET.

BLAZONING, in Heraldry, the Art of Deciphering the Arms, or Armories of Noble Houses, &c. or of Naming all the Parts in their proper and particular Terms. There is this Difference between *Arms* and *Blazon*; that the first are the Device or Figures bore on the Coat, or Shield; and *Blazon*, the Description thereof in Words. See ARMS and DEVICE. In *Blazoning* a Coat, 'tis a special Rule, to begin with the *Field* first, and then proceed to the *Blazon* of the *Charge*. If the *Field* be taken up with several things, whether of one or various kinds, that which lies next and immediately on the *Field*, must be first named; then those more remote. After the Metal-Colour of the *Field* is named, the Manner of the Division of the *Escutcheon* by Line, whether downright, or bend-ways, must be express'd. After the *Field* in Colour, and the *Line* and *Charge*, if there be more Parts of the *Field* possess'd by the *Charge* than one, the principal Part of the *Field* must be named first. The Arms of all Emperors, Kings, and Princes, are *blazon'd* by Planets; those of the Nobility by precious Stones; and Baronets, Knights, Esquires, and Gentlemens Coats, by Metal and Colour. It must farther be observ'd, that Metal must never be put on Metal, nor Colour on Colour; for, in so doing, the Arms are false. It may be added, that when Lions stand upright in a Coat, they are call'd *Rampant*; when walking forward, *Passant*; when they look you in the Face, *Passant Guardant*: In other Postures they have other Terms, as *Saliant*, *Regardant*, &c. which see. Wolves and Bears are term'd after the manner of Lions; Gryphons (instead of *Rampant* and *Saliant*) are term'd *Sergreant*; Lions, Gryphons, and Eagles, are also *Langued* and *Armed*; Swans, *Membred*; Hawks, *Jess'd* and *Bell'd*; Cocks, *Armed*, *Crest'd*, and *Fowlop'd*. And note, All these Things are to be express'd in *Blazon*, when met with, viz. when the Tongues, Bills, and Claws, are found of different Colours from the Body: When a living Creature proceeds from the Bottom of the *Ordinary*, 'tis term'd *Issuant*; when over two Colours, *Jessant*; if it proceed from the middle of any *Ordinary*, or common *Charge*, *Naissant*.

There are various Etymologies of the Word *Blazon*: The most probable brings it from the *German*, *blaesen*, to blow a Horn; it being the Custom of those who presented themselves at the Lists in the ancient Tournaments, to blow a Horn, to notify their coming. After this the Heralds found their Trumpets, and then *blazon'd* the Arms of those who presented themselves; describing them aloud, and sometimes expatiating on the Praises and high Exploits of the Persons who bore them.

BLEACHING, or BLANCHING, the Art and Manner of *Whitening* Linens, Stuffs, and Silks, &c. The Process in each is as follows.

For *bleaching* Silk. While 'tis yet raw, 'tis put in a thin Linen Bag, and thrown into a Vessel of boiling River-Water, wherein Soap has been dissolv'd, then boil'd two or three Hours, and the Bag being turn'd several times, taken out, beaten, and wash'd in cold Water, slightly wrung out, and thrown into a Vessel of cold Water mix'd with Soap and a little Indigo: The Indigo gives it the bluish Cast always observ'd in white Silks. After taking out of the second Vessel, 'tis wrung out, and all the Water and Soap express'd, 'tis shook out to untwist and separate the Threads, and hung up in the Air, in a kind of Stove made on purpose, wherein is burnt Sulphur; the Vapour whereof gives the last Degree of *Whiteness* to the Silk. See SILK.

To *bleach* Woollen Stuffs. There are three Manners of *Whitening* Stuffs; the first with Water and Soap; the second with Vapour of Sulphur; the third with Chalk, Indigo, and Vapour of Sulphur. For the first, the Stuffs being taken from the Fulling-Mill, are put into soap'd Water, pretty hot, and work'd a-fresh by Force of Arms over a Bench, which finishes the *Whitening* the Fulling-Mill had begun; and lastly, wash'd out in clear Water and dried: This is call'd the Natural Way of *Bleaching*. In the second Method, they begin with washing the Stuff in River-Water; 'tis then laid to dry on Poles, and, when half dry, spread out in a kind of Stove well closed, wherein is burnt Sulphur; the Vapour whereof diffusing itself, sticks by little and little over all the Stuff, and gives it a fine *Whitening*: this is commonly call'd *Bleaching* by the Flower. In the third Method, after the Stuffs have been wash'd, they are thrown into cold Water, impregnated with Chalk and Indigo; after they have been well agitated here, they are wash'd a-fresh in Eldar Water, half dried on Poles, and spread in a Stove to receive the Vapour of the Sulphur; which finishes their *Bleaching*. This is not esteem'd the best Method of *Bleaching*, tho agreeable enough to the

Sight. It may be here observ'd, that when a Stuff has once receiv'd the Steam of Sulphur, 'twill scarce receive any beautiful Dye, but *Black* or *Blue*.

To *bleach* fine Linens. After taking 'em from the Loom, while yet raw, they are steep'd a Day in clear Water, wash'd out and clear'd of their Filth, and thrown into a Backing Tub, fill'd with a cold Lixivium, or Lie. When taken out of the Lie, they are wash'd in clear Water, spread in a Meadow and water'd from time to time, with Water from little Dikes, or Canals, along the Ground, by means of Scoops, or hollow Peels of Wood, call'd by the *Dutch*, who pretend to be the Inventors of 'em, *Gieter*. After lying a certain time on the Ground, they are pass'd thro a new Lie, pour'd on, hot; and again wash'd in clear Water, and laid a second Time on the Ground, and every thing repeated as before; then pass'd thro a soft gentle Lie, to dispose 'em to resume the Softness which the other harsher Lies had taken from 'em, wash'd in clear Water, soap'd with black Soap, and that Soap again wash'd out in clear Water: they are then steep'd in Cow's Milk, the Cream first skimm'd off, which finishes their *Whitening*; and Scouring gives 'em a Softness, and makes 'em cast a little Nap: When taken out of the Milk, they are wash'd in clear Water for the last time. After all this Process, they give the Linen its first Blue, by passing it thro a Water wherein a little Starch, Smalt, and *Dutch* Lapis have been steep'd. Lastly, the proper Stiffness and Lustre is given with Starch, pale Smalt, and other Gums, the Quantity and Quality whereof may be adjust'd according to occasion. In fine Weather, the whole Process of *Bleaching* is achiev'd in a Month's Time; in ill Weather, it takes up six Weeks, or more.

To *bleach* coarse Linens. They are taken from the Loom, and laid in wooden Frames, full of cold Water; where, by means of wooden Hammers, work'd by a Water-Mill, they are beat so, as insensibly to wash and purge themselves of their Filth; then spread on the Ground, where the Dew which they receive for eight Days, takes off more of their Rowness; then put in a kind of wooden Tubs, or Pans, with a hot Lie over 'em. Thus lixiviated, they are again purg'd in the Mill, laid a-fresh on the Ground, and, after eight Days more, pass'd thro a second Lie, and all things repeated, till such time as they have acquir'd their just Degree of *Whiteness*. For *Bleaching* of Hair, see HAIR. For *Bleaching* of Wax, see WAX, &c.

BLEEDING, an Operation in Chirurgery, consisting in the Opening of a Vein with a Lancet, for the evacuating of corrupted or redundant Blood. *Bleeding* is the surest and most efficacious Species of Evacuants. It was very rare among the Antients, but is frequent among the Moderns. *Ostiensis* observes, that at Rome Persons of Quality are not allow'd to be let blood, even in their most dangerous Diseases, without Leave from the Pope. The *Hippopotamus* is said to have first taught Men the Use of *Bleeding*: For that Animal being overcharg'd with Blood, rubs herself against a pointed Bulrush, and opens a Vein; till finding her Plenitude discharged, she welters in the Mire to stanch the Blood again. See STIPTICK: See also PHLEBOTOMY.

BLEMISH, a Term in Hunting, when the Hounds, or Beagles, finding where the Chace has been, make a Profert to enter, but return.

BLEMYES, People suppos'd to be without Heads, and to have their Eyes and Mouth in their Breast; mention'd by *P. Mela*, and other ancient Authors. They are suppos'd to have inhabited Part of *Aethiopia*. Some Authors derive the Fable of the *Blemmyes* from this, that their Heads were hid between their Shoulders, by hoisting those up to an extravagant Height. *Bochart* derives the Word *Blemmyes* from בלי, which implies a Negation, and מוח, Brain: In which Sense the *Blemmyes* must have been People without Brains.

