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THE
Compleat Chymist,
OR, A
NEW TREATISE
OF
Chymistry.

Teaching

By a short and easy method all its
most necessary Preparations.

Written in *French* by *Christopher Glaser*, Apothecary in Ordinary to the *French King*, and the *Duke of Orleans*. And from the fourth Edition Revised and Augmented by the Author. Now faithfully *Englished* by a *Fellow* of the *Royal Society*.

Illustrated with Copper Plates.

LONDON,
Printed for *John Starkey* at the Miter in
Fleet-street, near *Temple-Bar*. 1677.



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The Authors Preface.

Authors who have treated of Chymistry have had very different discoveries and Apprehensions, and thence it is that they have disagreed very much in their Writings. Those who have applied themselves unto the high Chymistry, and have penetrated into its greatest mysteries, have contented themselves with the knowledg thereof; and though it may seem that they Wrote with an intent to be understood, yet they have penned things so obscurely, that they gave us no grounds to question whether they uttered realities, or have given us Fantoms for Bodies, and Thorns for Fruits: Others who have not soared so high, have notwithstanding had some good skill therein, and have themselves discovered some preparations, which have made them considerable to Posterity; but some of these have sought their own satisfaction also, and taken pleasure to perplex mens minds, and to cast them into Labyrinths, without giving them any means of retreating thence.

Others much less capable, have yet attained some small light, but not knowing all, nor having wrought themselves what they write, and desiring for all that, to pass for sufficient Artists in a Profession they had learnt by halves only, they made their Imaginations pass for certain Truths, whose falshood and imperfection the Practise hath frequently discovered.

Finally. Others, which deserve not the name of Chymists, but rather of ignorant Blowfires, working by copied or stolen Receipts, which they commonly take in some contrary sense, and having consumed their own, or others money in a ridiculous Labour, have made many others accompany them in their fortunes, engaging the vulgar by promises of enriching them in certain practises, whereby they have reduced the best Metal into Smoak, unless perhaps they pass some part of it through their own hand, which is not the least of their Operations. Hence it is that I wonder not, that many have

The Authors Preface.

declamed against such Authors, and against Chymistry, it self; having not understood truly the good things which it contains. As for my self, who profess to say nothing but what I know, and to write nothing but what I have done, I purpose only in this little Treatise, to publish a short and easy method for the happy attainment of all the most necessary preparations of Chymistry. Those who take the pains to read and well consider it, shall observe therein nothing tedious, superfluous, or defective in any point which ought to be known: and though indeed the Preparations of all things cannot be found therein, yet sufficient examples thereof will be had from it. And though it was very difficult to comprise in this little Tract, all the discoveries which I have made in this Profession, yet I have not concealed any manual Operation, and have sincerely discovered all the circumstances necessary to make a good Artist, and by practice to attain the greatest knowledg thereof. I set down no Preparation but what I have made and well experienced, and what any one following the Rules I have prescribed, may do after me. I speak very succinctly of the Theory, but I say so much therein as is necessary for direction to the preparations, and you may find in a few words the substance of many great Books.

I confine my self to Operation on Minerals, Vegetables, and Animals, and proceed therein orderly, and forget nothing that is necessary. I am perswaded that the experience of all that which I have advanced, will manifest my communicative freeness unto all, and that they will be well pleased with the care that I have taken therein. Unto which I have thought my self so much the more obliged by the choice which Monsieur Vallor, his Majesties chief and most worthy Physician, hath made of me, to make the publick Chymical Lectures and Preparations in the Royal Garden. For this cause I have desired to manifest as well by writing as work, that I have no other design than to acknowledg the honour he hath done me, by giving satisfaction to the publick, according to his inclination, by all ways which are possible for me.

Christopher Glazer.

The *French* Printer to the

READER.

THE favourable reception which this Book met with from the Publick in its former Editions has made me undertake this fourth, in which I have endeavoured to pursue as much as possible the Author's design; who the first time he published it, was moved so to do, only by the desire of being useful to those who delight in *Chymistry*; by discovering to them many hidden Mysteries which he made plain and open by the easiness of his Method. The second Edition was not only enriched by some Cuts, and encreased by some new Experiments, but it was likewise adorned with an *Epistle Dedicatory* to Monsieur *Vallot*, his most Christian Majesties first Physician, a person to whom *Chymistry* was not a little beholding, if it were but for having chosen our Author to teach it in the Royal Physick Garden at *Paris*, where he con-

The French Printer to the Reader.

stantly performed publick Lectures of it. The method he follows is clear and easily practicable; comprehending in few words the substance of great Volumes. Whosoever reads it attentively, may observe that there are no superfluous Cantings, nor any thing omitted of what is necessary to be known, and though one does not find here the preparation of all things in particular; yet there are Examples of every thing by which one may prepare others of the like kind, this one way be sure of, that he does not communicate any one Operation but he has first put it in practice; and so as by following exactly his Rules, any body may perform it after him: For far from concealing any slight of hand, or other mystery, he does what he can to discover all those means by which a good Artist is made, and all circumstances of Operations which may give light to ingenuous persons of attaining a greater skill. He speaks but sparingly of the Theory of this Art, and yet he delivers so much of it as is necessary to know in the Operations upon *Minerals, Vegetables, and Animals.*



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THE
 Compleat Chymist;
 OR,
 A TREATISE
 OF
 CHYMISTRY.

The FIRST BOOK.

CHAP. I.

*Of the different names, and
 definition of the Art of
 Chymistry.*

MY Design in this Treatise is to instruct the Publick in all the particulars of the Art of Chymistry, as well in its Practice as in its Theory; and that by the shortest and most intelligible method of any that has been yet seen

and we will begin by the different names which have been given it, as well by the Ancients, as by modern Writers.

The Etymology, or derivation of the word *Chymistry*, comes from the *Greek* Verb χέειν, which signifies to melt; or if you please, you may derive it from χυμός, which is a juice, because it does as it were draw the interior juice of all bodies: it is called likewise the *Spagyrick Art*, from two *Greek* words, σπέν, which signifies, to separate; and ἀγείρειν, which is, to congregate, or unite; which are the two Operations about which it is most particularly employed. Some call it *Pyrotechnia*, from πῦρ, Fire, and τέχνη, an Art, being an Art whose Operations are most performed by Fire: Finally, some others name it the *Hermetick Art*, because of *Hermes* a great Philosopher, who was the most Ancient and Famous Professor of this Art. The particle *al* is added to it, and it is called *Alchymia*, in imitation of the *Arabs*, who use it in the beginning of words, to express the excellency or supereminency of a thing; but for us, leaving all its other names, we shall stick to that of *Chymistry*, as being now the most in use; and though Authors have bestowed many definitions upon it, yet those have best known its nature who have defin'd it. A *Scientifick Art*, by which one learns to dissolve bodies, and draw from them the different substances of their composition, and how to unite them again, and exalt them to an higher perfection.

CHAP. II.

Of the Usefulness of Chymistry.

THEY that have any true knowledg of this Noble Art, are without doubt fully perswaded of the usefulness of it; for it is the key which alone can unlock to all Naturalists the door of Nature's secrets; by reducing things to their first principles; by giving of them new forms; and by imitating Nature in all its productions and Physical alterations. Without it Physitians would be at a stand how to penetrate into the many Fermentations, Effervescencies, Distillations, and other Operations, which are performed in the body of man, and are the immediate cause of many grievous Distempers; to which Art the same Physitians must be beholding for the Remedy as well as the Knowledg of the Disease; for we must own that Chymistry does furnish us with the more effectual Medicines for the more inveterate and obstinate Affections, and often supply the failings and deficiencies of those of the vulgar *Pharmacy*. Chirurgeons likewise cannot be without Chymistry, nor can with good success undertake the Cure of all Diseases pertaining to their Art without Chymical Remedies,

dies; and knowledg of their Operations: And it is impossible that *Apothecaries* should make their compositions like true Artists, if they know not how to preserve the principal vertue of their Ingredients, and separate the pure from the impure, and heterogeneous in natural commixtures, as unprofitable to their intention, which is not learned without the aid of this noble and excellent Art. Finally, most of the ingenious mechanick Arts are beholding to this: Painters have from it their most lively and glorious Colours: Engravers cannot work without the assistance of those corrosive Spirits prepared by Chymistry: Diers cannot exalt their Colours without the instruction of Chymists: One might alledg an infinity of other such Examples, which might prove the necessity of this Art; but we omit them for brevity sake.

CHAP. III.

Of the Subject-matter of Chymistry, and its Functions.

THIS Art is of a very great extent, since it embraces for its Subject the bodies of the three Families, Animal, Vegetable, and Mineral; which by fire it reduces into different sub-

substances, which the Philosophers call *First Principles*, and do constitute five of them, of which three are Active, and two Passive. The Active are, the Spirit which is called *Mercury*, the Oil which is called *Sulphur*, and the *Salt*, which has no other name. The Passive Principles are the *Water* or *Flegm*, and the *Earth* or *Terrestrial part*: These names are bestowed upon them for the likeness they have to common *Mercury*, *Sulphur* and *Salt*, and the Elementary water and earth: the *Mercury* appears to us in the resolution of bodies, in form of a most aerial subtil liquor; the *Sulphur* is apparent to our smell and tast, by which we distinguish it from the insipid and inodorous *Flegm*, which sometimes ascends with it; and it appears to us in the form of a penetrating inflammable Oil; the *Salt* remains joyn'd to the body of the earth till it be extracted by elevation. Now while these Principles remain in the body of the mixt, those that are Active are confounded with the Passive, so that their vertue is hidden, and as it were, buried; but Chymistry coming to separate them, purifies each by it self, then unites them again, to make of them bodies much purer, and more Active than they were before. We will now treat of each of these Principles in particular.

CHAP. IV.

Of the three Active Principles, Mercury, Sulphur, and Salt.

TO begin with *Mercury*, or the Spirit, which, as the most excellent of the three, does in the resolving of bodies, first present it self to our senses; we shall say that it is a subtil, light, and penetrating substance, which gives life and motion to bodies, makes them grow and vegetate; and because it is a continual action and motion, it would not long stay in any body, if it were not retained by the other Principles more fix and stable than it self: And from hence it follows, that those Mixts in which this substance predominates, are not very durable; as we may observe in Animals and Vegetables, which perish much sooner than Minerals and Metals, which are almost destitute of this Principle.

Sulphur is the second Active Principle, but much inferior to the Spirit; its substance is oleaginous, subtil, penetrating, and inflamable; it is easily reduced into a pure Principle as well as the others. When it contains some spiritu-ous and aery Particles, it swims upon the water, as the *Aromatick* subtil Oils of Rosemary,

mary, Sage, Turpentine, and others; and if it contain some part of Salt and Earth, then it is a thick and heavy Oil, which sometimes swims in the middle of the Flegm, sometimes goes to the bottom; as we observe in the Oils of *Gums, Bitumens, and Gross Woods, &c.* which are distilled with violent fire: 'Tis this Principle which is said to cause Beauty or Deformity in Animals, of the different smells and colours in Vegetables, and of the ductibility and malleability of Metals. It binds together all the other Principles, which without him would fall a-sunder, by reason of their little correspondence and contrarieties; it preserves bodies from corruption, sweetens the *acrimony* of Salts and Spirits; and being of a fiery nature, it preserves those Vegetables where it abounds, from the rigour of cold and frosts, and other injuries of the weather; as we may observe in *Cyprus* and *Fir-trees*, and others that are green all Winter.

The third Active Principle is *Salt*, which appears to us after that the volatile parts are evaporated and exhal'd, because it remaineth its self fix'd with the earth, from which it is separated by dissolution and evaporation; then it offers its self to our view in the form of a brittle substance easily pulveriz'd; and that demonstrates its driness, which appears likewise by its desire of moisture, which it attracts from the Air so powerfully, that in a small time it becomes fluid. The way of purifying the *Salt* is by fire, and it is incombustible: its office in

the Mixt is to retain the Spirit, and preserve the *Sulphur* from combustion, and is as it were their common Basis or Foundation; it is the cause of the different tastes of things, and renders those bodies where it abounds, so durable, that they are almost incorruptible: As for Example; the Oke, which has in it much Salt, and little Oil, is of a lasting subsistence, and so are many other Mixts of the same nature.

CHAP. V.

Of the Passive Principles; the Flegm and Earth.

WE must now speak of the Passive Principles, of which the *Water* or *Flegm* is the first; and though it seem to be of little or no use in bodies, nay, and is hurtful, being the substances where it abounds, are easily corrupted; nevertheless it has its utility. 'Tis by it that the Salt is dissolved and incorporated with the Spirit and *Sulphur*, in which union the Salt would hinder, by its binding too much, their action and vegetative motion, if it were not allaid by the water, which likewise corrects the *acrimony* of the Salt and Spirit, and hinders the inflammability of the Oil.

The *Earth* is the last of all our Principles; and though it be esteemed of little benefit in natural mixture, it is not unnecessary, since it retains the Salt, and the other Active Principles, which would else be easily dissolved, and carried away by the water. When it is entirely destitute of all the other Principles, it is called *Terra damnata*, or *damned Earth*: The use of it in Chymistry, is, only to hinder the Salts from being too easily melted down; and so we forbear to treat any further of it.

CHAP. VI.

Of all those different Operations which are used in the opening and reducing of mixt bodies to their first Principles.

THE mixt bodies of the three Families of *Vegetable*, *Animal*, and *Mineral*, are in infinite numbers, and do differ much in hardness, solidity, weight, softness, porosity and lightness; and this has obliged Artists to seek out all ways to attain their ends, and by consequent to use great variety of necessary Operations, upon which they have bestowed as great a diversity of terms of Art, whereof some carry their signification with them, and others are
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to be explained to young Chymists, which we shall do by an Alphabetical order.

To *Alkoolize*, is to reduce solid substances into a very fine impalpable powder; and it is likewise to purify and refine all Spirits and Effences of their Flegm, and other impurities; whence the Spirit of Wine well rectified, is called the *Alkool* of Wine.