BLIGHT, or BLAST, a Disease incident to Plants, and affecting 'em variously; the whole Plant sometimes perishing of it, and sometimes only the Leaves, which will be scorch'd and shrivel'd up, the rest remaining green and flourishing. This Disease seldom happens, but upon the blowing of sharp Eastern Winds, which are most frequent with us about March; whence that Month proves, of all others, the most fatal to Plants: From this Circumstance, some imagine the Colds that then reign being exasperated by the Eastern Winds, effect *Blights*; but Mr. *Bradley* furnishes us with a better Account: for, on this Principle, it were hard to say, why one Plant, or one Part of a Plant, should be *blighted* more than another. He observes, then, that Caterpillars generally attend those Winds, and that they infect some one kind of Tree more than another, and even some particular Branches more than others; and thence infers, either that the Eggs of those Insects, or the Insects themselves, are brought to us by the Easterly Winds; or that the Temperature of the Air, when the Eastern Winds blow, is necessary to hatch those Creatures, supposing the Eggs to have been already laid on the infected Parts. Now, each of these

These Causes seem to have their Effect: Those *Blight*s attended with large Worms or Caterpillars, seem hatch'd by the Eastern Winds; and those others, which only produce the small Insects, that occasion the Curling of the Leaves of Trees, may proceed from Swarms of 'em, either ready hatch'd, or in the Egg, brought with the Wind. The Coldness of those Winds he shews to be no Objection against their being fitted to hatch Insects; different Insects requiring vastly different degrees of Heat. To this he shews, that every Insect has its proper Plant, or Tribe of Plants, which it naturally requires for its Nourishment, and will feed on no other; and in which, therefore, it lays its Eggs: 'Tis no wonder then, that one kind of Tree should be infected, and all the rest escape. That Wind, *v. g.* which brings, or hatches, the Caterpillars on the Apple-Tree, will not infect the Pear, Plum, or Cherry; because, were the Shoals of Insects natural to the Apple, to light on those other Trees mention'd, they would either want their proper Matrix to hatch in; or, were they ready hatch'd, would perish for want of proper Food. So that 'tis morally impossible, all kinds of Plants should be *blighted* at the same time, unless the Eggs of every kind of Insect natural to each Tree, could be brought at one time with the Wind; or, that an Easterly Wind cou'd contain in it at once, as many different Degrees of Cold, or Heat, as wou'd be requir'd to hatch and maintain each different Class of Insects. Nor is it any Objection, that in *Blight*s there are not frequently any Animals immediately perceivable. By the Microscope, we discover Animalcules a Million of times less than the smallest which comes under ordinary Notice: These, the gentlest Air may be conceiv'd capable of blowing from Place to Place; so that 'tis no wonder if they be brought to us from the remotest Regions, especially the North-East Parts of *Great Tartary*, &c. where the Cold is intense enough to give 'em Life; and from whence there is not Sea enough, by the Warmth and Saltness of whose Vapours they may be suffocated. Those brought from the North-East Parts of *America*, may be probably destroy'd by passing the vast *Atlantick* Ocean, which may be the reason why the North-West Wind is not so infectious.

What confirms this Doctrine of *Blight*s is, that the more knowing among Country-People, while the Eastern Winds blow, use to guard against *Blites* by burning Heaps of Weeds, Chaff, and other Combustibles, on the Wind-side of their Orchards, that the Smoke may either poison the Insects, or their Eggs, as they pass along. It may be added, that these Fires are often made with good Success, to destroy the Caterpillars, even after they were hatch'd, and had began to devour the Trees. Another Method of preserving Trees from *Blight*s is, by sprinkling Pepper-Dust; which, 'tis said, is present Death to all Insects, and even all Animals. Corn is liable to *Blight*s like other sorts of Grain. The *Blight* of Wheat, call'd *Smut*, is prevented by washing the Wheat in three or four Waters, stirring it well all the time, and skimming off the light Wheat, then steeping it 30 or 40 Hours in Water impregnated with Salt, with the Addition of some Alum, till it be capable of sustaining a Body of twice the specifick Gravity of an Egg; when taken out, some slack'd Lime is sifted on it, to dry it fit for sowing the next Day: Such a Process secures the Grain from being infested with any kind of Vermin.

**BLINDNESS**, a Privation of the Sensation of Sight, arising from a total Depravation of the Organs thereof, or an involuntary Obstruction of their Functions. The Causes of *Blindness* are various; proceeding from *Cataracts*, *Gutta Serena's*, &c. which see. *Aldrovandus* tells us of a Sculptor, who became *blind* at 20 Years of Age, and yet 10 Years after made a perfect Marble Statue of *Cosmo II. de Medicis*; and another of Clay, like *Urban VIII.* *Bartholin* tells us of a *blind* Sculptor in *Denmark*, who distinguish'd perfectly well, by mere Touch, not only all Kinds of Wood, but all the Colours; and *F. Grimaldi* gives us an Instance of the like kind, beside the *blind* Organist lately living in *Paris*, who is said to have done the same. *F. Zaba* gives abundance of Instances of the amazing Sagacity of *blind* People, in his *Oculus Artificialis*. The Author of the Embassy of *D. Garcia de Silva Figueroa* into *Persia* tells us, that in several Parts of that Kingdom are found vast Numbers of *blind* People of all Ages, Sexes, and Conditions; by reason of little Flies which prick the Eyes and Lips, and enter the Nostrils, carrying certain *Blindness* with 'em. See **SIGHT**.

The Chymists say their Vessels are *blind*, which have no Opening but at one Side. See **COECUM**.

**BLINDS**, in Fortification, Defences made of Wood, or Branches interwoven and laid a-cross between two Rows of Stakes about the Height of a Man, and four or five foot apart. They are used particularly at the Heads of Trenches, when they are extended in Front towards the Glacis; serving to shelter the Workmen.

**BLISTER**. See **VESICATORY**.

**BLOCK**, a Piece of Marble, as it comes out of the Quarry, e'er it has assum'd any Form from the Workman's Hand. See **MARBLE**.

**BLOCK**, in Falconry, the Perch whereon the Bird of Prey is kept. This is to be cover'd with Cloth.

**BLOCKADE**, the Siege of a Place, intended to be taken by Famine; wherein all the Passages, and Avenues, are seiz'd, and shut up, so as no Supplies of Provision can be brought in. A *Blockade*, in strictness, is no regular Siege; inasmuch as there is not any Design of an Attack. A *Blockade* is form'd by the Cavalry. The Word is sometimes also used at the Beginning of a Siege, when Forces are sent to seize the principal Avenues, where the *Besiegers* intend to fix their Quarters. It comes from the *German Blochus*, a wooden Houfe; or from the *Gaulish Bloca*, Barricade: Others derive it from the *Latin bucolare*, to shut up the Passage.

**BLOCK-LAND** was formerly that which we now call *Freehold Land*, or Land held by Charters; and it was by that Name distinguish'd from *Folk-land*, which was *Copyhold Land*.

**BLOCKS**, a-board a Ship, are Pieces of Wood in which the Shivers are placed, and wherein the Running-Ropes go: Of these, some are single, some double; and some have three, four, or five Shivers in them. They are named and distinguish'd by the Ropes they carry, and the Uses they serve for.

**BLOMARY**, the first Forge in an Iron-Mill thro which the Metal passes after it is melted out of the Mine. See **IRON**.

**BLOOD**, a warm, red Liquor or Humour, circulating, by means of Arteries and Veins, through every Part of the Body. While in its Vessels, it appears to the naked Eye, uniform and homogeneous; but, when let out and cold, separates spontaneously into two different Parts; the one red and fibrous, which coheres into a Mass, and is call'd the *Cruor*; the other thin and transparent, which retains its Fluidity when cold, and, being suppos'd specifically heavier than the other, sustains and bears it up, and is call'd the *Serum*. The Proportion of the *Serum* to the *Cruor*, *Dr. Drake* makes at a Medium, as one and an half to one: But *Mr. Boyle*, more accurately, makes the *Serum*  $\frac{2}{3}$  of the whole *Blood*; and *Dr. Jurin*  $\frac{2}{5}$  of the whole Weight, or  $\frac{1}{4}$  of the Bulk.

By the Microscope, the *Blood* appears to consist of little red Globules, swimming in an aqueous Liquor, suppos'd to be the *Cruor* and *Serum*, that appear so distinct when let out. *M. Leewenboeck* computes these Globules to be twenty five thousand times smaller than the smallest Grains of Sand; and *Dr. Jurin* makes 'em still less. Upon an accurate Mensuration, he found the Diameter of one, equal to  $\frac{1}{3240}$  of an Inch, or  $\frac{1}{374}$  of an ordinary Hair of the Head. *Dr. Drake* thinks, that tho the rapid Motion of the *Blood* may make the *Cruor* appear round, and perhaps, by a kind of Whirling, or Rotation, really convolute 'em; yet that their Figure is not naturally Globular, when let out, as appears from their Cohesion, or hanging together in a Lump; which spherical Bodies, touching in a very few Points, are not apt to do: But, on the contrary, this Property, he thinks, argues an Implication of their Fibres within one another: Which is confirm'd by what *Dr. Adams* observ'd by his Microscope, *viz.* that immediately after Emission of *Blood*, 'tis so far from exhibiting any red Globules, that it appears to consist of infinite Branches, running in no certain Order, and variously colour'd.

By a Chymical Analysis, the *Blood* is found to consist of *Phlegm*, as the Basis or Vehicle of Volatile Salts; of *Oil*, which, by some nice Examiners, has been found of two Kinds; and of *Caput mortuum*, or Earth; which, tho it may consist of divers Substances, essentially different from each other, yet all we get out of it is a little fix'd Salt. From the best Experiments in this kind it appears, that in seven Ounces of human *Blood*, there are five Ounces two Drachms of *Phlegm*, three Drachms of a subtil, spirituous Oil, two Grains of a thicker Oil, two Drachms of Salt, and about two of Earth. *Dr. Jurin* adds, that the *Serum*, upon a Chymical Analysis, exhibits a great deal of *Phlegm*, and of the other Principles a small Quantity; and, on the contrary, the *Cruor* yields less *Phlegm*, but the other Principles much more copiously than the *Serum*. From which Data he concludes, that the Globules consist of some *Phlegm* united with the Oil and Salts, and a small Quantity of Earth; but in what Proportion, and how, and in what Parts they are form'd, &c. is not determin'd. Indeed, it must be consider'd, that the Principles which the Chymists thus produce separate, may possibly be much alter'd by the Fire. Thus, 'tis past doubt, the Oils drawn from the *Blood* by Fire, are vastly different from the natural Oil which circulates with the *Blood*. To which may be added, that the *Caput mortuum* remaining after Distillation, may, possibly, be a new Production, which had no Existence under any Form resembling that in the *Blood*.