To *Amalgame*, is to calcine any Metal by the means of ordinary *Mercury* or *Quicksilver*; and this Operation serves to reduce the most perfect Metals into very small particles; for when they are incorporated together, the Artists by a gentle fire causes the *Mercury* to exhale, and leave the Metal reduc'd into Powder in the bottom of the Crucible; and so prepares it to be more easily dissolved by any other *Menstruum*: this Operation is much used by *Goldsmiths* and *Guilders*, who by this means make Gold fluid, and easily extended upon those things they intend to guild. Observe that Iron and Copper cannot be *Amalgam'd* by *Mercury*; these two Metals being very impure and terrestrious, and of little sympathy with *Mercury*, who is of a subtil refin'd substance.

To *Calcine*, is to reduce into a *Calx* or Powder, either by Actual, or by Potential fire, Actual fire is that elementary fire which we keep and entertain by combustible substances, as Wood, Coals, &c. Potential fire is the fire of *Aqua-fortis*, and other corrosive Spirits; Calcination belongs more to Minerals, than Vegetables

getables and Animals, which may be cinderiz'd by ordinary burning ; but Minerals and Metals require most active and violent fires.

Cimentation is to purifie and examine Gold, which one reduces into thin Plates, and puts into a Crucible with a royal Ciment, which consumes and reduces to dross or cinders all the other Metals that are mingled with Gold.

Liquors are circulated in vessels for that purpose, and upon a convenient fire, sometimes in order to the fixing of the volatile Spirits, sometimes to volatilize the fix'd Salts ; 'tis one of the most important Operations of Chymistry.

To *Coagulate*, is to make those things hard and solid which before were soft and liquid ; which is done by depriving them of their moisture, or consuming it ; as in the evaporation of those liquors which contain some Salt in them ; or in mingling corrosive Spirits with fixed Salts : as for example, the water of Flint, or Crystal mingled with *Aqua-fortis*, is coagulated into an hard mass, though both these were liquid before.

Cobobation, is distilling the same thing very often, by putting the distilled liquor upon the matter which remains in the bottom of the Still, and so drawing it off : it is done either to open better the substances, and volatilize them ; or to fix the Spirits ; and accordiug to the quality of the matter, and the Artift's intention, this Operation is more or less reiterated.

To

To *Congele*, is to suffer those Bodies to grow hard by cold, which fire before had melted and liquefied: This Operation is practised upon Metals, Minerals and Salts, which are purified by the violence of a melting fire, and when they are exposed to the air, grow hard. The same is observed in the fat of Animals, and in the gums, rozins, and balms of Vegetables, which being melted by the fire, and their grosser parts thereby separated, are again congealed, by being exposed to the cold air.

To *Corporize* is to incorporate Spirits, which is often practised in *Acids*, which are mingled with fix'd Salts, or with dry Earths: As for example, when one puts the Spirit of *Nitre* or of *Aqua-fortis* with the fix'd Salt of *Tartar*, the last retains the first so strongly, that of them both one may make a good sort of *Saltpeter*; and likewise when one puts very strong Vinegar, or some other acid Spirit upon Coral or Pearls, they presently retain all the acidity which the liquor contained, and it is fix'd with them.

To *Crystallize*, is to reduce into Crystals, *Nitre*, *Salts*, *Vitriols*, and others, which were first dissolved, filtred, depurated, and evaporated, till a skin appeared upon the liquor; then they are exposed to the cold air, where the Salts congeal by little and little, and by retaining some part of the water with which they had been dissolved, they appear diaphanous, and crystalline; which transparency they lose upon the least heat of the Sun, who depriving

priving them of their water, makes them opake again.

Detonnation, or *Fulminating*, is the driving out of a Mineral its impure and volatile *Sulphur*, and preserving its intern and fix'd *Sulphur*: this Operation is performed by the means of *Salt-peter*, in preparing *Antimony* and other such bodies.

To *Digest*, is to concoct things by a moderate heat; like that of our stomachs, which concocts raw things, ripens and sweetens sour and austere ones, separates the pure parts from the impure, and extracts the best and most juicy parts of each substance. This Chymical Digestion is ordinarily perform'd by some liquor or *menstruum* fit for the matter digestible; it differs from maceration only, because there is requir'd heat in one, which is not in the other.

To *Dissolve*, is to reduce hard and compact bodies, by means of some dissolvents, into a liquid form, as we see in the dissolving of Gold by *Aqua-regis*, and of Silver and others by *Aqua-fortis*.

To *Edulcorate* or *Sweeten*, is to take away by often lotions and reiterated effusions of some liquor, the impression made by Salts and Spirits in Chymical Preparations, as in Precipitated Magisteries and others.

To *Extinguish*, or *Quench*, is to dip or steep a substance made red-hot by fire, in some water; it is particularly practicable in Metals and Minerals; either to make them brittle, as in
the

the extinction of pibbles in water; or to imprint into them some vertue of those liquors in which they are extinguished, as in the extinction of *Tutie* in Rose or Fennel-water; or sometimes to communicate vertue to the water, as in the extinction of Steel.

To *Evaporate* and to *Exhale* differ from one another in this, that dry bodies are exhal'd, and moist ones evaporated; as for example, when we *Amalgam* any Metallick body, we exhale the *Mercury* by fire, and the Metal remains calcin'd in the bottom of the Crucible. But Evaporations are done, as when for example, we drive away the superfluous humidity of Salts and Extracts; purified by their dissolutions and filtrations, to reduce them into a consistence necessary for their preservation.

To *Extract*, is to separate in Animals and Vegetables the purest parts from the most gross, by fit *menstruums* that are proper for the extracting of those substances which the Artist desires: as for example, we extract the rozinous substance of *Galap* by Spirit of Wine, because that the rozin is the sulphureous part of the *Galap*; and that Spirit of Wine does likewise contain a subtil *Sulphur*, which easily unites with the other. So in all Extractions the Artist must have a regard to find out a *menstruum* fitted to the substances he desires to extract.

To *Ferment*, is to reduce the *volatile* and spirituous parts of Mixts from rest into motion; or, as the Philosophers say, *a potentia*

in actum, from power to act, by disengaging them from the clog of the more gross and terrestrial parts, as is seen in all fermented liquors, and particularly in Wine, which having been fermented, easily yields its spirit inflammable by the least heat of fire; whereas the Must quite contrary retains all the spirituous and subtil sulphureous parts; and being reduced into the consistence of Honey, which they call *Sape, Rob,* or *Quiddany*, without loss of any substance, save insipid water, or flegm; its active and volatile parts are so well fastned and retained by the fix'd Salts, that they seldom fly away but by the violence of fire, or the action of fermentation: it has much of the nature of digestion, except that digestion, I mean Chymical, is made by an external heat, and fermentation is by its own power and an effect of the intrinsick fire of Mixts.

To *Filtrate*, is to let any thing strain through another body; it is performed most conveniently thorow grey Cap-paper into a glass-tunnel.

To *Fix*, is to stay and retain some body which of its self is volatile, so as to make it resist the fire: this Operation is performed by the means of fix'd bodies. The experience may be made in *Sal-armoniack*, which, though extremely volatile, yet being mingled with quick-lime, is so fix'd, that the greatest part of it endures the violence of the fire, which alone it would not have done.

To *Fumigate*, is to make any Mixt receive as it hangs in the air, the vapours of one or many other Mixts; to calcine it, or to correct some of its ill qualities, or impregnate it with some good one; as for example, we hang plates of lead over *Mercury*, which we cause to exhale in a Crucible upon the fire, in order to the calcining of them. We cause the smoke or vapour of *Sulphur* to be received by *scammony* thread upon a sheet of paper, thereby to hinder its activity: we give likewise to well-wash'd moss the smoke of some spices, thereby to perfume it.

Fusion, vide *Melt*.

To *Granulate*, is to pour out some molten Metal into cold water, to make it congeal to small grains or pellets, to make it by that division more fit for dissolution.

To *Levigate*, is to bring a Mixt into an impalpable powder upon the Porphiry-stone, or Jaspur; and it is performed upon the most solid Mixts, particularly upon Minerals.

To *Liquify*, is proper to all fat and grease of Animals, as likewise to wax, and all gums, and rozins, which is done by an easy heat, and they recover their consistency in the cold.

To *Melt*, does belong only to Metals and Minerals, and is an Operation by which they are made running by the heat of fire; which we give strong or moderate, according to the nature of the Metal or Mineral we are about to melt.

To *Mortify*, is to destroy the exterior form
of

of the Mixt, which is done to *Mercury*; when you take away from him his fluidity and motion; the mixture of Salts and Spirits is likewise some mortification to them; for the one corrects the *acrimony* of the other.

To *Precipitate*, is to separate a dissolv'd Mixt from its *dissolvant*, and make it fall in powder to the bottom. It is performed by the means of the Salts, which being put upon the dissolution, destroy the force and power of the *dissolvant*; and force him to forsake his hold of the Mixt, which he had already dissolved: as may be observed in the precipitation of Coral and others.

To *Putrifie* Bodies, is to dissolve them by a natural corruption, where moisture predominates over dryness.

We rasp, saw, and file the more solid mixt Bodies, Vegetable, Animal, and Mineral, the better to open them, or to facilitate their dissolution or preparation: these Operations need no farther explication.

To *Rectify*, is to distill the Spirits of any thing over again, to make them more subtil, and heighten their vertues.

To *Reduce*, is to give to the *Calx* of Metals their metallick form again; and this is done by the power of fire, and the help of some reductive Salts, as *Nitre*, *Tartar*, *Borax*, and others.

To *Reverberate*, is to bring a Body into a *Calx*, by the means of a violent fire environing the matter on all sides. This Operation may be performed either in an open, or in a close
C fire;

fire; which is so called when there is a *capola*, or *domo*, round or flat roof or cover upon the Furnace. This same close fire of *Reverberation* is likewise in use, to drive up the Spirits and the Oils by a Retort; it is called a fire of *Reverberation*, because the heat of the fire doth reverberate, and from all sides reflect and act upon the matter, or the vessel containing it.

To *Revive*, is opposite to the term of mortifying; since by this Operation, *Mercury*, which has been reduced into *Sublimate*, *Cinnaber*, *Precipitate*, and other such *Foraces*, is brought into a *Quicksilver* again, as it shall be shewed in its due place.

To *Spiritualize*, is to reduce compact Bodies into thinner and more subtil ones, such as Spirits are, as is practised upon Salts, which by distillation may be entirely forc'd into Spirits, and the same Spirits shall not take body again without the addition of some substance fit to retain them.

Stratifying, is laying *stratum super stratum*, course upon course, and belongs to the Operation called *Cimentation*, where you lay a portion of a Powder or some other Corrosive matter in the bottom of a Crucible or Calcining Vessel, and upon that some portion of the matter which one intends to calcine; so again upon that a new lay of Powder, and over that a lay of Matter, so continuing till your Vessel be full, and finishing with a lay of Corrosive Powder, as one began.

To *Sublime*, is to force a dry Body to rise, and exhale, and stay in dry parts in the top of the Vessel, and this by the means of a well-govern'd fire. By this Operation some Bodies are perfectly sublim'd, as *Mercury* and *Brimstone*; others imperfectly, as *Antimony* in Flowers, *Benjamin*, and others.

To *Vitrify*, is to reduce Stones, Metals, Minerals, and others, into a transparent Mass, hard as Glass, by a most violent fire, as may be seen in the Vitrification of *Antimony*, *Lead*, and many others.

To *Wash*, is to take away the grosser impurities of some mixt Body with water: we wash Minerals also to separate, and cause to rise their thinner and finer parts, and to leave the more gross and earthy in the bottom; as for example, in the preparation of *Litharge*.

CHAP. VII.

Of the variety of Vessels which serve for Chymical Operations.

TO perform Chymical Operations, one must be very well provided with necessary Instruments and Vessels; for there being but few things that can be prepared in an open naked fire, one is obliged to put ones matter into

some convenient Vessel, which is to be placed with dexterity upon the fire, and that is to be governed differently, according to the Artift's skill and intention.

These Vessels are to be considered either according to their matter, or their form: their matter is to be of some pure, close substance, not easily penetrable, and which likewise may not communicate its qualities to the Medicine prepared; such as are particularly Potters-Earth and Stone, Brass and Tin may sometimes serve in distillations and preparations of Vegetables. But it is necessary to tin all Brass and Copper-Vessels, that they may not so easily communicate their *Vitriolick* quality hurtful to Medicaments.

The shape and form of Chymical Vessels is almost infinite, therefore we will speak only of those which are necessary in a Chymical Laboratory, leaving every man to his liberty to invent those which he judges proper to his design. First, Gourds or Bodies either of Glass or Earth, with their Heads or *Alambicks*, which are placed in the *Balneum Maria* either of Sand or Ashes, for all distillations *per ascensum*, by ascent; then we make use of the *Vesica*, or Brass Body or Gourd, with its Head or Refrigeratory tinn'd within, and fill'd on the top with cold water, which one must often change during the Distillation; likewise the other Brass *Vesica* or Body, with the *Moreshead*, and a Pipe passing through an Hoghead of water, is very useful in the distilling of such

Aromatick Oils of Vegetables as are heavy, such as are the Oils of *Cinnamon, Rose, Wood, Cloves,* and others of that nature, which fall down to the bottom of the water, and do ascend with difficulty in an high *Refrigeratory*.

To distill such herbs as not being *Aromatick*, have their vertue consisting in their kind; *Salt*, a *Cucurbite* Gourd or Body, large, low, and capacious, is best; it may be of Brass, but its *Lembick* or Head must be of Pewter; and this must be placed in the Sand Furnace represented here in the third Table.

Retorts are used in all Distillations that are made on the side, or sidelong, *per lacus*. Artists have invented this Vessel for such matters as in distilling do not easily send their vapours upwards.