The Source, or Origin, of the *Blood* is the *Chyle*, which passing the *Lacteals*, is deliver'd into the *Subclavian*; where, mixing with the *Blood*, they proceed together to the *Right Ventricle* of the Heart; and there, being yet more intimately mix'd, they circulate together thro the whole Body; till after several Circulations, and Secretions, at the several Strainers of the Body, they are assimilated so as to make one uniform compound Mass, which appears to be nothing else but *Chyle*, alter'd by the Artifice of Nature, and exalted into *Blood*; there being no Appearance of any thing extraneous mix'd with the Liquor circulating in the *Blood-Vessels*, but *Chyle*; excepting what had been before separated from it, for some particular Purposes, which being once served, it is returned to it again: unless, perhaps, it may receive some Portion of Air in the Lungs. That there is Air mix'd in the *Blood*, and circulating with it, is past doubt; but, whether any more than was at first contain'd in the Food whereof the *Chyle* is form'd, is a Question not yet decided. The principal Arguments urg'd for it, are, the Necessity of Respiration; which is accounted for on another Principle: and the florid Colour the *Blood* receives in the Lungs, and first shews in the *Vena Pulmonalis*; which is countenanced by an Experiment made with the red grumous Part of the *Blood* after Coagulation on *Blood-letting*; for, upon turning the Under-Surface, which was before black, upwards, and exposing it to the Air, by its Contact therewith it acquires a florid Colour, like that of the *Blood* in the *Vena Pulmonalis*. But this Effect others account for from the extraordinary Agitation and Comminution of the Blood in the Lungs.

Indeed, Dr. Keill and some others go further. Mr. Boyle having examin'd the Specifick Gravity of *Blood*, and found that of the *Serum* to be greater than that of *Blood*, in the Proportion of 1190 to 1040, i. e. nearly as 8 to 7, it follow'd, that the *Cruor*, or *Blood-Globules*, were specifically lighter than the *Serum*, and that in a great degree; which was further confirm'd by the *Globules* being sustain'd in the *Serum*, both while circulating, and when let out. Hence it was conjectur'd, that these *Globules* were nothing else but thin Vesicles fill'd with a subtle aerial Substance: And this Opinion was confirm'd from its being observ'd, in viewing the Circulation by a Microscope, that a *Blood-Globule*, in passing thro a very narrow Vessel, wou'd change its Shape from a Globular to an Oval Form, and wou'd again recover its former Figure, as soon as it was got thro its narrow Passage; which Appearance was naturally enough ascribed to the Elasticity of the included Air: And, from this Conjecture, were accounted for a great Number of the Phænomena of the Animal Oeconomy, particularly Dr. Keill's *Theory of Muscular Motion*. But this Principle Dr. Jurin has examin'd, and appears to have overthrow'n. He made several Experiments, in some of which the *Cruor* before suspended a-top of the *Serum*, by its Adhesion to the Sides of the Porringer being cut off, and put in another Vessel of *Serum*, immediately sunk. In others, the *Cruor* buoy'd up in the *Serum*, even without any Adhesion to the Sides of the Glass, and merely by the Bubbles of Air adhering to its Surface, upon including it in a Receiver, and exhausting the Air, the Bubbles bursting, the *Cruor* wou'd sink; whence he concludes, the globular Part of the *Blood* to be heavier than the *serous*: And, from other Experiments, he ascertains the Proportion of the Gravity of *Blood* to that of *Serum*, to be as 1054 to 1030; whence the Quantity of the *Globules* being before fix'd at  $\frac{1}{4}$  of the whole, the precise Gravity of the *Globules* beyond that of the *Serum* is easily determined. The *Blood-Globules*, therefore, are not Vesicles fill'd with Air, or any other fluid Substance lighter than *Serum*: Which is further confirm'd from this, that *Blood-Globules* are not found to dilate, or undergo any Alteration, in an exhausted Receiver, when view'd thro a Microscope; whereas, were they fill'd with any elastick Fluid, they would either burst, or at least dilate into 70 or 80 times the Space.

As to the Heat of the *Blood*, Authors are exceedingly divided about the Cause thereof: The Antients ascrib'd it to a vital Flame, or innate Heat lodg'd in the Heart, and thence communicated to the *Blood*. Dr. Willis imagines a kind of Accension in the *Blood*; and thinks its Heat results from its being, as it were, set on fire, and persevering in that State. Dr. Henshaw solves it from an Ebullition consequent on the Mixture of two Fluids, so dissimilar as the *Chyle* and *Blood*. Others have recourse to the chymical Principles of Alkali and Acid; others to the mutual Action of the Principles, or component Parts of the *Blood*, by means whereof an intestine Motion, and by that means an intestine Heat, or Incalcescence, is effected. Dr. Drake, with more Reason, attributes the Heat of the *Blood* to the Spring of the Air inclos'd together with it in the Vessels: For, Air being inclosed in the *Blood-Vessels*, will endeavour to expand it self, and, consequently, if it have Force enough, will drive outwards the Parts of the Body that inclose it; by which means it causes the *Blood* to beat against the Sides of the Vessels, which having musculous, contractile Coats, do in

their Turns compress it again, and so cause a reciprocal *Æstus* in the *Blood*, greater than the mere circulatory Motion cou'd; whence the Parts of the Solids, or containing Vessels, being put into a constant Agitation, a Heat is produced in both, which they mutually impart to each other. Lastly, Dr. Boerhaave accounts for it from the Action of the Heart, and the Re-action of the *Aorta*: For, the *Blood*, driven by the Heart obliquely against the Sides of the *Aorta*, presses them, and spends almost its whole Momentum against the Curvity thereof, and is, by its Figure and Elasticity, press'd back again. Every Moment of Time, therefore, each Particle of *Blood* acquires a new Motion, a new Nifus and Rotation: Hence follows a perpetual Attrition, Attenuation, rubbing off of Angles, and a Similitude and Homogeneity of all the Parts; and hence the *Mass* derives its Fluidity, Heat, Division into Particles accommodated to all Vessels, Pressure into the Lateral Tubes, &c.

Nor is the Cause of the *Redness* of the *Blood* less obscure: The Chymists account for it from the Exaltation of its Sulphur; others from the Mixture of saline and subacid Juices with sulphureous; and others from the Colour of the Heart. The French Philosophers attribute this *Redness* to the Smallness of the Size, and Roundness of the Figure of the Particles that compose the *Cruor*; notwithstanding, that *red* being the Colour, of all others, least refrangible, and the *Globular* Figure, of all others, most refrangible, that Figure seems, of all others, least apt to produce this Colour. Others fetch the Colour of the *Blood* from the Impregnation of the Air in the Lungs: For, that Air is dispos'd to produce such an Effect, appears from the Experiment above. But others, more reserv'd, extend this Effect of the Air no further, than to account for the Difference of *Redness* between the *Venal* and *Arterial Blood*; supposing, that after its Colour has been heighten'd, and render'd more florid by the Mixture of the Air in the Lungs, it retains it pretty well in the Arteries; but that circulating in the Body, and carried thro the Veins, the Air transpires, by degrees, thro the Pores of the Vessels, and leaves the Liquor of a paler Dye. Boerhaave accounts for the Colour of the *Blood* from the same Cause as for its Heat, viz. from the Action of the Heart, and Re-action of the Sides of the *Aorta*. Borelli, to ascertain the Cause of the *Redness*, took a Parcel of the *Cruor*, after it had separated itself as far as spontaneously it wou'd from the *Serum*, and washing it frequently in Water, found it separable into a viscous, slippery Substance, consisting of white, or colourless Fibres, (which rose to the Surface of the Water, and there gather'd into a Skim, or coherent Pellicle of a reticular Texture) and a deep *red* Pouder, which precipitated pretty plentifully to the Bottom. Hence it appears, that the *red* Colour of the *Blood* is imparted to it by *red* tinging Particles, as in the common Case of Dyers. By examining the *red* Precipitate apart, and finding which of the Elements it consisted chiefly of, a Man who wou'd reason about the Colour of the *Blood* from Principles of the Chymists, might carry that Matter nearer an Issue.

However, this *red* Colour, tho generally found in all terrestrial Animals, is not yet absolutely necessary and essential; there being whole Species which have their circulating *Liquor*, or *Blood*, white and limpid: To which Dr. Drake adds an Instance of a pure white *Blood*, like Milk, which he let out of the *Median Vein* of a Man, and which, when cold, did not separate into a Crassamentum, as the *red* usually does; nor yield a Skim, or Cream, or turn sour upon keeping, as Milk does. Dr. Beal gives us another Instance of the like kind; and Dr. Lower adds a third, of a Person who bled so long at the Nose, till at last the Broth he drank, flow'd, little alter'd, that Way as *Blood*.

From the Principles, or constituent Parts of the *Blood* above-recited, variously combined and distributed by the Circulatory Motion impress'd by the Heart, (see CIRCULATION,) and by the Oscillatory, expansive Motion of the interspers'd Air, and the Re-action of the Contractile Vessels, flow all the Properties, and Operations of the *Blood*. From this Mixture of Elements, and their lax Composition, it becomes susceptible of various Alterations and Impressions; the principal whereof are, *Coagulation*, which usually attends it out of the Body, sometimes in it, and scarce ever without an artificial Procurement, but always mortal: and *Dissolution*, which is just opposite to the former, and consists in such a Comminution of the Fibrous Parts of the *Blood*, as indisposes it for a Separation of the *Cruor* from the *Serum*. This is frequently the Consequence of Malignant and Pestilential Fevers, &c. and is likewise occasion'd by some Kinds of Poisons. These two contrary Affections of the *Blood*, Dr. Drake ascribes to the opposite Kinds of Salts, Acids, and Volatile Alcalies. For tho, adds he, in a human Body no sincere Acid is found, nor cou'd it, indeed, be consistent with Life; yet it may, and does often enter the *Blood* so compounded, as to bridle the Volatile, Alcalious Salt of the *Blood*, and so hinder the due Attenuation

and Mixture of the several Parts; as is the Case in a *Diabetes*, and, perhaps, in a *Chlorosis*, where the *Blood* is thick and torpid: On the other hand, where the Alcalious are too redundant, the *Blood* is render'd too thin and fluid, so that the Difference of its constituent Parts is lost.