As for that Operation which is called Distilling by descent, we have Earthen-Pots that enter into one another; the lowermost must be set in the ground up to the very mouth, and the upper must have in its neck a *partition* full of holes, to hinder the matter contained in it from falling into the lower: this way of Distilling does particularly sute with all sorts of gross Woods, they are to be chopt, and put into the uppermost Vessel, which is to be placed with its neck downwards upon the lowermost Vessel, which must have, as has been said, a partition full of little holes in its neck, & the mouth of it must go into that of the inferior; this done, they must be well luted, then light a gentle fire

about the Pot, which is above ground, and encrease it till it be red-hot; thus the fire acting upon the wood, liquifies those parts of it that may be liquified, and sends them through the holes of the *partition* into the lower Pot, which is that we call a Distillation *per descensum*; one must have some great *Recipients* like round Globes, capable of receiving a great abundance of Spirits, which some matters do yield with impetuosity, and then they must be very large.

Matrasses or *Bolts-heads* are likewise very good to digest and extract.

There is a sort of double *Bolts-heads*, when the neck of one *Matrass* or *Bolt-head* is inserted into the neck of the other: the lowermost containing the matter, and the uppermost receiving the Spirits, and sending them down again, that they may the better open and digest the substances they come from. This Vessel is used in our most excellent Operations, and for very subtil matters. There is another sort of double Vessel, which is a Glass *Cucurbite*, or Body covered with a blind head, that has no nose or spout; this is useful in circulating matters, that are not so subtil as those that are done in *Matrasses* or *Bolt-heads*: they must both be carefully luted in their joints, or where they unite *Twians* or *Pelicans*, are very necessary; they are two *Retorts*, or other distillatory Bodies and Heads, made all of one *pecke*, swimm'd in such manner, that their spouts or noses are reciprocally inserted into the Bodies
of

of each other, they are used for the fixing and incorporating of Spirits, and the volatilizing fixt Bodies by circulation.

We cannot be without the use of *Aludels*, and subliming-Pots made of different pieces placed and inserted upon into one another: the matter to be sublim'd, is contained in the *Aludel*, or lowermost Pot, of a different figure from the others, as may be seen in the Table here represented; the pots that are on the top, do enter into one another, but must be carefully luted in their joints, and bored through, to give way to the flowers that rise, except the uppermost, which must be covered, and is a sort of blind Head, and in which, after you have gently unluted the Vessels, you find a great part of the flowers sticking, as in the other, and the higher the Vessels are, the purer the Flowers; and those which rise to the top are always the best, and so downwards, diminish in purity.

You must have Crucibles, and earthen Pans, or Calcining-Pots, with covers to calcine, melt, cement, cupel, or cast, and perform such like Operations; as likewise of little earthen rounds or moulds fit to hold up, raise, and contain the Crucibles in the fire: your Laboratory must not be without an Iron-Vessel like a Cornet or Cone of Paper, into which you pour your *Regulus* of *Antimony* and other Minerals when they are melted; for in this Vessel the separation is made easily, the *Regulus* fastning to the bottom in a *Cone*, and the dregs or dross remain above, easily taken away. Besides, you

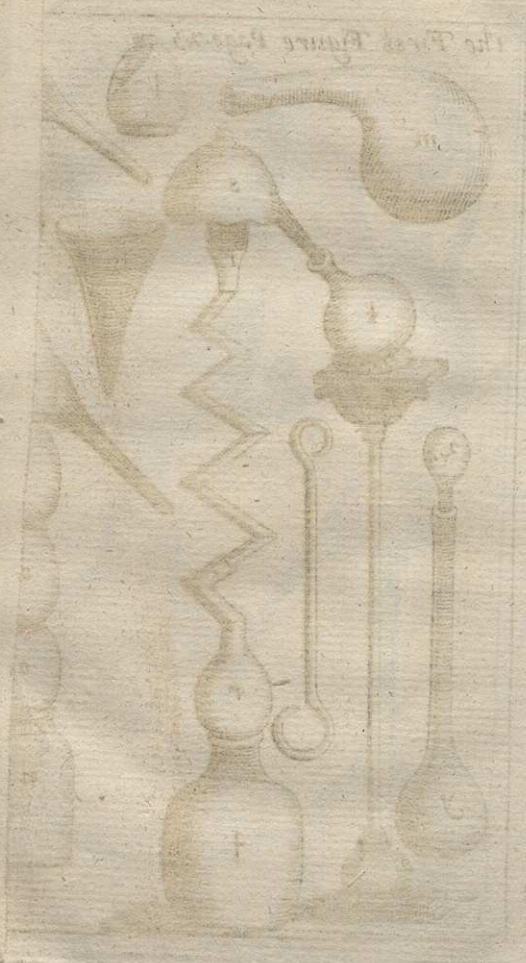
save a great many Crucibles; for if you did let your *Regulus* cool in your Crucible, you would be forced to break it, whereas now the same Crucible may serve a great many times.

You must be well provided of Dishes, earthen Pans, Basins, Pots, &c. to Evaporate, Chrystallize and Dissolve by a *Deliquium*, and many other operations, as likewise of Glass Tunnels and Bottles fitted to them, and to receive those Liquors which you intend to filtrate or pass through those Tunnels, and of an infinite of Glass Pots and Bottles, and Vessels of all bignesses and fashions to keep their Preparation. I shall not here specify an infinity of other Vessels and Instruments, as Brass, Iron, Marble, and Glass Mortars, Brass and earthen Vessels for *Balneum Mariae*, *Spatula's*, Pallets, Roundles of Iron, and Ladders to bear up Strainers, cutting Irons, Ladders, Pincers, and Tongs of Iron, great and small, without which a Laboratory is not compleat out. I think I have hear described the most necessary, which I now expose in a Table to your view; nor will I speak of innumerable other Vessels, which Artists do continually invent, for particular operations, which it is impossible to describe exact.

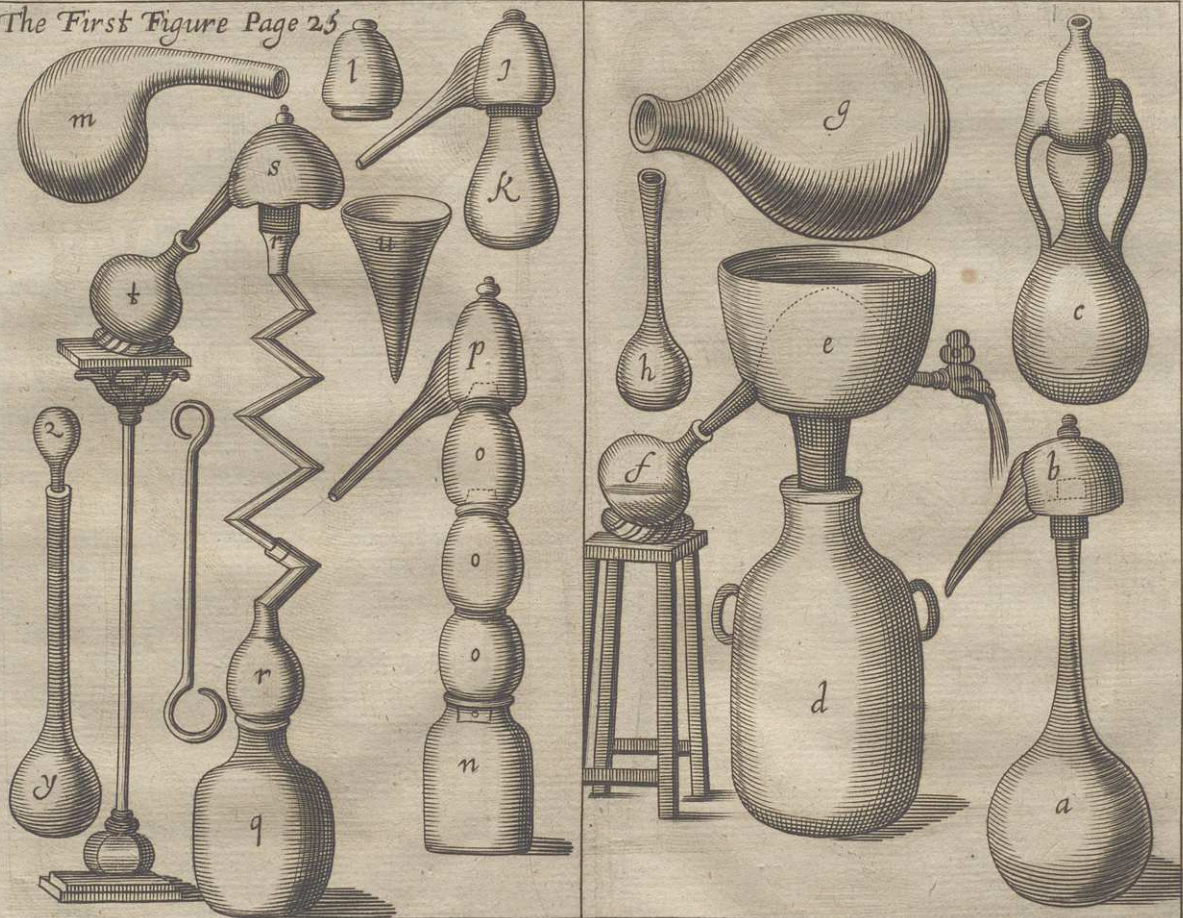
The Explication of the Figures of the Vessels.

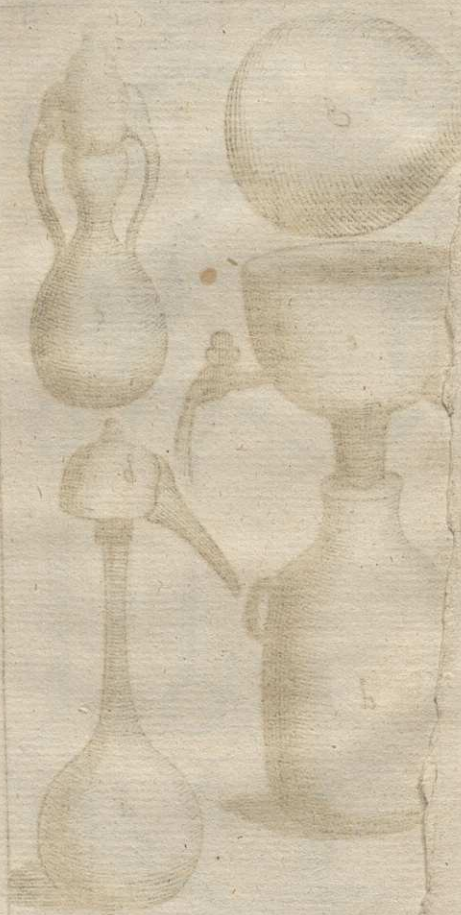
A. A great Bolt-head or *Matrass* serving to rectify Spirits, and sublime volatile Salts.

B. Its



The First Figure Page 25





B. Its Head or *Limbick* with a nose or spout; having a narrowed neck fit for its *Bolts-head Matrass* and well luted, to receive the volatile Spirits, Salts, which ascend.

C. A *Pelican* or Circulating Vessel, all of a piece.

D. The Body or *Brass Vesica* of the *Refrigeratory*, tinn'd within, containing the matter to be distilled.

E. The head of the *Refrigeratory*, likewise of *Brass* tinn'd within, to receive the Spirits that mount, and containing separately cold water to condense the rising Spirits.

F. A small *Recipient* to receive the Liquors that distill, set upon a stool with a round of Straw betwixt them, to hold and stay the bottom of the Receiver.

G. A great Globe *Recipient* to receive those Spirits that are driven out impetuously by a fire of Reverberation.

H. A small *Bolts-head* or *Matrass* for several uses.

I. An Head or *Limbick* of *Glass*, with its spout for distilling.

K. A *Cucurbite* Gourd or Body containing the substances to be distilled; it may be of *Glass*, *Earth*, *Pewter*, or *Brass* tinn'd within.

L. A blind Head without a spout.

M. A *Retort*.

N. The lowermost *Subliming-Pot*, called an *Aludel*, containing the matters to be sublimed into dry Flowers; having on one side a little Pipe, with its stopper, to put in materials at.

OOO.

OOO. Three Pots thorough bored, placed one upon another on the top of the *Aludel*, and well luted in their joynings.

P. An Head to cover the said Pots, luted in the jointure.

Q. A Brass *Vesica* or Body tinn'd within, containing Spirit of Wine to be rectified.

RRR. A Brass-head tinn'd within, to place upon the *Vesica* or Body, upon which is sauder'd a Pipe or Worm fit to carry the Spirits upwards; and having on its top a Tunnel likewise saudered, upon which one fits a Glass-head.

S. The *Glass-head* or *Limbeck* to receive the Spirits, and resolve them into Liquor by means of the cold air.

T. A *Recipient* for the Spirit that is distilled.

V. A Glass-tunnel.

XX. An Iron-Instrument to cut the necks of *Retorts* and *Receivers*, we call it a *Cutting-Iron*.

Y. Half of the double Vessel containing the materials.

Z. The other half of the said Vessel set above, to receive the vapours, and send them back again upon the same substances. They must be exactly luted in their joinings.

C H A P. VIII.

Of the Construction and variety of
FURNACES

AS *Chymists* cannot be without Vessels to contain their Matters, so neither is it possible for them to work thereon according to their purposes, unless those Vessels themselves be so placed by some ingenious contrivance that the Fire may be increased, abated, and governed as shall be needful. And to say truth, they have been but too ingenious in inventing these *Furnaces* having encreased many infinity of diverse proportions and figures, not considering the simplicity of Nature, even to confusion. This has made great Artists make use but of one *Furnace* for all their Operations, imitating in that Nature, which as much as it can is single, and delights in unity, not multiplying any Instrument without necessity. But nevertheless, because there may be occasion of making the same Operations upon the like matter at the same time, and likewise because that in building different *Furnaces* according to the different degrees of Fire, one may with more exactness

ness compass one's intention ; we have thought fit to deliver the way of raising different *Furnaces*, and amongst them the Construction of one which may serve in a need for all necessary uses.

And *First*, Before we speak of their form, or figure, we will deliver the Matter they are to be made of, as well those that are Portative, as the fix'd ones.

The fix'd ones must be built of Brick, and that Clay or Earth, with which Bakers make their Ovens, which must be well mingled and kneaded with a third part of Horse-dung.

The *Portative*, or movable *Furnaces* are to be made of Potters Earth, and Potshards beaten together to Powder, and well mixed with the Earth, thus are made Crucibles, and other Vessels, that must endure much Fire.

Every *Furnace* must be divided into four parts and sometimes into five. The *First* is, the Ash-hole, with it's door. The *Second* is the Grate. The *Third* is the Fire-hole, with its door. And the *Fourth* is the place that the Vessel is to be set in: In which space there ought to be four Holes or Registers, by the opening or shutting of which the fire is to be governed. The *Fifth*, when necessary is, the *Domo* or *Cupola* over the Vessel which stops up the Registers, and therefore in their room must have a Hole in the top to be opened and shut as the Registers were.

We shall now begin by describing that
Furnace,

Furnace, which the Artists have named *Piger Henricus*, or, *Slothful Harry*; so called because it requires not to be so exactly looked to, and watched as other *Furnaces* do. It is called likewise *Athanor*, which in *Arabian* signifies a *Furnace*; it is so called for its excellence, because it is very useful to perform many Operations at once, save Coals, and to refresh the Artist, because the heat which the Tower communicates to the neighbouring parts may be easily governed.

This *Furnace* has three parts. The *First*, is the Tower, which contains the Fire, and as much Coals as can be consumed by it in 24 hours. The *Second* is a *Furnace* for the *Balneum Maria*: and the *Third* a *Sand Furnace*: and if the place be big enough one should add a *Furnace* with Ashes. The first part, which is the Tower ought to be at least three Foot high and eight or nine Inches in its diameter, round within and very smooth, it must have it's Ash-hole with its door to take out the Ashes; it must likewise have a grate, and under it another door, by which one may make clean the Tower, in case it be foul: a collection of Stones, Earth, or other impurity happening amongst the Coals, which may stop the Grate and hinder the Fire. The Tower must have on each side a little above the Grate, a hole of about five Inches high, and four Inches wide, by which the heat of the Tower may be communicated to the *Balneum Maria Furnace*, and to the *Sand Furnace*;

Furnace; which may likewise have their Ash-holes, or Grates by themselves, that so by putting in Coals they may be heated, without heating the whole Tower; they must likewise have their Registers: one may likewise fix an earthen Pan upon the top of the Tower over the hole by which the Coals are put in, and lute it well, and so filling it with Sand or Ashes, one may place it a Vessel either for Distilling or Circulating.

There is another sort of *Furnace* for digestions in which one may likewise perform many other operations at the same time, and save Coals; its Figure is in the third Table, it is composed of three Parts or *Furnaces*, joyned to one another by stories. The First, which is that which contains the Fire, is made of an Ash-hole and its door, a Grate, and Fire-hole, of a space to contain Coals enough to maintain an equal Fire for twelve hours, and of a *Capsula*, or Vessel to contain Sand, in which are put the Glasses or other Vessels for the Operation; all the difference between this *Furnace* and others is, that instead of the four Registers, one at each corner, there is an overture or hole within, by which the heat is communicated to the second *Furnace* joyned to this, and from thence to the third. In the *First* one may Distil by Retorts; in the *Second* by *Cucurbites*, with their *Limbeck* heads; and the *Third* is for Digestions, Extractions, and other such Operations: and yet the expence is no greater than for one

Furnace

Furnace: for whereas the heat of the Fire in ordinary *Furnaces* is lost, through the Registers, here it is retained and communicated from *Furnace* to *Furnace*; they that have room enough may add a *Furnace* or two more, and by the same Fire make five or six sorts of degrees of heat.

There is required a *Furnace* by it self for the Brass *Vesica*, with its Refrigeratory, or Moors head to Distil and rectify in it Spirit of Wine, and the Spirits of other fermented Vegetables, as likewise to Distil Aromatick Oyls.

A *Furnace* of close Reverberatory is necessary for the Distilling of *Aqua Fortis*, *Spirit of Salt*, *Niter*, *Vitriol* and others: and the same *Furnace* may serve to Calcine and Reverberate Metals and Minerals, it ought to be composed of five parts. The First is the Ash-hole; the Second, the Grate; the Third the place where the Fire is put in; the Fourth, is, the space which contains the Retorts, or other Vessels, which rest upon two Iron bars; and Lastly, there is a Cover either round or square, which Reverberates the Fire. And there is is another flat Cover to be used when one is to Reverberate any thing with a flaming Fire of Wood.

Besides this *Furnace*, Artists have another *Furnace* of Reverberation, very fit for Calcinations and Reverberations of Metals and Minerals, which are to be reduced to *Crocus's* or Impalpable Powders by the force of the Fire.

Its

Its Figure is in the third Table, it is ordinarily made of three parts. The first is to contain the Wood; the second and third are for the things to be operated upon, which, when they are done by the flame of Wood, are spread upon thin Iron-plates, or upon Tiles; one may add the fourth, fifth, and sixth Story, the flame going Serpent-wise from one Story to another.

One must have a *Wind-Furnace* for melting of Minerals and Metals, and for *Vitrification*; the Ash-hole of this *Furnace* must be pretty high, and the Overture wide, that the wind may enter with ease.

This *Furnace* ought to be round within, it is made large or small, according to the quantity of matter you intend to melt: over the Grate there must be a door for the Charcoal to be put in. The Fire-hearth must be about a foot-high, and covered with a strong covering of good Crucible-Earth, consisting of two pieces, that so the one half may be taken off when a Crucible is to be placed in, or removed from the fire. This covering must be made in form of an half-Globe, having an hole in the top, in which may be thrust one, two, or three Pipes one upon another, for the better concentrating of the heat about the Crucible. This very *Furnace* may also serve for the Sublimation of *Antimony* and other Minerals, by taking away the Covering, and placing an Iron-Bar cross the fire-place, whereon to set the Vessel containing the matter to be sublim'd.

Now

Now for the ease of those who will not, or cannot have a great Laboratory, I will describe an *Universal Furnace*, serving for all Chymical Operations, and portable. This *Furnace* consists of one single piece, besides the Covering, and of very good crucible-Earth; after it is made and dry'd, it must be bak'd in some Potter's *Furnace*; by which means it will last a mans life. The height of the Ash-hole must be six Inches, with a door for drawing forth the Ashes, and giving Air to the Fire. The Iron Grate must be plac'd over it for the Fire to lye on. The inside of the *Furnace* must be narrow downwards in form of a Scuttle, to the end the Grate may rest on it; and wide upwards. The Fire-place must be nine Inches in height, to the place where two Iron Bars are to be set for supporting the Vessels. These Iron Bars must be movable for calcining or distilling any matter. The *Furnace* must be six or seven Inches high above them, and in that upper part a half-round notch must be made, for letting through the neck of a Retort, with a piece of the same earth fit to the said notch, and to be put to, or taken away upon occasion of distilling otherwise than by the Retort, or placing a *Balneum Mariae* or Sand there.

Lastly, This *Furnace* must have its cover in form of a *Cupclo*, with a large hole in the middle thereof for governing the Fire, by opening the same more or less, according as you see fit. The Diameter of this *Furnace*

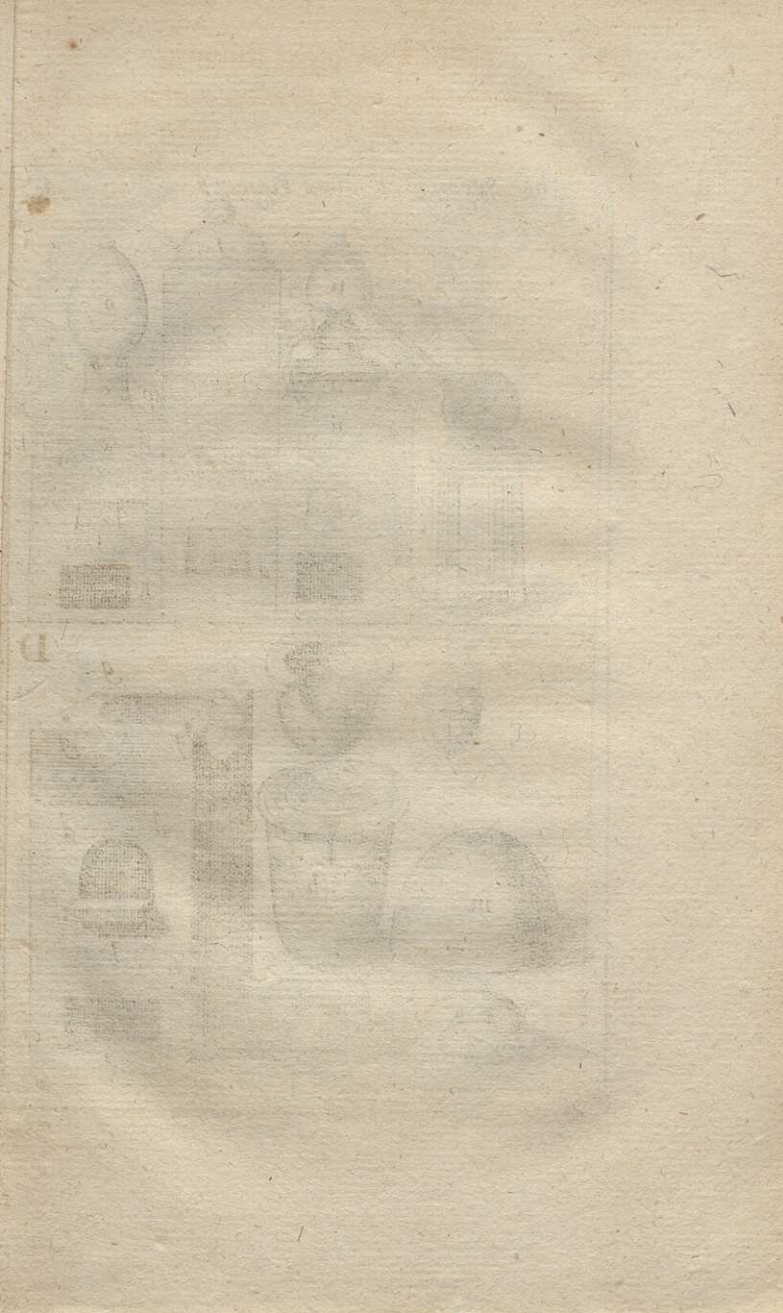
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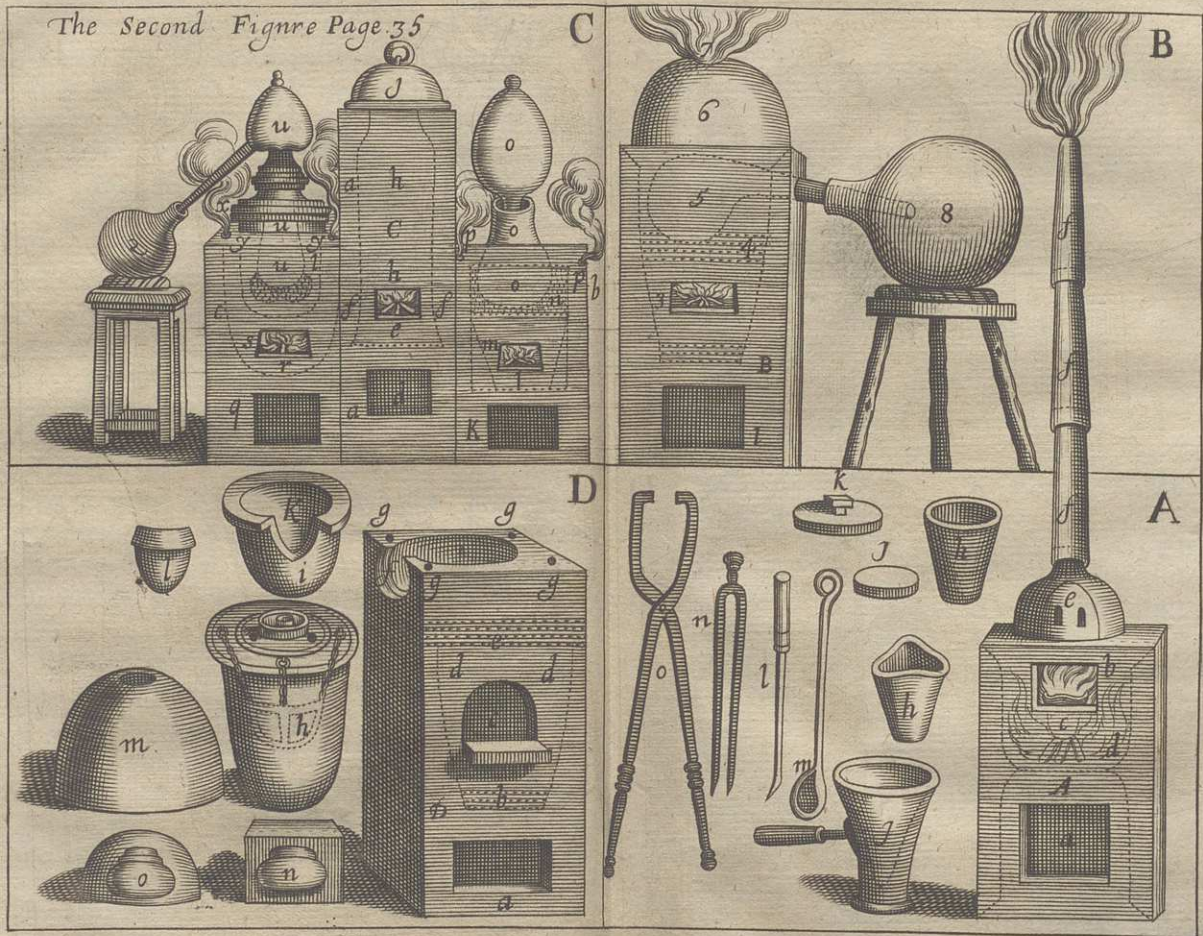
may be greater or lesser, according as the Artift is minded to work upon little or much matter. He must not forget to make four holes in the top of the *Furnace*, to serve for *Registers* in those Operations in which the round Head or *Cupolo* is not necessary; as also four Stopples wherewith to shut and open the said Registers, as well as two others to serve for the like use to the doors of the Fire-place and Ash-hole; which is to be observed in all sorts of *Furnaces*. When you are minded to distill *in Balneo*, you must get a round Kettle proportionable to the opening of the *Furnace*, and so likewise a *Vesica* of Copper of the same proportion, or what other Vessel you think good to employ for rectifying the burning Spirits of Vegetables. For distilling in Sand, you must have a good Earth of the like proportion, wherein to put the Sand. For Reverberation, place the Retort upon the Iron Bars, and cover it with the round Head or *Cupolo*.