Another Affection frequent in the *Blood* is, a too great abundance of Oils, or saline Particles, by means whereof the active Parts of the *Blood* are too much clogg'd, and those Parts which should be secreted for peculiar Uses in the Body, are detain'd; and perhaps the Solids, thro which it pass'es, too much lubricated, their Tone vitiated, shrunk, relax'd, &c. whence that Sluggishness and Inactivity of very fat People. The contrary Affection to this is, the defect of Oil in the *Blood*; which being, as it were, its Balsam, lines and preserves the Parts from being fretted and corroded by the Salts, whose Spicula, or Edges, are, as it were, sheathed in this soft Balsamick Matter, and their Attrition against the solid Parts prevented. This State of the *Blood* is usually attended with a general Atrophy, and a Fretting and Corrosion, of some particular Parts; whence serous Defluxions, Apothumations, and Ulcers, especially in the Lungs, whose tender, vesiculous Substance is more easily annoy'd than any other, by the Acrimony of the saline *Serum*.

There are other less considerable Affections of the *Blood*, resulting from its Temperature and Mixture, with regard to the earthy Parts; the Consequences of which are, the Stone, &c. and others that don't originally spring from any Dyscrasy, or undue Mixture of the Elements, but from an Alteration in its Motion; such as an Augmentation, or Diminution, of its progressive Motion, or the like Changes in its elastick Motion; whence supernatural Fermentations are induced: The Occasions here may be various; sometimes Fevers, and other Disorders occasion'd by Surfeits, Debauches, catching Cold, violent Exercise, &c. whence Atonias; at other times, some latent Malignity of the Air, whence Epidemical Diseases.

The *Blood* thus variously compounded and circumstantiated, visits even the minutest Parts of the Body, by means of its Circulative Motion: The Cause and Course whereof see under CIRCULATION. In this Round, those Particles of the *Blood* which conform best to the Figure and Structure of the Parts thro which they pass, are apposit to 'em, either for their Accretion, or for the Reparation of such as the constant rapid Force of the *Blood* wears off.

About the Matter of Nutrition, or the Source whence the Nourishment is deriv'd, great Contests have arose among the Physicians and Anatomists; some contending for a nutritious Juice convey'd thro the Lungs; some setting up the *Lymph*, others the *Chyle*, some the *Serum* of the *Blood*, some the *Cruor*, as the universal *Succus alibilis*, &c. However, all these, except they who bring the Nutriment thro the Nerves, make the *Blood* the *Vehicle*, that conveys the Alimentary Parts thro the Body, whatsoever they be, and whencesoever derived: But, perhaps it was on the score of its Heterogeneity, or Composition of different Elements, that they did not make it self the Nutritious Fluid, without restraining that Faculty to some particular Parts thereof. But Dr. Drake makes no Scruple to say, that the *Blood*, in its largest Acceptation, as consisting of all the Parts before described, is simple and homogeneous enough for the Purposes of Nutrition; and that every Part thereof contributes something, either materially or instrumentally, to the Augmentation, or Reparation, of the Parts thro which it pass'es. See NUTRITION.

For the Manner in which the *Blood* is form'd, and how the *Chyle* is assimilated into *Blood*, see SANGUIFICATION. The Quantity of *Blood* in a human Body, has been variously estimated by various Authors. Where note, That in Computations of this Kind, not only the Fluid contain'd in the Veins and Arteries, but also that in the Lymphæducts, Nerves, and the other Vessels secreted from it, and return'd to it, are included. This Dr. Lower computes, in an ordinary Man, at about 20 Pounds; Dr. Moulin at about  $\frac{1}{10}$  of the Weight of the whole Man, which may amount to about 8 or 10 Pounds: But Dr. Keill, from a more accurate Calculation, built on the Proportion of the Coats to the Vessels, shews, that in a Body weighing 160 Pounds, 100 Pound thereof are *Blood*. Hence he proposes a Method of determining the Velocity of the *Blood*: For, as each Ventricle of the Heart is capable of receiving an Ounce of *Blood*; being full in their *Diastole*, we may suppose they throw out about an Ounce each *Systole*. Now, the Heart beats about 4000 times in an Hour; therefore, every Hour 4000 Ounces, or 250 Pound of *Blood*, pass'es thro the Heart. So that a Quantity of *Blood* equal to the whole Mass, pass'es in two Hours and a half: but, the Sum of the Sections of the Branches of an Artery being always greater than that of the Trunk, the Velocity of the *Blood* will constantly decrease as the Artery divides; and the Ratio of its greatest to its least Velocity in the Arteries may be thus found, as 5223 to 1. Again, the Veins are to the Arteries, as 441 to 324; wherefore, as the *Blood* returns to

the Heart by the Veins, its Velocity will be still further diminish'd, and may be found to move more slowly in the Veins than in the *Aorta*, 7116 times. Again, the farther the *Blood* goes off the Heart, the more slowly it returns. The Times of these are directly as the Spaces, and reciprocally as the Velocities; consequently, some Parts may be some thousands of times longer in returning to the Heart than others. From the Diameter of the *Aorta*, and the Quantity of *Blood* driven out every Pulse, the Velocity of the *Blood* in the *Aorta* is easily determin'd, and found to be at the rate of 52 Feet in a Minute. But Dr. Jurin shews, that in any two Arteries transmitting equal Quantities of *Blood*, the *Momentum* of the *Blood* is greater in the Artery more remote from the Heart than in that nearer; and that its *Momentum* is greater in all the capillary Arteries together, than in the *Aorta*; and, lastly, that the *Momentum* of the *Blood* is greater in any of the Veins, than in the Artery corresponding to it; and therefore greater in the *Vena Cava* than the *Aorta*.

Lastly he shews, that the *Momentum* of the *Blood* in the *Vena Cava*, is equal to that of the Quantity of *Blood* thrown out into the *Aorta* at each *Systole*, whose Velocity is such as wou'd pass the whole Length of the Arteries and Veins in the Interval of Time between two Pulses; and that the absolute *Momentum* of the *Blood* in the *Cava*, without any regard to the Resistance, is equal to the *Momentum* of a Weight of 30 Pounds passing over the Space of an Inch in a Second. But note, that the Motion of the *Blood* is here supposed equable, which in reality it is not. See HEART.

As to the Transfusion of the *Blood* of one Animal into the Veins of another, first set on foot by Dr. Lower, see the Method and Effects thereof under TRANSFUSION.

In the *Philosophical Transactions* we have several very uncommon Instances of spontaneous *Bleeding*; particularly of a Child that bled at the Nose, Ears, and hind-part of the Head, for three Days; from that to the sixth, she sweat *Blood* from the Head; on the sixth, bled at the Head, Shoulders, and Waste; and for three Days more continued to bleed at the Toes, Bend of the Arms, Joints of the Fingers of each Hand, and at the Fingers Ends till she died: After her Death were found, in the Places whence the *Blood* issued, little Holes like the Prickings of a Needle. For the Stanching of *Blood*, see STIPTICK.

*Blood of Jesus Christ*, a military Order instituted at Mantua in 1608, by Vin. Gonzagua IV. The Devise of this Order was, *Domine probasti me*; or that, *Nihil hoc triste recepto*. *Hermant* speaks of this Order, and observes it took its Name from some Drops of the *Blood of Christ*, said to have been preserv'd in the Cathedral Church of Mantua. Their Number was restrain'd to 20, besides the Grand Master; the Office whereof was attach'd to himself and his Successors.

There is also a Congregation of Nuns at Paris call'd by the same Name, reform'd from the *Bernardines*.

BLOOD-LETTING. See PHEBOTOMY.

BLOOD-SHOTTEN, a Distemper of the Eyes, where the *Blood-Vessels* are greatly distended, so as to make the Eyes appear red.

BLOODY-HAND, one of the four kinds of Trespasses in the King's Forest, by which the Offender being taken with his Hands or other Part bloody, is judg'd to have killed the Deer, tho he be not found Hunting or Chasing.

BLOSSOM. See FLOWER.

BLOWING of Glass, one of the Methods of forming the divers kinds of Works in the Glass Manufacture. 'Tis perform'd by dipping the End of an Iron Pipe in the melted Glass, and blowing thro it with the Mouth, according to the Circumstances of the Glass to be blown. See GLASS.

BLUE, one of the Primitive Colours, otherwise call'd *Azure*. See COLOUR.

The Painters BLUE is made different, according to the different kinds of Paintings. In Limning, Fresco, and Miniature, they use indifferently *Ultramarine*, *blue Asbes*, and *Smalt*; these are their natural Blues, excepting the last, which is partly natural, partly artificial: See each under its proper Head. In Oil and Miniature they also use *Indigo prepared*; see INDIGO; as also a factitious ULTRAMARINE, which see. Enamellers and Painters on Glass have Blues proper to themselves; each preparing 'em after their own manner. See ENAMELLING, and PAINTING on Glass.

BLUE of the Dyers, is one of their simple, or Mother-Colours, used in the Composition of others: 'Tis made of Wood, *Indigo*, and a *Pastel* brought from Normandy: Of the three, the *Pastel* is esteem'd the best, and the most necessary: Wood, tho of less Force and Effect, yet makes a tolerable Colour: *Indigo* only makes a spurious Colour; yet it may be used along with *Pastel*, if it be well prepar'd, and ben't mix'd in too great a Proportion. Wood having but little Substance, can neither be used alone, nor is it capable of correcting the *Indigo*, without the Assistance



tance of *Pastel*. Some *Dyers* heighten their *Blue* by adding *Brafil* and other Woods. The ways of brightening *Blues* are, by passing the Stuff, when dyed and well wash'd, thro luke-warm Water; or, which is much better, by working and fulling the dyed Stuff with melted Soap, and then scouring it well. *Blues* are dyed immediately from the *Whites*, without any other Preparation than Fulling.

*Turnsol BLUE*, is a *Blue* used in Painting on Wood, made of the Seed of that Plant. 'Tis prepar'd by boiling four Ounces of *Turnsol* in a Pint and half of Water wherein Lime has been slack'd. See *TURNSOL*.

*Flanders BLUE*, is a Colour bordering on *Green*, seldom used but in *Landskips*.

Antiently, *Blue* was the Symbol of the Sea; for which Reason, in the *Circensian Games* the Combatants who represented the Sea were clad in *Blue*; and those who had distinguish'd themselves by any notable Exploit at Sea, were rewarded with a *blue Ensign*.

*BLUEING of Metals*, is the heating any Metal till it assume a *blue* Colour; particularly practis'd by *Gilders*, &c. who *blue* their Metals e'er they apply the Gold or Silver Leaf. See *GILDING*.

*BLUENESS*, the quality of a Body that is *blue*; or, such a Size and Texture of the Parts that compose the Surface of a Body, as disposes 'em to reflect the *blue* or *azure* Rays of Light, and those only, to the Eye. See *LIGHT* and *COLOUR*. For the *Blueness* of the Skies, Sir *Isaac Newton* observes, that all the Vapours, when they begin to condense and coalesce into natural Particles, become first of such a Bigness as to reflect the *azure* Rays, e'er they can constitute Clouds of any other Colour. This, therefore, being the first Colour they begin to reflect, must be that of the finest and most transparent Skies, in which the Vapours are not arrived to a Grossness sufficient to reflect other Colours.

*M. de la Hire*, and before him *Leonardo da Vinci*, observes, that any *black* Body view'd thro a thin *white* one, gives the Sensation of *blue*; and this he assigns as the Reason of the *Blueness* of the Sky, the immense Depth whereof being wholly devoid of Light, is view'd thro the Air illuminated and whitened by the Sun. For the same Reason, he adds, it is, that Soot mix'd with a *white* makes a *blue*; for *white* Bodies being always a little transparent, and mixing themselves with the *black* behind, give the Perception of *blue*. From the same Principle he accounts for the *Blueness* of the Veins on the Surface of the Skin, tho the Blood they are fill'd with be a deep red; for red, he observes, unless view'd in a clear, strong Light, appears a dark brown bordering on black: Being then in a kind of Obscurity in the Veins, it must have the Effect of a black; and this, view'd thro the Membrane of the Vein and the white Skin, will produce the Perception of *Blueness*.

*BLUSHING*, a Phenomenon in the Animal Oeconomy, excited from a Sense of Shame, &c. It is supposed to be produced from a kind of Consent, or Sympathy, between several Parts of the Body, occasion'd by the same Nerve being extended to 'em all. Thus the fifth Pair of Nerves being branch'd from the Brain to the Eye, Ear, Muscles of the Lips, Cheeks, Palate, Tongue, Nose, &c. hence a thing seen, or heard, that is shameful, affects the Cheeks with Blushes, driving the Blood into the minute Vessels thereof, at the same time that it affects the Eye and Ear. For the same Reason it is, as Mr. *Derham* observes, that a savoury Thing seen or smelt, affects the Glands and Parts of the Mouth: If a Thing heard be pleasing, it affects the Muscles of the Face with *Laughter*; if melancholy, it exerts it self on the Glands of the Eyes, and occasions *Weeping*, &c. And to the same Cause Dr. *Willis* ascribes the Pleasure of *Kissing*.

*BOAT*, a little floating Vessel, for the Navigation of Rivers, Lakes, &c. The *Boat* acquires various Names, according to its various Structure, and the various Uses it is appointed for, and the Places where it is to be used. The several *Boats*, and their Names, are,

- |  |   |                  |  |
|--|---|------------------|--|
| <ul style="list-style-type: none"> <li>A Jolly Boat,</li> <li>A Long Boat,</li> <li>A Skiffe,</li> <li>A Pinnace,</li> <li>A Water Boat,</li> <li>A Yawl,</li> <li>A Gondola,</li> <li>A Greenland Boat,</li> <li>A Bermudas Boat,</li> <li>A Ballon of Siam,</li> <li>A Horse Boat,</li> <li>A Periaga,</li> <li>A Pleasure Boat,</li> <li>A Ponton,</li> </ul> | } | Boats for Ships. | <ul style="list-style-type: none"> <li>A Canoe,</li> <li>A Cruckle,</li> <li>A Currycurry,</li> <li>A Deal-Hooker,</li> <li>A Felucca,</li> <li>A Ferry-Boat.</li> <li>A Praw,</li> <li>A Flying Praw,</li> <li>A Punt,</li> <li>A Tilt-Boat,</li> <li>A Tod-Boat,</li> <li>A Well-Boat,</li> <li>A Wherry.</li> </ul> |
|--|---|------------------|--|

*De Chales* proposes the Construction of a *Boat*, which, what Burden soever it bear, shall not only sail against the Cur-

rent without either Sails or Oars, but also advance so much the faster, as the Rapidity of the Water is greater. Its Make is the same with that of the others, excepting only a Wheel added to its Side, with a Cord, which winds round a Roller as fast as the Wheel turns. See *VESSEL*.

*M. de la Hire* has given us an Examen of the Force necessary to move *Boats*, both in stagnant and running Water, either with Ropes fasten'd to 'em, or with Oars, or with any other Machine: wherein he shews, that the larger the Surface of the *Oars* plung'd in the Water, and the smaller that of the *Boat* presented to the Water is; and again, the longer that Part of the *Oar* between the Hand and the Place where the *Oar* rests on the *Boat*, and the shorter that between this last Point and the Water; the freer will the *Boat* move, and the greater Effect will the *Oar* have. See *ROWING*.

Hence 'tis easy to calculate the Force of any Machine that shall be apply'd to *Rowing*; v.g. If we know the Absolute Force of all the Men who *Row*, it must be chang'd into a Relative Force, according to the Proportion of the two Parts of the *Oar*; i.e. if the Part out of the *Vessel* be double the other, and all the Men together can act with the Force of 900 Pounds; we compute first, that they will exert 300: Which 300, multiply'd by the Surface the *Vessel* presents to the Water, gives a Solid of Water of a certain Weight; whose Weight may be found, and of Consequence the Velocity impress'd on the *Vessel* by the *Oars*. Or the Velocity of the *Oars* may be found in the same manner, by multiplying the 300 Pounds, by the Surface of all the Parts of the *Oars* plung'd in the Water. Nor would there be any Difficulty in finding first the Relative Forces, then the Absolute ones; the Velocities either of the *Oars*, or of the *Vessel* being given, or the Proportion of the two Parts of the *Oar*.

*BOAT-SWAIN*, is an Officer on Board a Ship, who has Charge of her Rigging, Ropes, Cables, Anchors, Sails, Flags, Colours, Pendants, &c. He takes care of the Ship's *Long-Boat*, and its Furniture; and steers her, either by himself or his *Mate*. He calls out the several Gangs aboard, to the due Execution of their Watches, Works, &c. and he is likewise a kind of *Provost-Marshal*, who sees and punishes all Offenders who are sentenc'd by the Captain, or a Court-Martial of the Fleet.

*BOCARDO*, in Logick, the fifth Mode and the third Figure. In a Syllogism in *Bocardo*, the first Proposition is particular and negative, the second universal and affirmative; and the Medium, or middle Term, the Subject in the two Propositions. Thus,

Some Animal is not Man,  
Every Animal has a Principle of Sensation,  
Therefore something has a Principle of Sensation besides Man.

*BODY*, in Physicks, a solid, extended, palpable Substance; compos'd, according to the *Peripateticks*, of *Matter*, *Form*, and *Privation*; according to the *Epicureans* and *Corpuseularians*, of an Assemblage of hooked, heavy *Atoms*; according to the *Cartesians*, of a certain Quantity of *Extension*; according to the *Newtonians*, of a *System*, or Association of solid, massy, hard, impenetrable, moveable Particles, rang'd or dispos'd in this or that Manner; whence result Bodies of of this or that Form; distinguish'd by this or that Name. These Elementary or Component Particles of Bodies must be infinitely hard; vastly harder than the Bodies compos'd of 'em; nay, so hard as never to wear, or break in pieces. "This Sir *Isaac Newton* observes to be necessary, in order to the *World's* persisting in the same State, and *Bodies* continuing of the same Nature and Texture in several Ages. For should the *Component Particles* break or wear, the Nature and Frame of Things depending on them, would be chang'd. *Water* and *Earth* compos'd of old worn *Particles*, and Fragments of *Particles*, would not be of the same Nature and Texture now with *Water* and *Earth* compos'd of *Entire Particles* in the beginning: And therefore, that Nature may be lasting, the Changes of *Bodies* are to be placed only in the various Separations, and new Associations and Motions of these *permanent Particles*. *Bodies* don't break in the midst of *solid Particles*, but in the joinings of those *Particles*, which only touch in a few Points. These *Particles* have not only a *Vis Inertiae*, accompany'd with such passive Laws of Motion as naturally result from that Force; but likewise with certain active Principles, such as that, v.g. of *Gravity*, (See *GRAVITY*.) And that which occasions *Fermentation* and the Cohesion of *Bodies*. See *FERMEN-TATION* and *COHESION*. For the rest, *Bodies* being only particular *Associations* or *Systems* of primitive *Particles* of *Matter*, have the same Properties, and follow the same Laws with *Matter*." See *MATTER*; see also *PARTICLES*.