When you would Calcine or melt, take away the Iron Bars, that you may let the Pot down upon a little round Plate, which is to be put upon the Grate.

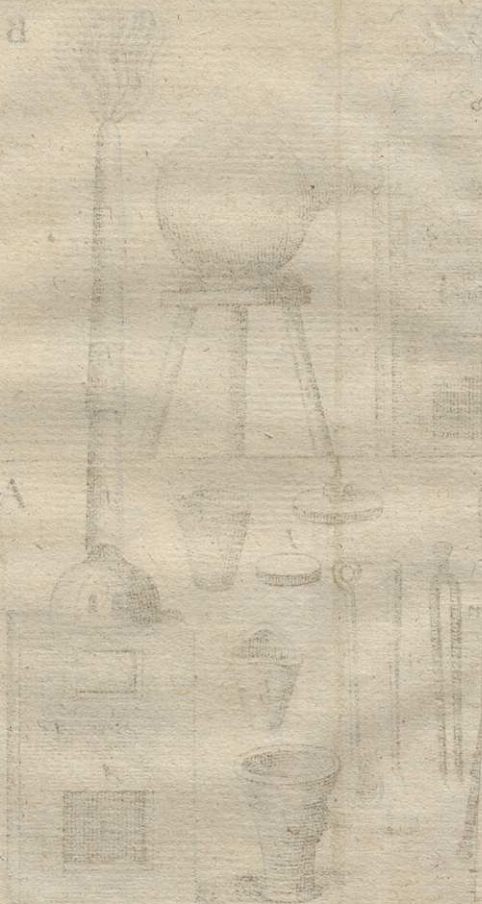
I omit here to speak of the *Lamp-Furnace*, because it is not useful in a course of Chymistry which allows not time for long preparations, as those of this *Furnace* are. The curious may find the same in other Authors, to whom I refer them.



The Second Figure Page 35



R



The Explication of the Figures of Furnaces in
the Second Table.

A. A Wind-Furnace for the melting of Minerals.

A. The Ashh-hole.

B. The Fire-place, serving also for the putting in and viewing of materials.

C. A Crucible, containing the materials to be melted.

D. The Grate.

E. The Cupolo, which covers the said Furnace, having a hole in the middle of the top.

F. Pipes, serving to repel and restrain the Fire.

G. An Iron Cone, for casting any *Regulus*.

H. A Crucible, round at the top.

H. A Crucible, triangular at the top.

I. A round Earthen Plate, capable to endure the Fire, to be plac'd under Crucibles in Furnaces.

K. A Copper for Crucibles.

L. A Fork, to cleanse the Furnaces, and to try if the Fusion be perfect in the Crucibles.

M. An Iron Spoon or Ladle.

N. Iron Tongs.

O. Great Iron Pincers, to put in, and take out the Crucibles.

B. A Reverberatory Furnace.

1. The Ash-hole.
2. The Grate.
3. The Door of the Fire-place.
4. The Fire-place.
5. The Retort.
6. The *Cupolo*, or Cover of the Furnace.
7. The Hole in the top of the *Cupolo*, for regulating the Fire.
8. The great *Recipient*.
9. The little Stool that supports the *Recipient*.

C. The Furnace Athanor, or Piger Henriens.

- AA.* The Tower which contains the Coal.
- B.* The Furnace for Sand.
- C.* The Furnace for *Balneum Maria*.
- D.* The Door of the Ash-hole of the Tower.
- E.* The Grate.
- FF.* The Fire-place.
- G.* The Door of the Fire-place.
- HH.* The top of the Tower wherein the Coal is.
- I.* The *Cupolo* of the Tower.
- K.* The Door of the Ash-hole for Sand.
- L.* The Grate.
- M.* The Door of the Fire-place.
- N.* The Sand.

OOO. The Gourd, containing the materials, having on the Top its blind *Atambiok*, which

which makes a sort of double Vessel.

PPPP. The four Holes or Registers, for regulating the Fire.

Q. The Ash-hole for the *Balneum Mariae*.

R. The Grate.

S. The Door of the Fire-place.

T. The Vessel of the *Balneum Mariae*.

VVV. The Gourd, containing the matter, with its *Alembick*.

X. A Copper Ring for the top of the Gourd.

YY. The Registers.

Z. The *Recipient*.

⊙. A Head-Ring, serving for a counterpoise to the Gourd, fasten'd to the neck-bottom thereof.

D. An universal *Furnace*.

A. The Door of the Ash-hole.

B. The Grate.

C. The Door of the Fire-place.

DD. The Fire-place.

E. Iron Bars to support the Vessels, and movable.

F. The Notch, for the Neck of the Retort.

GGGG. The Four Registers.

H. *Balneum Mariae*, containing the Vessels with Water for the materials.

I. An Earthen Vessel, resisting the Fire, for distilling in Sand.

D 3

K. The

K. The notch of the said Vessel to let out the neck of the *Retort*.

L. A piece of the same Earth, to open and close the said notch.

M. The *Cupolo* of the said *Furnace*.

N. A Stopper for the Ash-hole.

O. A Stopper for the Fire-place.

Explication of the Figures of Furnaces in the third Table.

A. A great *Furnace*, composed of three parts.

a. The first part, containing the Fire, and serving to Distill by *Retort*.

b. The second part, proper for Distillations by *Alembick*.

c. The third part, proper for *Digestions*.

d. The Ash-hole, with its door.

e. The Fire-place, with its door and grate.

ffff. The notches of the Pot or Pan, which contains Sand for resting the necks of *Retorts*.

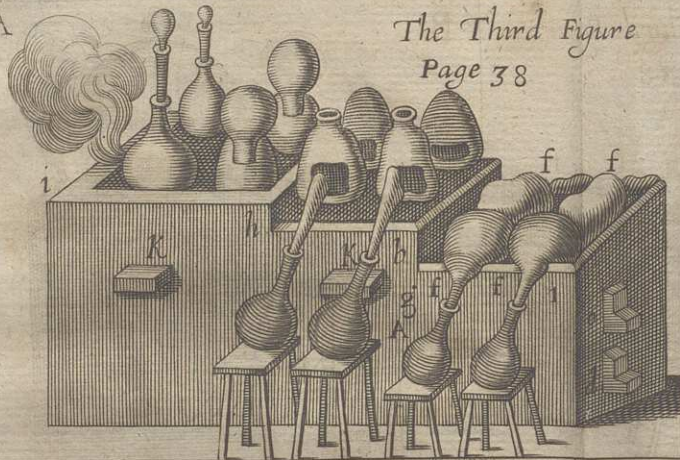
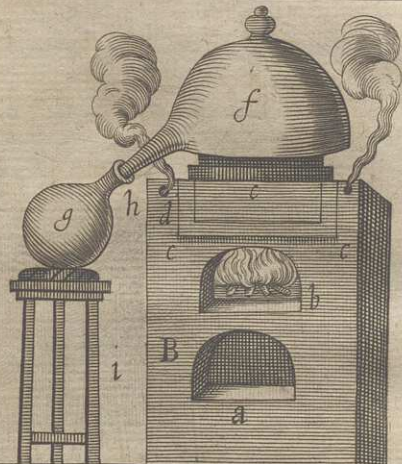
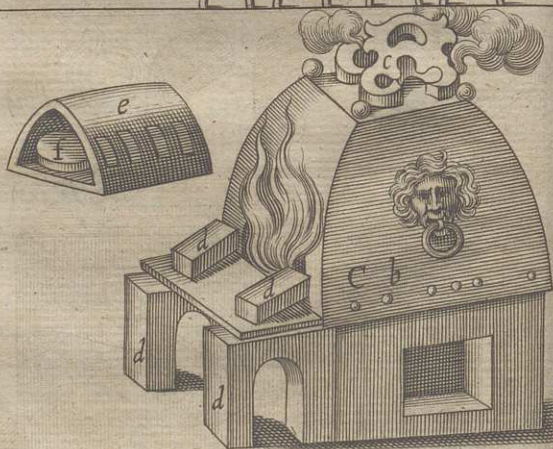
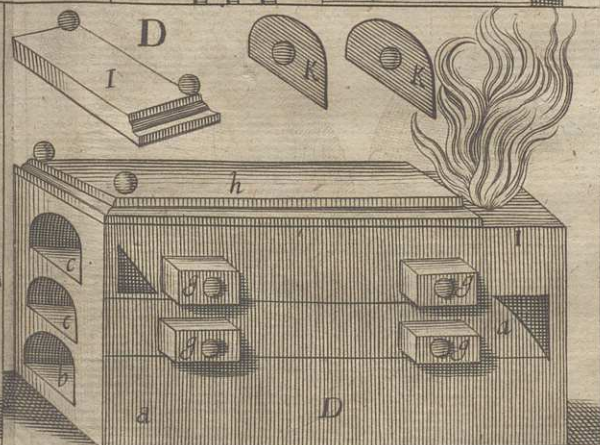
g. The place by which the heat of the Fire enters out of the first part into the second.

h. The place where the heat enters out of the second into the third part.

i. An hole for the smoke to go out, serving also for a *Register*, by being opened and shut.

kk. Doors,



A**B****C****D**

kk. Doors, by which Salts or other things to be dried, may be set into the cavity of the Furnace.

B. A Furnace to distill Herbs without addition.

a. The Ash-hole, with its door.

b. The Fire-place, with its door and grate.

cc. Bars of Iron to support the Pan.

d. An earthen-Pan containing Sand, which keeps the leaves of Vegetables from burning, and their distilled Waters from tasting of the fire.

e. A Copper-Vessel, containing the Herbs.

f. An *Alembick* of Pewter.

g. A *Recipient* of Glass.

hh. *Registers*, for governing the fire.

i. A foot, to support the *Recipient*.

C. A *Furnace* to make assay of Metals, or test them.

a. The foot of the *Furnace*, which must have four holes, one at each corner, for intromission of much air to the fire.

b. The upper part, which is to be taken off when you set in the *Muffle* with the *Cup-pel*.

oooo. The place where several bars of Iron are put to support the *Muffle* with the Coal.

c. The Covering, having divers holes to let out the smoke.

dddd. Divers pieces of good bak'd-Earth, to keep up the burning-coal before the door of the

the fire-place, lest the air cool the *Cup-pel*.

e. The *Muffle*.

f. The *Cuppel*.

g. The door of the fire-place, in which the *Muffle* is placed.

D. A *Reverberatory Furnace*.

a. The fire-place.

b. The door of the fire-place, into which the Wood is put.

cc. Flat pieces of Earth, upon which the matter to be Reverberated, is laid.

d. An opening, by which the flame passes from the fire-place to the first stage.

e. Another opening, by which the flame passes from the first stage to the second.

f. An opening, for the flame to go out.

gggg. Little doors, at which to look upon the matter, during the *Reverberation*.

h. The great Cover.

i. The little Cover, with which the fire is governed.

kk. Doors, to stop the first and second stage, after that the matter to be *Calcin'd*, is set in.

C H A P. IX.

Of the Lutings of Furnaces and Vessels.

TIS not enough to have spoken of the diversity of Vessels, and of the construction of *Furnaces*; 'tis also fit that the Artist know how to manage, cut, and adjust them one with another; and in case of need, if he cannot make all the Vessels, he must learn to make part of them, as Crucibles, Pans, with other Fire-vessels, and likewise all the matter of his *Furnaces*.

The *Paste* for Portable *Furnaces* is composed of fat Earth, or Potters-clay, and of broken Pots grossly powdered, which commonly they call Cement. You must take two parts of fat Earth, dry it, and powder it; and three parts of the said Cement in powder. Mix them well, and with water make a *Paste*, of which form your *Furnaces*; dry them first in the shadow, and afterwards bake them in a Potters *Furnace*. Observe that when the Earth is extremely fat, the quantity of Cement must be augmented, lest the *Furnaces* cleave in drying; which will happen, unless sufficient quantity of powder of broken Pots be added.

This

This very composition of Earth may also serve for the construction of *Aludels, Pans, Gourds, Crucibles,* and other Vessels destined to the violence of the fire; which they will resist, provided you take care to make the powder of broken Pots finer than for *Furnaces*. You must also let them dry gently, and then bake them.

The *Paste* or *Lute* for immovable *Furnaces* must be made of two thirds of that Earth with which Bakers make their Ovens, and one third of Horse-dung well cleansed and sifted, which must be tempered with water, and well wrought together. This *Paste* set in a Cellar in a Tub, putrifies, and becomes so managable, that it may with great ease be employed for the conjunction of the Bricks, wherewith we ordinarily build fix'd *Furnaces*, which must be thick, as well to preserve the heat, as to last a long time.