The Existence of *BODIES*, or of external *Objects*, is a Thing not to be demonstrat'd in any Manner whatever. The

The Order in which we arrive at the Knowledge of the Existence of *Bodies*, seems to be this; We first find we have *Sensations*; then observe we have not those Sensations when we please; and thence conclude, we are not the absolute Cause thereof, but that there is requir'd some other Cause for their Production. Thus we begin to know, that we don't exist alone, but that there are several other *Things* in the World together with us. But even this Dr. Clark owns to fail of a Demonstration of the Existence of a *corporeal World*: He adds, that all the Proof we have of it is this; That God would not create us such, as that all the Judgments we make about *Things* existing without us, must necessarily be false. If there be no External *Bodies*, it follows, that 'tis God who represents the Appearances of *Bodies* to us; and that he does it in such a manner as to deceive us. Some think this has the Force of a Demonstration: 'Tis evident God can't deceive us; 'tis evident he does deceive and delude us every Moment, if there be no *Bodies*; 'tis evident therefore, there must be *Bodies*.

Against the Existence of *Bodies*, or any External World, Mr. Berkley argues very strenuously, "That neither our Thoughts, Passions, nor Ideas form'd by the Imagination, exist without the *Mind*, he observes is allow'd; and that the various Sensations impress'd on the *Mind*, whatever *Objects* they compose, cannot exist otherwise than in a *Mind* perceiving them, is not less evident: This appears from the meaning of the Term *Exist*, when apply'd to sensible Things. Thus, the Table I write on exists; *i. e.* I see and feel it; and were I out of my Study, I should say it existed; *i. e.* Were I in my Study, I should see and feel it as before. There was an Odor; *i. e.* I smelt it, &c. But the Existence of unthinking *Beings*, without any Relation to their being perceiv'd, is unintelligible; their *Esse* is *Percipi*: Nor is it possible they should have any Existence out of the *Mind* that perceives them." The Notion of *Bodies*, he endeavours to shew founded on the Doctrine of *Abstract Ideas*: "What are Light and Colours, Heat and Cold, Extension and Figures, in a word, the Things we see and feel, but so many Sensations, Notions, Ideas, or Impressions on the *Sense*? And is it possible to separate, even in Thought, any of these from Perception? The several *Bodies* then, that compose the Frame of the World, have not any Subsistence without a *Mind*; their *Esse* is to be perceiv'd or known; and as long as they are not perceiv'd by Me, nor any other thinking Being, they have no shadow of Existence at all.—The *Things* we perceive, are Colour, Figure, Motion, &c. that is, the Ideas of those *Things*: But has an Idea any Existence out of the *Mind*? To have an Idea, is the same thing as to perceive: That therefore wherein Colour, Figure, &c. exist, must perceive them. 'Tis evident, therefore, there can be no unthinking *Substance*, or *Substratum* of those Ideas. But you will argue, If the Ideas themselves don't exist without the *Mind*, there may be Things like 'em, whereof they are Copies or Resemblances, which exist without the *Mind*: 'Tis answer'd, an *Idea* can be like nothing but an *Idea*; a *Colour* or *Figure* can be like nothing else but another *Figure* or *Colour*. It may be farther ask'd, whether those supposed *Originals*, or *External Things* whereof our Ideas are the Pictures, be themselves perceivable or not? If they be, they are Ideas; if they be not, I appeal to any one whether it be *Sense* to say, A *Colour* is like somewhat which is Invisible; hard or soft, like somewhat Intangible, &c. Some distinguish between Primary and Secondary Qualities; the former, *viz.* Extension, Solidity, Figure, Motion, Rest and Number, they maintain have a real Existence out of the *Mind*: For the latter, under which come all other sensible Qualities, as Colours, Sounds, Tastes, &c. they allow the Ideas we have of 'em, are not Resemblances of any *Things* existing without the *Mind*, or unperceiv'd; but depend on the Size, Texture, Motion, &c. of the minute Particles of Matter: Now 'tis certain, that those Primary Qualities are inseparably united with the other Secondary ones, and cannot even in Thought be abstracted from them; and therefore must only exist in the *Mind*. Can any Man conceive the Extension and Motion of a *Body*, without all the other sensible Qualities? For my part, I find it impossible to frame an Idea of a *Body* extended and moving, without giving it some Colour, &c. In effect, Extension, Figure and Motion, abstracted from all other Qualities, are Inconceivable: Where the others, therefore, are, there these too must be; *i. e.* in the *Mind*, and no where else. Again, Great and Small, Swift and Slow, are allow'd to exist no where without the *Mind*; being merely relative, and changing, as the Frame or Position of the Organ changes: The Extension therefore that exists without the *Mind*, is neither great nor small, the Motion neither swift nor slow; *i. e.* they are nothing.—That Num-

ber is a Creature of the *Mind*, is plain (even tho the other Qualities were allow'd to exist) from this; that the same thing bears a different Denomination of Number, as the *Mind* views it with different Respects: Thus the same Extension is 1, or 3, or 36, as the *Mind* considers it, with reference to a Yard, a Foot, or an Inch. Nay, many of the modern Geometricians hold, that a finite Line may be divided into an infinite Number of Parts, and each of those Infinitesimals into an infinity of others; and so on, in *Infinitum*: So that the same Thing is either Unity or Infinity; either no Number or all Number. In effect, after the same manner as the modern Philosophers prove Colours, Tastes, &c. to have no Existence in Matter, or without the *Mind*; the same thing may be proved of all sensible Qualities whatsoever. Thus, they say, Heat and Cold are only Affections of the *Mind*, not at all Patterns of *real Beings* existing in *corporeal Substances*; for that the same *Body* which seems cold to one hand, seems warm to another. Now why may we not as well argue, that Figure and Extension are not Patterns or Resemblances of Qualities existing in Matter; because to the same Eye, at different Stations, or to Eyes of different Structure at the same Station, they appear various? Again, Sweetness, 'tis proved, does not exist in the Thing *sapid*; because the Thing remaining unalter'd, the Sweetness is chang'd to Bitterness, as in a Fever, or otherwise vitiated Palate. Is it not as reasonable to say, that Motion does not exist out of the *Mind*? since if the Succession of Ideas in the *Mind* become swifter, the Motion, 'tis acknowledg'd, will appear slower, without any external Alteration.—Again, were it possible for solid figur'd Bodies to exist out of the *Mind*, yet it were impossible for us ever to know it: Our Senses, indeed, give us Sensations or Ideas, but don't tell us that any Thing exists without the *Mind*, or unperceiv'd, like those which are perceiv'd: This the Materialists allow. No other way therefore remains, but that we know 'em by *Reason's* inferring their Existence from what is immediately perceiv'd by *Sense*. But how should Reason do this, when 'tis confess'd there is not any necessary Connection between our Sensations and these *Bodies*? 'Tis evident from the *Phenomena* of Dreams, Phrensies, &c. that we may be affected with the Ideas we now have, tho there were no *Bodies* existing without them: Nor does the Supposition of external *Bodies* at all forward us, in conceiving how our Ideas should come to be produc'd. The Materialists own themselves unable to conceive in what manner *Body* can act on *Spirit*; or how it should imprint any Idea on the *Mind*. To suppose therefore *Bodies* existing without the *Mind*, is little else than to suppose, God has created innumerable *Beings* entirely useless, and serving to no Purpose at all. On the whole, it appears that the Existence of *Bodies* out of a *Mind* perceiving 'em, is not only impossible, and a Contradiction in Terms; but were it possible, nay real, it were impossible we should ever know it. And again, that supposing there are no such Things, yet we should have the very same Reason to suppose there were that we now have: Suppose, *v. g.* an Intelligence affected with the same Train of Sensations, impress'd in the same Order, and with the same Vividness; would it not have all the Reason to believe the Existence of *Bodies* represented by his Ideas that we have?—All our Ideas and Sensations are visibly Inactive; nay, the very Being of an Idea implies Passiveness and Inertness: So that it is impossible for an Idea to do any thing; or, in strictness, be the Cause of any thing: It cannot therefore be the Resemblance or Pattern of any active *Being*; unless Opposites can be said to resemble one another.

Now we find a continual Succession of Ideas in the *Mind*; but these, it has been proved, don't depend on any External *Body* as their Cause: It remains therefore, that their Cause is an Incorporeal active *Substance* or *Spirit*. For that I am not the Cause of my own Ideas, is plain from this, that when I open my Eyes in broad Day-light, I can't help seeing various Objects. Now the fix'd Rules or Methods wherein the *Mind* we depend on excites in us the Ideas of *Sense*, are call'd *Laws of Nature*: These we learn by Experience; which teaches us, that such and such Ideas are attended with such and such other Ideas in the ordinary Course of Things.—Ideas are not any how, and at random produced; there is a certain Order and Connexion establish'd among 'em, like that of Cause and Effect: And there are several Combinations of 'em made in a very regular artful Manner, which we call *Bodies*; and the System of those, the *World*. In strictness, however, the Connexion of Ideas does not imply the Relation of Cause and Effect; but, only of a Mark or Sign of the Thing signify'd: The Fire I see is not the Cause of the Pain I feel, but the Mark that forewarns me of it. The Noise I hear, is

“ not the Effect of this or that Motion or Collision of Natural *Bodies*, but the Sign thereof. The *Cartesians* own somewhat like this: The Action of *Bodies* on our Organs, say they, is not the Efficient Cause of our Ideas and Perceptions, but only the *Occasional Cause*, which determines God to act on the *Mind*, according to the Laws of the Union of the *Soul* and *Body*. See CAUSE. Mr. *Berkeley*, indeed, taking away *Bodies*, takes away what these Philosophers account the Occasions of their Ideas: By an *Occasion*, he says, must either be meant the Agent that produces an Effect, or something observ'd to accompany or go before it, in the ordinary Course of Things: But Matter is allow'd to be passive and inert, and can't therefore be an Agent or Efficient Cause; and this Matter primitively and in it self, is allow'd imperceivable, and devoid of all particular sensible Qualities; *i. e.* it has not this or that particular Colour, this or that particular Figure, &c. but has Colour in the General, Figure in the Abstract, &c. but an Abstract is no Object of Sense: Matter therefore can't be the Occasion of our Ideas in the latter Sense.”