As for the luting of *Retorts*, whether of Glass or Earth, which are to be exposed to a violent fire, as also for luting and joining the *Recipients* with the *Retorts*, take ten parts of the above-mentioned putrified *Paste*, one part of the flakes of Iron, one part of powdered Glass, two parts of the *Caput-mortuum* of *Aqua-fortis* beaten to powder, and incorporate them well all together.

In the *Cohobation* or *Rectification* of Spirits or *Athereal* Oils, there is nothing better to keep them from evaporating, than the bladder of an Hog or Ox, applied wet round about the
 joining

joining of the Gourd to the *Alembick*, and that of the *Alembick* to the *Recipient*. It also serves for joining double Vessels; for as it dries, it makes a kind of Glew, which becomes hard, and by that means binds the Vessels perfectly well together. But note that Corrosive Spirits consume the bladder in a moment, and then fly away. To retain their Spirits, use the following lute.

Take Wheat-flower, and unslak'd-Lime powdered, and with the white of an Egg make them into a Paste, which apply presently to the joints with a fine rag. The cracks of *Recipients* and other Vessels may be mended with this Lute, provided some *Minium* or *Litharge* powdered, be mix'd with it.

Sometimes the neck of the Vessel, which is to be set for digestion, is stopt by the melting of it; this they call *Hermetical Sealing*, and it is practis'd in *Pelicans*, and long-neck'd Vessels. When the materials are put into them, a Charcoal-fire is applied round about the neck of the Vessel; which fire must be kindled with discretion, to the end the Glass may be heated by little and little, without breaking. Then the fire is to be encreased till the Glass melt, which must in that condition be wreathed with hot tongs, till there remain no hole at all.

But in as much as such Vessels are used but seldom, especially the *Pelicans*, and this sort of luting renders them incapable of serving more than once; you may make a Paste of a mixture of *Mastich*, *Venice-Glass* powdered, *Borax*,
and

and the white of an Egg, with which Vessels may be stoppt, and let the same dry with a gentle heat. Afterwards melt this Lute with a small Reed at the flame of a Lamp. You may also seal *Hermetically* with a Lamp thin Glass-Vessels, which have a narrow mouth, and long neck.

C H A P. X.

Of the degrees of Fire.

THE Furnaces being built, and the Vessels provided, and luted, (such as require it) the next thing is to make choice of, and to manage the Fire suitably to the matter you work upon. To this purpose 'tis fit to know what Fires are more or less violent. The gentlest of all is the *Balneum Vaporis*, which is, to hang the Vessel containing the matter, just over the *Balneum Mariæ*, that so it may receive the streams of the water, which may be heated more or less even to boiling.

The next degree of heat is the *Balneum Mariæ*, which consists in placing the Vessel containing the matter, in another Vessel containing water; which may be kept either *tepid* or boiling, as occasion requires. But lest the water lift up, and overturn the Vessel, as it will
be

be apt to do, especially when there is but little matter within it; and also lest the bottom of the Vessel touch the bottom of the Bath, and endanger the breaking of it; 'tis usual to fasten to the bottom of the Vessel a circle of Lead environ'd with straw, to serve as a counterpoise to the Vessel, and to secure it from touching.

The next Heat is that of Ashes, improperly term'd a *Bath*; which Ashes must be sifted, and put into an earthen-Pan that resists the Fire. Place the Vessel in these Ashes as deep as the matter it contains. The Heat of Sand follows next, as being a degree beyond the former; 'tis improperly called a *Bath*, but is ordered after the same manner.

~~Filings of Iron come next, and afford a greater heat than Sand.~~

The close *Reverberatory* Fire follows; it serves for drawing of Spirits, and is made with Charcoal.

The last is the Flaming-Fire, or Fire of *Fusion*; 'tis the most violent of all, and is made with Wood, but sometimes too with Charcoal, for *Calcining* and *Reverberating* things.

Each of these sorts of Fire hath its degrees, especially the Violent, as well by encreasing the Fewel, as by opening the *Registers*. Hence you are directed to a Fire of the first, second, third and fourth degree, especially in the *Distillation* of Spirits.

Besides these, there are the *Lamp*, the *Dung-hil*, the *Burning-Glass*, and others; of which, for brevity-sake, I shall say nothing; because those already mentioned serve for all the Operations intended in this Treatise.

A Trea-

A
TREATISE
OF
Chymistry.

Book II.

*Certain Remarks preliminary
to the following Prepara-
tions.*

IN the First Part of this Treatise we have spoken in few words what seemed necessary concerning the Names, Usefulness, and Definition of Chymistry; as also concerning its Object, Matter, and Functions. We have also

also spoken of its Principles, and the several Operations whereby the same may be separated and purified. We have likewise described the Figures of Vessels, and their Variety; the construction and matter of *Furnaces*, the diversity of *Lutings*; and lastly, the manner of giving and graduating Fire; without the action whereof, all the rest would be useless. These Generals will not perplex the mind, and yet they will afford a Theory sufficient for Practice; to which we shall now proceed.

But before we enter upon it, our End being to propose plainly all the Preparations as well in Writing as in Working, we have thought fit to acquaint the curious Reader with certain Remarks, of great moment both to his Design and ours. Inasmuch therefore as natural Bodies are infinite in number, and very different in substance and form, both internal and external, great variety of means and instruments must be employed as well to open them as to separate their parts. For Metals and Minerals require to be handled otherwise than Vegetables and Animals; and even the preparation of Metals and Minerals is different according as they are more or less perfect, compact or porous, fixt or volatile. For example, the Oils of Vegetables are capable to dissolve or extract the Sulphurs of Minerals; but the extraction or dissolution of some is much more easie than that of others. As we see, common Oil will totally dissolve common Sulphur, if they be put together

gether upon the Fire; and that because of the great correspondence that the Sulphurs of Minerals have with the Oils of Vegetables. Lead, which hath acquired a greater perfection than common Sulphur, needs help, and cannot be united with Oil, unless it be reduced into Powder, Calx, or Litharge; after which, its whole substance easily incorporates with Oyl, by means of the Fire and a gentle agitation. This gives us to know, that Lead is almost nothing else but Sulphur, and a terrestrial Salt. For if it contain'd much Mercury, Oils having no correspondence therewith, could not dissolve it totally as they do. Which remark may serve to undeceive certain curious persons, who accounting Lead more perfect than it is, eagerly seek for Mercury in its Body. Which I advise them well to consider.

Antimony is a Mineral, which contains in itself much *Sulphur*, indigested, and dissolvable in Oil as well as common *Sulphur*. For 'tis a *Sulphur* superficially joined to the *Antimony*. Nevertheless, if *Antimony* be not opened by *Sublimation*, and reduced into Flowers, or an *Alkool*, 'tis impossible to make a Dissolution of it. But being reduced into that state, Oil penetrates it, and joins it self with its sulphureous part, leaving the rest apart, which could not in any wise abandon that sulphureous part of the *Antimony*, before it was so reduced.

By these Examples of common *Sulphur*, *Lead* and *Antimony*, 'tis easy to understand, that the more compact or perfect a Metal is, the more it ought to be opened and disposed to the separation of its superficial *Sulphur*; I speak not of that which is internal and essential, since we believe Metals indivisible; unless any man will pretend to reduce them into their Principles, or several substances by the *Alkabeft* or universal *Dissolvent*, of which I shall not discourse here, for fear of offending some, who think they possess it, and yet have not even good particular *Dissolvents*, or of being esteemed too incredulous by those that seek it. If we should say that 'tis hard to imagine how a Liquor without *Corrosion* can resolve all Sublunary Bodies into their true Principles, without any reaction on their part; and how this *Dissolvent* should diminish neither in weight nor vertue, but have as much strength after a thousand Dissolutions, as in the first; as *Van Helmont* discourses of it. Wherefore wanting this mystery, we maintain, that whatsoever form is given to Metals by the ordinary Dissolutions, which are properly *Corrosions*, they remain always reducible into their first substance, with little or no alteration. So the Essences or Tinctures, and the Oils pretended to be drawn from Metals, are, to speak properly, nothing but Metallick Substances disguised by the division of their integral parts, and by their union with the *Dissolvents*; but so that they may be separated from the same,
and

and reduced into Metallick Bodies, in the same form which they possessed before they were dissolved.

And upon this occasion we might say something further against those who boast of possessing the true *Tincture* or *Essence* of Gold, its *Sulphur*, and its *Mercury* irreducible into a Metallick Body. In a word, who think they have the true Potable Gold, of which they tell wonders, and by which they pretend to remove all sorts of Diseases, and to make men live as long as the first Patriarchs. This sort of People are more diseased themselves, than they whom they pretend to Cure, and were more worthy of pitty than punishment, if there were not some persons credulous enough to believe their promises, and to lose their Time, Estate, Health and Life, by the imposture of these Ignorants. This is the source of the Scandals cast upon true Chymistry; which being well considered, is found most worthy to be cultivated.

This by the way. Now, since Metals and Minerals are so different, there is requisite almost to every one in particular, not only a different Preparation, but to every Preparation a great labour both of Body and Mind, and manners of proceeding wholly distinct: which is the reason that general Rules for their Preparation cannot be establish'd, as there may be for that of Vegetables and Animals. Nevertheless, they cannot be reduced without some Salts, Oils, or Spirits. But most Vegetables

need no addition, yet require different Preparations as well as Minerals. For sometimes we design to reduce them distinctly into their five substances; sometimes we desire but one of them. For Example; we are contented to draw only the rozinous substance of *Zallap*, rejecting the other substances as useless. We draw by Distillation the essential Oil of *Anise*, and preserve the same carefully, without regarding the remainder. Sometimes we *Calcine Tartar*, to draw out the fixt Salt, without minding its sulphureous and *mercurial* parts, which are suffered to exhale or evaporate by the violence of the fire. When we extract the volatile Salt of *Urine*, we trouble not our selves aboutt the other Principles; as when we have made the Jelly of *Harts-horn*, we reject all the rest; and so of infinite others.

Vegetables entire, or their parts, which we desire to reduce into their solid Principles, hard or dry, as Roots, Barks, Gums, Seeds, Fruits, Leaves, &c. are first rasp'd or cut in pieces, or else powdered grossly, so as to be put into a *Retort*, which is placed in a *Reverberatory* fire, by means whereof comes into the *Recipient*, first the Flegm, next the Spirit, and afterwards the Oil. But the fixt Salt and Earth remain in the *Retort*, and are separated afterwards by *Dissolutions*, *Filtrations* and *Coagulations*.

The parts of Vegetables which are in a liquid form, as *Must*, and other juices, before their *Fermentation*, are distill'd by an *Alembick* in

in a fire of Sand, and yield first a quantity of Flegm, next the Spirit, and afterwards the Oil, leaving the Earth and Salt in the bottom of the *Alembick*.

If you desire to draw the five substances of fermented Liquors, as Wine, Cider, Hydromel, Beer, and the like; whereas those which are not fermented, send out the Flegm first; these send first their subtil and inflammable Spirit, and afterwards the Flegm; then they yield a Spirit and Oil smelling of burning, and leave the fix'd Salt and Earth in the bottom.

Liquors which have pass'd a Fermentation even to a kind of corruption, as Vinegar of Wine, Beer, Cider, and others, render their Flegm first, then an *acid* Spirit, afterwards a Spirit, and *fetid* Oil, leaving the Salt and Earth in the bottom.

Animals entire, or their parts, if dry, are cut into pieces, or reduced to a course Powder, in order to their being put into the *Retort*. If their parts be liquid, as Blood, Urine, &c. they are put into an *Alembick*. Both these Vessels are set in a fire of Sand, by means whereof you draw first the Flegm, then Spirit, and volatile Salt, with a stinking Oil: and in-as-much as this Spirit and volatile Salt abound in Animals, they raise up the fix'd Salt, and carry it with them; so that the Earth remains alone in the bottom of the Vessel.

Having thus destroy'd the first form of mix'd Bodies, you separate the Principles, each by it self. The Oil is separated from the Spirit

and Flegm by a Tunnel ; the Spirit is separated from the Flegm by *Rectification* ; and the Salt by *Elixation* and *Filtration* from the *Caput-mortuum*, or *Terra-damnata*, as we shall shew more clearly in due place.

This Second Part shall be divided into three Sections. The First shall treat of the Preparations of *Metals*, *Metallick Bodies*, *Stones*, *Vi-triols*, *Salts*, &c. The Second shall teach the Preparation of *Vegetables*. And the Third that of *Animals* ; to which we shall join some Preparations of things not comprehended in these three Families, as *Manna*, *Honey*, *Wax*, &c.

S E C T. I.

Of Minerals.

C H A P. I.

Of Gold.

WE shall begin with *Gold*, which is the most pure, fix'd, compact, and weighty of all Metals, rendered so by the union of *Salt*, *Sulphur*, and *Mercury*, equally digested, and purified to the highest point. Hence it is justly called the King of Metals, as being the most perfect of all. 'Tis called also the Sun, as well for the resemblance it hath with the Sun of the great World which enlightens us; as for that it hath with the heart of man, which is the Sun of the little World. Its colour is yellow, tending towards red. I will not stand to enquire what place affords the best; since the Artist ought to know how to separate and free it from other Metals that are found mix'd with it either in the Mines, or

by the fraud of men; and that all *Gold* is good when 'tis alone, and separated from other Metals.

We will begin with its Purification, whereof there are four ways. The first is, the *Cupple* with *Lead*. The second, *Cementation* in a *Crucible*. The third, by *Aqua-fortis*. And the fourth, and most certain of all, is, the Purification by *Antimony*.

I. *The Purification of Gold by the Cupple.*

TAKE a good *Cupple* made of Sheep's-bones calcin'd, or of common Ashes wash'd, and deprived of their *Alkali* Salt. Put the same into a little Furnace, and cover it with a *Muffle* or *Tile*. Then make a fire round about, and over it, but moderate the fire in the beginning, that the *Cupple* may heat by degrees, and not crack. When 'tis become red, if you have an ounce of *Gold* to *Cupple*, put into the *Cupple* four ounces of *Lead*, leave it alone in *Fusion* for some time, that the *Cupple* may imbibe some of it. Then put your *Gold* to it, and it will melt instantly amidst the *Lead*; though otherwise of very difficult *Fusion*. This done, continue the fire, and blow incessantly upon the matter: the *Lead* will by little and little enter like Grease into the pores of the *Cupple*, (which, for this intent, is made of porous matter,)

ter,) and carry with it the other imperfect Metals mixt with the *Gold*, which will become pure within the *Cupple*, and of an high colour; except the *Gold* be mixt with some portion of Silver, which resists the action of the *Lead* as well as the *Gold*; in which case you must have recourse to *Aqua-fortis*, or *Antimony*.

2. The Purification of Gold by Cementation.

REduce your *Gold* into plates of the thickness of the back of a knife, and cut them into round or square pieces, so that they may lye flat in the *Crucible*. Then take *Cement* prepared of four ounces of powder of Brick, an ounce of *Salt-Armoniac*, an ounce of *Salt-Gemme*, and an ounce of common *Salt*; all well powdered, and mixt together, and reduc'd into a dry *Paste* with a little *Urine*. Lay a *Bed* of this *Cement* in the bottom of a *Crucible*, proportionable to the matter, and so continue to lay *Bed* upon *Bed*, intermixt of plates and *Cement*, layer upon layer, or course upon course, (called *stratum super stratum*,) till the *Crucible* be full. The first and last layer must always be *Cement*, to the end the plates may be involv'd and covered with it. Cover the *Crucible* with a fit covering, having an hole in the middle; and then place it thus luted in a circular fire (or *ignis rotæ*) for the space of three hours,

hours, during which the hole of the cover must be left open, that the moisture of the *Cement* may evaporate. After this, lute up the hole likewise. The fire must be moderate in the beginning, then augmented by degrees, and continued during 8 or 9 hours, in such sort, that the two last hours the *Crucible* be covered over with charcoal. Then let it cool. Opening the *Crucible*, you will find the plates diminished in weight, because the *Cement* has corroded and destroyed all that was mixt with the *Gold*. Wash these plates well, and having put them into a *Crucible*, make a fire of *Fusion*, with a little *Tartar* and *Saltpeter*; and so you shall reduce them into an *Ingot*.

3. The Purification of Gold by Aqua-fortis.

TAKE one part of *Gold*, and three or four parts of refined *Silver*; melt them together in a *Crucible*; then pour them into a deep *Copper-Vessel* full of water; and you shall find the *Gold* and *Silver* mixt in the form of small grains, (which is that they call *Granulation*.) Dry the grains, put them into a *Matrass*, and pour upon them a triple quantity of good *Aqua-fortis* made of *Saltpeter* and *Vitriol*. Place the *Matrass* in a *Furnace* of *Sand*, till the *Aqua-fortis* have dissolved all the *Silver*; which is known when the matter sends forth

no more red fumes, and the *Gold* lies in the bottom of the *Matrass* in a black powder. Then pour off the *Liquor* (which contains in it all the *Silver*) into an earthen Vessel full of common water; and upon the black powder of *Gold* pour a little new *Aqua-fortis*, and replace the *Matrass* upon the hot Sand, to the end that if any *Silver* yet remain, it may be dissolv'd and separated this second time. Pour this second *Dissolution* to the first, and keep them. In the mean time *edulcorate* the *Calx* of *Gold* with water, then dry it, and make it red gently in a *Crucible*. You shall have a powder of a very high colour, which you may reduce into an *Ingot* by melting it with a little *Borax*. The *Silver* dissolv'd in the *Aqua-fortis*, and poured into the Vessel of water, precipitates, and separates it self from its *Dissolvent*, by putting a plate of *Copper* into it; the *Spirits* of the *Aqua-fortis* immediately leaving the *Silver* to fasten on the *Copper*, which they dissolve; and during the *Dissolution*, the *Silver* precipitates it self. The reason of this is, because the *Copper* being less compact, and more earthy than the *Silver*, is easily penetrated by that corrosive Spirit, which impetuously falling upon this morsel, as agreeable to its appetite, it quits its first hold, and takes up to the *Copper* which it last met with, and devours as much of it as it can retain. This blue water impregnated with *Copper*, must be pour'd off by inclination, and kept in an earthen Vessel; 'tis called *the second water*, and Chirurgeons use

it for *Cancers*, and other outward *Ulcers*. The Silver is found in the bottom. It must be wash'd, dry'd, and kept (if you please) in form of a *Calx*, or else reduc'd into an *Ingot* in a *Crucible*, with a little Salt of *Tartar*. But if into this second water, which is properly a *Solution* of Copper, you put a body more earthy and porous than Copper, as Iron is, the Copper precipitates, and the *Corrosive* Spirits of the *Aqua-fortis* fasten to the substance of Iron; which may likewise be precipitated by some Mineral more earthy and porous than Iron, as *Lapis Calaminaris* and *Zink*. Lastly, if you pour into this Liquor charg'd with these Substances some of the Liquor of fix'd *Nitre*, drop by drop, this latter will destroy the *acidity* of the *Aqua-fortis*, and precipitate those Minerals. Note, that if you evaporate and crySTALLIZE the Liquor, you will draw from it very good *Saltpeter*, reincorporated with its fixt Salt, from which those Spirits at first were distilled.

These last Experiments might seem impertinent to this Chapter of *Gold*. But our desire to instruct the Curious, made us take occasion to mention them from the Purifying of that Metal by *Aqua-fortis*. And they are not unuseful to open the way to others more considerable.

4. *The Purification of Gold by Antimony.*

THIS is the best way of all; for Lead carries away only the imperfect Metals, but leaves Silver join'd with *Gold*. *Cement* oftentimes leaves the *Gold* impure, and consumes some part of it. *Aqua-fortis* is not always a certain trial of the pureness of *Gold*: for sometimes it happens that *Gold* having been mixt with some sulphureous matters, their odour involves some of the Silver which had been put to the *Gold*, to cleanse it by *Aqua-fortis*, which Silver falls down, and is precipitated with the *Gold* at the parting, thereby giving surprizing and short joys to the unskilful, who are apt to think presently they have found out the way to encrease *Gold*: but upon further examination they find their expectation deceived. On the other side, you may be certain, that *Gold* which hath past the trial by *Antimony* is thoroughly purged, and freed from all mixture. For nothing but *Gold* is able to resist that devouring Wolf.

Take therefore an ounce of *Gold*, such as the Goldsmiths use; put it into a *Crucible* amongst burning-coals in a wind-Furnace, and when it is very red, put to it by little and little four ounces of good *Antimony* in powder, which will melt immediately, and at the same
time

time devour the *Gold*, (which otherwise is of very difficult *Fusion*, by reason of its most exact composition :) when the whole is melted like water, and the matter sparkles, 'tis a sign that the *Antimony* is at work upon the impurities of the *Gold*. Wherefore leave it a little upon the fire; then cast it nimbly into an *Iron-Crucible*, which has been to that end before heated, and smear'd with a little *Oil*. When the matter is pour'd in, strike the *Crucible* with the *Tongs*, to make the *Regulus* descend to the bottom. After 'tis a little cool'd, separate the *Regulus* from the dross. Weigh it, and put it to melt in a good large *Crucible*, adding to it by little and little double its weight of *Salt-peter*: then cover the *Crucible*; so that the coals get not into it, and giving a quick fire, the *Salt-peter* consumes all that remain'd of the *Antimony* with the *Gold*; and the *Gold* settles at the bottom of a most beautiful colour, and pure. You may put it into a *Crucible* hot at it is, or else let the *Crucible* cool, and then break it to separate the *Ingot* from the *Salts*. This manner of purifying the *Regulus* of *Gold* is not common and ordinary, but preferable before the rest, because done speedily: but 'tis practis'd only in a small quantity. The common fashion is, to put the *Gold* in a flat *Crucible* upon a melting fire, and blow continually till the *Antimonial* part be exhale'd. This not only requires time, but exposes you to the hurtful exhalations of the *Antimony*, which 'tis always good to avoid.

Aurum Fulminans.

Reduce into thin plates a dram of fine *Gold*; put these plates into a *Matrass*, and pour on them three drams of good *Aqua-regia*, then set the *Matrass* upon hot *Sand*, till the *Gold* be dissolv'd. Pour the *Solution* into a *Vessel* wherein there is three or four ounces or more of *Fountain-water*; then pour to it drop by drop some *Oil of Tartar* made by *Deliquation* till the *Ebullition* ceases; which is a sign that the *Corrosion* of the *Aqua-Regia* is destroyed by the *Liquor* of the *Salt Alkali of Tartar*, which, as other *Alkalies*, breaks the force of *Corrosive Spirits*, so that they are constrained to let fall to the bottom the body which they held in form of *Liquor*. The same happens here to the *Gold*: for if you let it settle a-while, it will precipitate it self to the bottom of the water; which will swim above as clear as *Crystal*, and is to be pour'd off by inclination. You must pour warm water upon the powder, to take away all the *Acrimony* of the *Salts*; and when 'tis settled, pour that water off, and put more upon it. This do so often, till the powder of *Gold* be well *edulcorated*; which is known by its being *insipid*. Lastly, put it into a *Tunnel* with *filtring paper*, through which the *Liquor* passes, and leaves behind it
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the powder of *Gold*, which must be dried carefully by a slow heat: for it easily takes fire, and bouncing like a Gun, flies away.

This impetuous action proceeds from the mixture of the Salts and Spirits which enter into the *Dissolvent* and the *Precipitant* of the *Gold*, and which reduce it into atoms. Of which Salts and Spirits, the *Gold* by its reaction and its *fixity*, retains some portion, though imperfectly; for when the fire acts upon this mixture, it drives out the spirituous parts, which the *Gold* and the *Corpuscles* of Salt of *Tartar* desire to retain; from which conflict the great noise ensues.

This *Fulmination* may be hindred several ways, all which tend only either to break the force of the *nitrous* Spirits, or to separate them from the Salt of *Tartar*, a good quantity whereof always remains with the fulminating *Gold*. For after all the *Lotions* that can be made of it, it will be commonly found a fourth, or almost a third part heavier than the simple *Gold* which was dissolved and precipitated. Wherefore to destroy the activity of this Salt, beat the fulminating *Gold* together with three times as much of flower of *Sulphur*, and put this mixture upon a small fire in a *Crucible*: the *Sulphur* will burn and exhale, during which its *saline acid* parts fasten to the *saline* and spirituous parts which involv'd the *Gold*, and carries them away; and the *Gold* will remain in the bottom of the *Crucible*, of the same weight as at first. You may reduce it into a Metallick
Body,

body, with the addition of a little *Borax* by a fire of fusion; or else you may mix the fulminating *Gold* with Oyl of *Vitriol* or *Sulphur*, or with the Spirit of *Sea-Salt*, and put them boldly in a *Crucible* upon the fire without fearing any thing; for their acid Spirits change the nature of the Salt of *Tartar*.

Some employ this Powder in diseases proceeding from corruption of the Blood; for by sweat and insensible transpiration it drives the venom from the Center. The Dose is from 2 to 8 Grains, in some Conserve, or in the Extract of *Juniper Berries*.

The Calcination of Gold by Mercury.

TAKE a Dram of *Gold* purged by *Antimony*; reduce it into very thin Plates, which cut with Cizars into small pieces: Then take two little *Crucibles*, which place upon burning Coals; and put your *Gold* into the one, and six Drams of good *Mercury* into the other. When the *Gold* is all red, and the *Mercury* begins to smoke, mix them together in one of the *Crucibles*, and stir them with a little Stick; they will presently unite, and make a soft and tractable *Amalgama*, which you must wash to take away the blackness; then dry it and pass it through a piece of *Shammoy Leather*: The overplus of *Mercury* will

will remain in the Leather, weighing ordinarily about four Drams; the *Gold* retaining three times its weight of *Mercury*. Now to reduce this *Gold* into a subtle and impalpable *Calx*, you must mix this with twice the weight of *Sulphur*, in a Marble-Mortar for the space of two or three hours, and put this mixture into a *Crucible*, on which put a covering with a hole in the middle. Place the same in a moderate Fire, for fear of reducing the *Gold* into a solid body and loosing all your pains. The *Sulphur* and the *Mercury* will exhale; but the *Gold* will remain in the bottom of the *Crucible* in a spongy and impalpable Powder. You may likewise reverberate it under a muffle, and so you shall have a *Calx* of *Gold* well opened and fit for curious operations.

Another Calcination of Gold.

Dissolve a Dram of *Gold* in *Aqua Regia*; poure the solution into a *Gourd*, wherein there is a quart of Spring Water and about six Drams of *Mercury*. Place the *Gourd* in a hot Sand four and twenty hours, during which the Spirits of the *Aqua Regia* will act upon a part of the *Mercury*, and let the *Gold* fall in a red light Powder to the bottom of the Vessel; and the Water which
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before was yellow by reason of the *Gold* which it contained, will become clear as *Crystal*. Pour it off by inclination and dry the powder of *Gold* and the *Mercury* (which could not be dissolved in this little quantity of *Aqua Regia*, necessary to the dissolution of a Dram of *Gold*, and having lost a great part of its virtue by the mixture of the Spring Water in the *Gourd*) I say, dry your *Gold* and *Mercury* in a Spoon with a gentle heat; then pass the *Mercury* through Leather, the Powder of *Gold* will remain in the Leather; beat it and Calcine it with double its weight of Flower of *Sulphur*, as is said above of *Aurum Fulminans*; and you shall have a very subtil and well opened *Calx* of *Gold*.

A Diaphoretick Powder of Gold.