How far the great Argument of the Maintainers of a material World, from the Impossibility of God's deceiving us, and from the Evidence that he does so, if there be no such thing, will go against this Reasoning, we leave to the Reader. See EXTERNAL World.

For the Colours of BODIES: Sir *Isaac Newton* shews, that *Bodies* appear of this or that Colour, as they are dispos'd to reflect most copiously the Rays of Light originally endu'd with those Colours. See LIGHT and COLOUR. But the particular Constitutions whereby they reflect some Rays more copiously than others, remain yet to be discover'd. However, some of the Laws and Circumstances thereof, he delivers in the following Propositions.

1. Those Surfaces of transparent *Bodies*, reflect the greatest Quantity of Light, which have the greatest Refracting Power; *i. e.* which intercede Mediums, that differ most in their refractive Densities: And in the Confines of equally refracting Mediums, there is no Reflexion. 2. The least Parts of almost all Natural *Bodies*, are in some measure transparent; and the Opacity of those *Bodies*, arises from the multitude of Reflexions caus'd in their internal Parts. See OPACITY, &c. 3. Between the Parts of Opaque and Colour'd *Bodies*, are many Spaces, either empty, or replete with Mediums of different Densities; as Water between the tinging Corpuscles, wherewith a Liquor is impregnated; Air between the aqueous Globules, that constitute Clouds or Mists: and even Spaces, void both of Air and Water, between the Parts of hard *Bodies*, are not yet perhaps wholly void of all Substance. See MEDIUM. 4. The Parts of the *Bodies*, and their Interstices, must be less than of some definite Bigness, to render them opaque and colour'd. 5. The transparent Parts of *Bodies*, according to their several Sizes, reflect Rays of one Colour, and transmit those of another, on the same Grounds that thin Plates or Bubbles do reflect, or transmit those Rays: And this appears to be the Ground of all their Colour. See COLOUR. 6. The Parts of *Bodies*, on which their Colours depend, are denser than the Medium which pervades their Interstices. 7. The Bigness of the component Parts of Natural *Bodies*, may be conjectur'd from their Colours; on this Principle, that transparent Corpuscles, of the same Thickness and Density with a Plate, do exhibit the same Colour. 8. The Cause of Reflexion, is not the impinging of Light on the solid or impervious Parts of *Bodies*, as commonly believ'd. See REFLEXION. 9. *Bodies* reflect and refract Light, by one and the same Power variously exercis'd, in various Circumstances. See REFRACTION; see also LIGHT, RAY, &c.

BODIES, are distinguish'd into *Animate* and *Inanimate*; *i. e.* into those inform'd by a *Soul*, and those which are not; or those that have Life, and those that have none.

Some consider *Bodies*, either as *Natural* and *Sensible*; *viz.* as form'd by Physical Causes, and cloth'd with Physical Qualities: (In which Sense, *Body* makes the Object of *Physicks*.) See PHYSICKS. Or, as *Intellectual* or *Quantitative*, in the General or Abstract; and according to the three Dimensions: In which Sense, *Body* makes the Subject of *Geometry*. See GEOMETRY.

*Body*, with regard to *Animals*, is us'd in opposition to the *Soul*; *viz.* for that Part compos'd of Bones, Muscles, Canals, Juices, Nerves, &c. In which Sense, *Body* makes the Subject of *Anatomy*. See ANATOMY.

The human *BODY*, consider'd with regard to the various voluntary Motions it is capable of performing, is an Assemblage of an infinite Number of Levers, drawn by Cords: If consider'd with regard to the Motions of the Fluids it contains, 'tis another Assemblage of an Infinity of Tubes and hydraulick Machines. Lastly, If consider'd with regard to the Generation of those same Fluids, 'tis another infinite Assemblage of Chymical Instruments and Vessels; as *Philters*, *Alembics*, *Recipients*, *Serpentines*, &c. and

the whole is a Compound which we can only admire, and whereof the greatest Part escapes our Admiration itself. The principal Chymical *Apparatus* in the whole *Body*, is that wonderful Laboratory the *Brain*: 'Tis in this, that precious Extract, call'd *Animal Spirits*, the only material Movers of the whole *Fabrick*, is secreted from the Blood. See BRAIN, SPIRITS, BLOOD, HEART, &c.

In the Machine of the *Animal Body*, the Retainers to the Doctrine of *Trituration* maintain the *Brain* to do the Office of the *Beam* of a *Press*, the *Heart* of a *Piston*, the *Lungs* of *Bellows*, the *Mouth* of a *Millstone*, and the *Teeth* of *Pestles*; the *Stomach* of a *Press*, the *Intestines* of a *Reservoir*, the *Vessels* of *Sieves* or *Strainers*, and the *Air* of a *Pondus*, or *Spring* that sets the Machine a going. See TRITURATION.

The *Soul*, *Robault* well observes, is not the Form of the *Human Body*: So far is the *Animal Life* from depending on the *Soul*, because of its ceasing when the *Soul* is separated; that on the contrary, the Continuance of the *Soul* depends entirely on the Disposition of the *Body*: the former never quitting the latter, till its Oeconomy or Order is interrupted. The *Cartesians* maintain the *Soul* and *Body* to be too disproportionate, for Thoughts or Ideas of the *Soul* to be caus'd by the Motions of *Bodies*, and *vice versa*: Thus, their reciprocal Motions not being able to be the direct Cause of the one and the other, are only deem'd the Occasion, or occasional Cause. God, on occasion of the Motion of a *Body*, impresses an Idea or Sensation on the *Soul*; and again, on occasion of an Idea of the *Soul*, communicates a Motion to the *Body*: of consequence, God is, as it were, the Mediator of all the Commerce between *Soul* and *Body*. See CAUSE.

Physicians divide the *Body* into three Venter, or Cavities, the *Head*, *Thorax*, and *lower Venter*; which see: The rest of the *Body* they call *Members*. See PARTS.

*BODY*, *Corpus*, is also apply'd by Anatomists to several particular Parts of the *Animal Fabrick*: As the *Callous Body* of the *Brain*; the *Cavernous* or *Spongy Bodies* of the *Penis*, &c. See CORPUS CALLOSUM, CORPORA CAVERNOSA, &c.

*BODY* in *Geometry*. The *Regular* or *Platonic Bodies*, are those whose Sides and Angles are equal; of these there are only Five, *viz.* The *Tetrahedron*, consisting of four Angles; the *Octahedron* of eight; the *Icosihedron* of twenty; the *Dodacahedron* of twelve Pentagons; and the *Cube* of six Squares. See REGULAR *Body*.

*BODY* in *Law*. A Man is said to be bound, or held, in *Body* and Goods; that is, he is liable to remain in Prison, in default of Payment. In *France*, by an Ordonnance of 1667, all Restraints of *Body*, for Civil Debts, are null after four Months, unless they exceed 200 *Livres*. A Woman, tho' in other Respects she cannot engage her Person but to her Husband, may be taken by the *Body*, when she carries on a separate Trade.

*BODY* in *War*, is an Assemblage or Collection of Forces, Horse and Foot, united and marching under some Chief. An Army, rang'd in Form of Battle, is divided into three *Bodies*; the *Vant-Guard*, the *Rear-Guard*, and the *Main Body*; which last is ordinarily the *General's Post*. See CORPS.

BOGOMILES or BOGARMITES, a Sect of Heretics, sprung from the *Manichees*, or rather the *Paulicians* in the 12th Century. The Chief hereof, *Basil*, was burnt, by Order of the Emperor *Alexander Commenius*. They denied the Trinity; maintain'd, that God had a human Form, that the World was created by evil Angels, and that it was the Archangel *Gabriel* that became incarnate. They rejected the Books of *Moses*, and only admitted seven Books of Scripture: They maintain'd the Lord's Prayer to be the only Eucharist; that the Baptism of the *Catholics* was that of *St. John*, and theirs that of *Jesus Christ*; and that all those of their Sect conceiv'd the Word, or *Logos*, as much as the *Virgin*. Lastly, That there was no other Resurrection but Repentance. *Du Cange* derives the Name from two Words in the *Bulgarian Language*, *Bog, deus*, and *Milia, miserere*, have Mercy.

BOILING, *Ebullition*, in *Physicks*, the Agitation of a fluid *Body*, arising from the Application of Fire, &c. The Phenomenon of *Boiling* may be thus accounted for: The minute Particles of the Fuel being detach'd from each other, and impell'd in *Orbem*, with a great Velocity, (*i. e.* being converted into Fire) pass the Pores of the containing Vessel, and mix with the Liquid. By the Resistance they here meet withal, their Motion is destroy'd; *i. e.* they communicate it wholly to the quiescent Water; hence arises, at first, a small intestine Motion in the Water, and from the continued Action of the first Cause, the Effect is increas'd, and the Motion of the Water continually accelerated: So that the Water, by degrees, becomes sensibly agitated. But, now, the Particles of the Fire striking on those in the lowest Surface of the Water, will not only give 'em an Impulse upwards, contrary to the Laws of *Æquilibrium*, but will likewise render 'em specifically lighter than before, so as to determine 'em to ascend according to the Laws of *Æquilibrium*: And this, either by inflating 'em into little Vesicles, by the

Attraction of the Particles of Water around 'em ; or by breaking and separating the little Spherules of Water, and so increasing the Ratio of their Surface to their solid Content. There will therefore be a constant Flux of Water from the Bottom of the Vessel to the Top ; and consequently a reciprocal Flux from the Top to the Bottom : *i. e.* The upper and under Water will change Places ; and hence we have the Reason of that Phænomenon, of the Water's being hot at Top sooner than at Bottom. Again, an intense Heat will diminish the specifick Gravity of Water, so as not only to make it mount in Water, but also in Air ; whence arise the Phænomena of *Vapour* and *Smoak* : Tho the Air inclosed in the Interstices of the Water, must be allow'd a good share in this Appearance : for that, Air being dilated, and its Spring strengthened by the Action of the Fire, breaks its Prison, and ascends thro the Water into the Air ; carrying with it some of the contiguous Spherules of Water, so many as shall hang in its *Villi*, or as can adhere immediately to it. The Particles of Air in the several Interstices of the fluid Mass thus expanded, and moving upwards, will meet and coalesce in their Passage ; by which means great Quantities of the Water will be heav'd up, and let fall again alternately ; as the Air rises up, and again passes from the Water : For the Air, after Coalition, tho it may buoy up a great heap of Water, by its Elasticity while in the Water, yet can't carry it up together with itself into the Atmosphere ; since when once got free from the upper Surface of the Water in the Vessel, it will unbend itself in the Atmosphere, and so its Spring and Force become just equal to that of the common unheated Air. Add to this, that were the Spring and Motion of the Air sufficient to carry up the Water with it, yet it would not have that Effect ; but the Water would run off at the Extremities of the Air ; all, except so much as should be either entangled in its *Villi*, or immediately adhere to its Surface by Attraction : And hence we see the Reason of the principal Phænomenon of *Boiling*, *viz.* The fluctuating of the Surface of the Water. See *EBULLITION*, and *EFFERVESCENCE*.

Water, only lukewarm, *boils* very vehemently in the Recipient of an Air-Pump, when the Air is exhausted : The Reason is obvious ; for the Pressure of the Atmosphere being taken off from its Surface, the Air included in the Interstices of the Water, dilated by a feeble Heat, has Spring enough to heave up the Water, and disengage itself.—When the Water ceases *boiling*, it is again excited thereto by pouring cold Water upon the Recipient ; and when it *boils* the most vehemently, ceases by pouring on hot Water : The Reason whereof is scarce guess'd at. See *HEAT, FIRE, &c.*

**BOLE**, in Medicine, is us'd, in the general, for several Kinds of Earths that enter *Galenic* Preparations, and are used by Painters and other Artists. See *EARTHS*.

**BOLE-ARMONIA**C, or *Ammoniac*, is a kind of Earth, of considerable Medicinal Virtue, brought from *Armenia*. The Physicians sometimes call it *Rubrica Synopica*, from the City of *Synope*, where it is suppos'd to be found. 'Tis of a pale red Colour, and partakes much of the Nature of Stone ; but soft, fat, friable, easily pulveriz'd, and sticks to the Tongue. 'Tis esteem'd Desiccative and Stiptic ; in which Quality 'tis us'd in several Diseases, both internal and external. This *Bole* is easily falsify'd ; and the Merchants frequently sell *Lemnian-Earth* in lieu thereof. *Matthiolus* says, 'tis found in Gold, Silver, and Copper Mines. See *AMMONIAC*.

**BOLE of the Levant**, is a Medicinal Earth brought from the *Levant* ; nearly of the same Nature, and having the same Uses with the *Bole-Armoniac*. *Pomet* says, there is no such thing among us, as either true *Bole-Armoniac*, or *Bole of the Levant* ; and that all the *Boles* now in use, are brought either from the Provinces of *France*, or the neighbouring Countries. But this does not seem sufficiently warrantable ; and the New *Tarifs*, or Duties on Goods imported into *France*, which mention 'em both, make it credible that there are of either kind imported into that Kingdom. Indeed, it appears, that 'tis the *Levant Bole* which passes among us for the *Armoniac* : It enters several Compositions, particularly *Diascodium*, to give it the Colour, &c.

**BOLLANDISTS**, a modern Term, now become of some Consequence in the Republick of Letters. The *Bollandists*, are certain *Jesuits of Antwerp*, who have been a considerable Time, and continue still employ'd in collecting the Lives of the Saints. As we find frequent Occasion to quote that learned Body in this Work, and are indebted to 'em for several excellent Observations that occur therein ; the Reader will not be displeas'd to find the Occasion of their Name.

In the beginning of the XVIIth Century, *F. Heribert Rosweide*, a *Jesuit of Antwerp*, laid a Design of collecting the Lives of the *Saints*, as wrote by the Original Authors, with Notes, like those added to his Lives of the *Fathers*, to clear obscure Passages, and distinguish the Genuine from the Spurious : He died in 1629, e'er the Work was begun. The Year following, *J. Bollandus*, a *Jesuit of the same*

House, took up the Design ; and whereas *Rosweide* only propos'd to collect the Lives already compos'd, *Bollandus* undertook, where there was no Life of a Saint extant, to compose new ones from the Authors who had mention'd 'em. In 1635, he took in *G. Henschenius* a Partner with him ; and in 1641, publish'd the *Saints of the Month of January*, in two large Volumes, Folio. In 1650, *F. Papebroch* became an Associate ; and, *Henschenius* dying, *F. Baert*, *Janning*, *Sollier*, and *Raye* were call'd in, who are still alive, and continue the Work : whereof, in 80 Years, there have appear'd 24 Volumes, for the first six Months of the *Roman Calendar*.

**BOLT-HEAD**, the same as *Matras* ; a Vessel used by the *Chymists*, see *MATRAS*.

**BOLTING**, a Method of Pleading, or Arguing, in use in the Inns of Court ; inferior to *Mooting*. The Case is argued first by three *Students*, then by two *Barristers* ; a *Senior* sitting Judge. The Word came from the *Saxon Bolt, an House*, because done privately within Doors for Instruction. See *BENCHER*, and *MOOTING*.

**BOLTS of Iron**, in Building, are distinguish'd into three Kinds, *Plate*, *Round*, and *Spring-Bolts*.

**BOLTS**, or Iron Pins in a Ship are of several sorts : As, *Ring-Bolts*, serving for the bringing to of the Planks, &c. *Drive-Bolts*, used to drive out others ; *Set-Bolts*, employ'd for forcing the Planks and other Works, and bringing them close to one another ; *Rag-Bolts*, on each side full of Jags or Barbs, to keep them from flying out of their Holes ; *Clench-Bolts*, for the same end clenched, or fasten'd at the Ends where they come thro ; *Fore-Bolts*, made like Locks with an Eye at each end, whereinto a Forelock of Iron is driven to prevent starting out ; *Fender-Bolts*, made with long and thick Heads, struck into the uttermost Bends or Wales of a Ship, to save her Sides from Bruises and Hurts.

**BOLUS** or **BOLE**, in Medicine, an extemporaneous Form of a Medicine, of a soft Consistence, somewhat exceeding that of an Electuary, and of the Quantity of one Dose ; contrived principally for the sake of such as have an Aversion to potable Medicines ; as also for the better Conveyance of certain Preparations of *Mercury*, *Antimony*, &c. which by their Weight would sink to the bottom of the Glass, were they mix'd with Fluids. There are *Bolus's* of various kinds, made with Electuaries, Confections, Conserves, Pulpes, Pouders, Salts, Oils, Essences, Extracts, Syrups, &c. some of which Ingredients must always have Solidity or Driness enough, to give a Consistence to those that are Liquid.

**BOMB**, a large *Granada*, or hollow Iron Ball, or Shell fill'd with Gunpowder, and furnish'd with a *Fusée*, or wooden Tube full of a Combustible Matter ; to be thrown out from a Mortar. See *MORTAR*.

The Method of preparing a *Bomb* is as follows : A hollow Iron Globe A B, (Tab. *Pyrotechnia*, Fig. 1.) is cast pretty thick, having a round Aperture A, by which it may be fill'd and lighted ; and circular Handles C D, for the commodious putting it into the Mortar. To prove whether it be staunch, after heating it red-hot on the Coals, it is expos'd to the Air, so as it may cool gently : for since Fire dilates Iron, if there be any hidden Chinks or Perforations, they will thus be open'd and enlarg'd ; and the rather, because of the Spring of the included Air continually acting from within. This done, the Cavity of the Globe is fill'd with hot Water, and the Aperture well stopp'd ; and the outer Surface wash'd with cold Water and Soap : So that if there be the smallest Leak, the Air, rarefy'd by the Heat, will now perspire, and form Bubbles on the Surface. If no Defect be thus found in the Globe, its Cavity is fill'd with whole Gunpowder ; a little Space, or Liberty is left, that when a wooden Tube A E, of the Figure of a truncated Cone, is driven thro the Aperture, and fasten'd with a Cement made of Quick Lime, Ashes, Brickduft, and Steel-filings work'd together in a glutinous Water ; or, of four Parts of Pitch, two of Colophony, one of Turpentine, and one of Wax ; the Powder mayn't be bruise'd. This Tube is fill'd with a Combustible Matter, made of two Ounces of Nitre, one of Sulphur, and three of Gunpowder-duft, well ramm'd. This *Fusée* set on fire, burns slowly till it reach the Gunpowder, which goes off at once, bursting the Shell to pieces with incredible Violence : Whence the use of *Bombs* in besieging Towns. Special Care, however, must be taken, that the *Fusée* be so proportion'd, as that the Gunpowder don't take Fire e'er the Shell arrives at the destin'd Place ; to prevent which, the *Fusée* is frequently wound round with a wet clammy Thread.

*Bombs* being made of different Magnitudes, it may be proper to exhibit some of their Dimensions ; as in the following Table.

Diam. of Bomb.	Thickness of Bomb.	Diam. of Apert.	Quant. of Gunpoud.	Weight of Bomb.
17, In. 10	2 In. 2, 10	,20	48 lb.	490 lb.
11, 8	1, 18	,16	15	130
8	0, 10	,12	4	40

Others