Dissolve in three Drams of good *Aqua Regia* one Dram of fine *Gold*, and when it is dissolved add to it one Dram of well refined *Salt-peter*, which dissolve also in it. In this Liquor moisten some small pieces of very fine Linnen, and till all the Liquor be imbibed by them. Dry them with the gentle heat of Sand; then set them on fire with a little spark of fire, which they take as easily as *Tinder*; and they will be reduced into

Ashes of a dark red; which being cold; sweep up carefully with a Hare's Foot or a Feather, and keep it for use.

This *Gold* cleanseth the Mass of Blood by Sweat and insensible Transpiration. It also cures continual and intermitting Feavers, taken in the beginning of the Fits. The Dose is from four to twelve Grains, in some conserve, in form of a *Bolus*, or in a little Wine, or a spoonful of Broth.

This Powder hath been in some hands as a great secret; and they have told wonders of it to the credulous, who are easily taken with the least things. If you rub *Silver* with this Powder moistned with a little Water, it guilds it very well and this gilding is of long continuance.

CHAP. II.

Of Silver.

S*ilver* is a Metal less fixed, less weighty, and less perfect than *Gold*, though much more so than all other Metals, and passes for a perfect Metal, because it comes near the perfection of *Gold*.

'Tis called *Luna* from its colour, and from the great Remedies it affords for the diseases

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of the Brain, which by sympathy easily receives the impressions of the *Moon*. *Silver* is found naturally in Mines, impure, or else is mixt by Men with other Metals; and therefore it must be purified before it be employed for Medicinal Preparations. The purification of it is either *Superficial* or *Total*. In order to the first take common *Water*, common *Salt*, and *Tartar*, mix them, and in this mixture boil the *Silver* which hath some little *Copper* in it. But a more powerful way of purifying is necessary to open the close body of it, and get out every other imperfect Metal. The Goldsmiths use this boiling for the whitening of Plate, in which there is always some small portion of *Copper*; and this cannot be done without some little loss of weight, because the boiling always dissolves some small portion of *Copper* upon the Surface. To purify *Silver* totally you must have recourse to the *Cupple*, which spares no Metal but *Gold* and *Silver*; which remain fixt in the middle, after all the other Metals are dissipated.

The Purification of Silver by the Cupple.

THIS operation differs not from the purifying of *Gold* by the *Cupple*. For the *Lead* carries away all other Metals, reducing

them either into Dross or Smoak; only *Gold* and *Silver* resist it. Place a good *Cupple* with its *Muffle* in a little *Furnace* made for this purpose, the *Figure* of which is in the third *Table*. In defect of such a *Furnace*, place the *Muffle* in a *Wind-Furnace*; put fire round about, and over it; which must be gentle in the beginning, that the *Cupple* may heat by degrees, otherwise it will crack. When it is all red by encreasing the *Fire* by little and little; put first into it an equal quantity of *Lead*, and let it melt and boil, to the end the *Cupple* may begin to imbibe it. Then put in also the *Silver*, which easily melts in the *Lead*. Continue the *Fire* till the *Lead* be exhale and have carried away with it the impure *Metals* wherewith the *Silver* was mixed before: Then the *Silver* will be seen coagulated, and remaining alone very pure upon the *Cupple*.

Vitriol of Luna.

TAKE an ounce of *Cuppled Silver* reduced into little grains, or thin *Plates* and three ounces of *Spirit of Nitre*. Put them together into a *Matrace* upon hot *Sand*, and leave them so till the *Silver* be dissolved; pour the warm *Solution* into a little *Gourd* or *Cupping Glass*, warm'd a little before, lest the

the heat of the Solution break it. Leave it to cool some hours, and the Liquor will turn almost all into *Crystals*, but some will remain not Crystallized this first time. Therefore evaporate half away upon Sand in a Glass vessel, and leave it to Crystallize in the cold. Or if you be contented with the first *Crystals*, pour the floating Liquor into an earthen Pan, wherein there is water and a piece of *Copper*; so all the *Silver* contained in the Liquor will fall down in Powder, which you may wash and dry, and then melt with a little *Saltpeter*, and *Tartar* in a little *Crucible*, to restore it its first Body. Those first *Crystals* must be dried by a gentle Fire, and kept very carefully in a Glass Vessel well stop'd. They are called the *Salt* or *Vitriol* of *Luna*, and are of a very bitter tast. They are used chiefly for diseases of the *Brain*, or for *Dropsies*: They purge kindly enough. The Dose is from three to eight Grains in a Glass of Liquor proper to the Disease, for such as can bear their bitterness; or else in some Conserve, drinking after it some appropriated Liquor, to temper the *Acrimony* left in these *Crystals* by the *Spirit* of *Nitre*.

A Tincture of Luna.

Reduce an ounce of Cuppled *Silver* into small Grains, Plates, or Filings, which dissolve in three ounces of good *Aqua Fortis*, made of *Saltpeter* and *Vitriol*. The Solution pour into *Salt-water* or *Sea-water* well filtered and clear; and the *Silver* will immediately be precipitated in a white Powder, which you must let settle together in the bottom. Then pour off the Liquor by inclination, and instead thereof pour on some very clear Spring-water warm; stir the *Silver* about in it; then let it settle again, and pour off this Water likewise by inclination. Repeat this washing till the Powder of *Silver* be free from all *Acrimony*. Then dry it gently, and put it into a fit *Matrace*, adding to it half an ounce of the *volatile Salt* of *Urine*, and twelve ounces of Spirit of *Wine* well Tartarized, *i. e.* well rectified upon Salt of *Tartar*. Put upon this *Matrace* another *Matrace*, whose mouth must enter into that which contains the matter to make a Vessel called *Bocia centra bociam*, or *Double bolts head*; lute the joynts exactly with a wet Bladder. Digest the matter in a very gentle heat of a vaporous Bath of *Horse-dung* for ten days; in which time the *Menstruum* will extract the *Tincture* of *Silver* and

and become of a Sky-colour. Pour off the *Tincture* by inclination, filtre it, and put it into a little *Glass-Gourd* with its head; which Lute well together, and place in a vaporous *Bath*; and having drawn off three parts by Distillation, the *Tincture* will remain in the bottom, which you must keep carefully in a *Viol* well stoppt.

This *Tincture* is used with good success in *Epilepsies*, *Apoplexies*, *Frenzies*, and other Diseases of the *Brain*, in some convenient Liquor. The Dose is from four to fifteen drops.

After you have drawn this *Tincture*, you find in the bottom of the *Marrace* a *Calx* of *Silver*, which may be reduced into a body by the following mixture. Take an ounce of powdered *Pibbles*, an ounce of *Tartar*, two drams of powdered *Charcoal*, and four ounces of good *Saltpeter*. Put this mixture by little and little into a *Crusible* heated red hot in the Fire, and it will soon melt with great agitation; which being over, pour this melted Salt into a hot Mortar and there let it cool; you shall have a hard mass, of which take a weight equal to your *Calx* of *Silver*; powder them together, and melt them in a good *Crusible*, and the *Calx* will be reduced into a body, being otherwise hardly reducible, by reason of the *Sea-Salt* wherewith it was precipitated, and of the *volatile* Salt of *Urine*, with which it was digested. For these two Salts make the *Silver* very *volatile*. And if
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you should go about to melt the said *Calx*, without this mixture of fixt Salt, which destroys the impression of the volatile Salts, it would fly almost all away through the violence of the fire of *Fusion*.

Lapis Infernalis, or a Perpetual Caustic.

TAKE two ounces of Cuppled *Silver*; reduced either into Granules, Plates, or Filings; dissolve it in a *Matrace* with its double or triple of good *Aqua-fortis*; pour the *Solution* into a *Gourd* covered with its *Alimbeck*, or rather into a little Porrenger of strong earth not vernisht, and open; evaporate it in in Sand till it come to a yellow Salt, and place it in a fire of Sand, and draw off about half the *Aqua-fortis*. The Water which comes off will be very weak because the *Silver* retains the stronger Spirits of the *Aqua-fortis*. Leave the Vessel some hours to cool, and you shall find the matter remaining in the bottom of the *Gourd* in form of a Salt, which put into a good *German Crucible* somewhat large, because the matter swells at first in boiling, and would be apt to run over and be lost. Set the *Crucible* upon a little fire, till the *Ebullitions* be passed, and the matter be fallen to the bottom; about which time augment the fire a little, and you shall see
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the matter like Oil in the bottom of the *Crusible*. Pour it into a very clean Casting-mould a little heated before, and you shall find it as hard as Stone; keep it in a Box for use. But for greater convenience, to the end the Surgeon may have pieces of several sizes to employ in hollow Ulcers, of the bigness of the Tag of a Point, or other Figure according to occasion cut the matter before it be quite cold, and leave it in such figures as you think fit.

It may be used for *Cancers*, and to eat and consume the superfluous spongy Flesh of *Ulcers*, only by touching them. And if a *Gangreen* be not deep this Medicine will reach to the sound parts; after which you need only leave Nature to her self, employing ordinary Remedies to produce new flesh, and *Cicatrise* the diseased part.

The daily use of the said Remedy will discover, will shew its excellency in sundry other Diseases. 'Tis prudence in a Surgeon to use oftentimes the same *Medicament* for different Maladies, when the *Indications* concur. This Stone is very commodious and lasts very long. 'Tis called *Infernalis*, partly from its black colour, and partly from its *Caustic* burning quality.

Observe, that the virtue of this Stone proceeds from the *Corrosive Salts* of the *Aqua-fortis* which the *Silver* congeals and retains. You may make the like Stone of *Copper* or *Iron* the same way, saving that *Iron* and *Cop-*
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per reduced into this condition attract the Air more powerfully, and dissolve into Liquor: which happens not to this of *Silver*? for it preserves it self always in a solid form, and may be carried about in a Box; for which reason Surgeons prefer it before others, and make use of it.

Many Authors fill their Books with several *Tinctures* and other preparations of *Gold* and *Silver*; which we omit as either useles or hurtful, persisting in our first design, to set down nothing superfluous, or that may fruitlessly puzzle the Reader, but to communicate to the publick all that is profitable, and that may be understood and easily performed by Artists, yea even by such as have no skill but what they derive from their Writings.

CHAP. III.

Of Lead, or Saturn.

L*ead* is an imperfect Metal, consisting naturally of an impure Salt, and undigested *Mercury*, and a *Terrestrial Sulphur*, which abounds in this body, for which reason it easily unites with the Oils of Vegetables, and the Fats of Animals, which are Sulphureous. It easily destroys all other imperfect Metals, and
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In the fire reduces them into Dross by the devouring *Sulphur* predominant in it. The *Chymists* call it *Saturn*, from its sympathy with that Planet; and though it be of a very coarse and impure composition, yet it affords good Medicines both internal and external.

'Tis to be observed that *Lead* in it self without having passed through the Artist's hands is a Metal friendly to Man, and causes no prejudice by it self through any malignant quality either within or without. For we see persons every day, who being shot, keep the Bullets in their Bodies without any inconvenience; and Plates made of *Lead* being applied outwardly soften the hardness of Nerves and Tendons, and take away divers external Tumors, which would not easily yield to other Remedies.

The Purification of Lead.

BEfore you can imploy *Lead*, 'tis necessary first to purify it as much as its imperfection admits, in order to extract out of it what is profitable. Melt it in a great Iron-spoon, then put to it by degrees some small pieces of *Wax* or *Soot*, which pieces presently flame and leave a little Scum upon the *Lead*, which must be taken off with an *Iron Spatula*.
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Cast new little pieces of *Soot* or *Wax* and take away the *Scum* in this manner, till the *Lead* remain as bright as a *Looking-glass*; then pour it into a *Basin*, and let it cool.

The Calcination of Lead.

PUT *Lead* thus purified into a *Glass* not *Vernisht*, and set the same in a *Wind-Furnace* amidst the burning *Coals*. Yet the *Fire* must not be violent; but 'tis enough that the *Pot* be red, and the *Lead* melted. Stir it continually with an *Iron rod* till it be turned into *Powder*, or a grayish *Calx*, inclining to green; which let cool, and then by sifting separate its impurities.

Another Calcination of Lead.

LAY some purified *Lead* upon a *Tile* that resists the *Fire*, and hath edges to keep the melted *Lead* from running into the *Fire*. Place the *Tile* in a *Reverberatory Fire*, so that the flame may beat continually upon the *Lead*. But the *Fire* must not be too violent; for then it will remain always melted, or else *Vitrified*; to prevent which, the *Fire* must
be

be moderate, and the *Lead* must be stirred continually with an Iron-rod; so the *Lead* will first turn to a gray Powder somewhat greenish, and by continuing the motion it will become yellow, and at last red, at which time 'tis called *Minium*. The *Calx* of a Pound of *Lead* will be found encreased above two ounces, by reason of the Particles of Fire incorporated with it, and by their activity reducing it into very subtle parts. This augmentation is also observed in the *Calcination* of *Tin* and other imperfect Metals.

Lead is reduced into Dross, which is a sort of *Calcination*, in great *Cupples*, near the Mines, or in Mint-houses, when they purifie *Gold* and *Silver* by *Lead*, which destroys the imperfect Metals mixt with the perfect, and reduces them into Dross; which is called *Litharge* of *Gold* when it is drawn from the Cuppling of *Gold*, and *Litharge* of *Silver* when it is so drawn from *Silver*; and employ'd for the purifying of these Metals.

Another Calcination of Lead.

TAKE a Pound of *Lead* purified as above; melt it in an Earthen Pot not Vernish'd, that resists the Fire, Then cast into it half a pound of *Sulphur* grossly powdered, and stir it all together with an Iron-rod, till the
Sulphur

Sulphur cease to flame and be consumed; and then you shall find the *Lead* in the bottom of the Pot in a black powder which is called *Plumbum Ustum*, or *Burnt Lead*.

Another Calcination of Lead.

Lead is also calcined by acid vapors, and by this means reduced into a white *Calx*. The process is as follows. Hang Plates of *Lead* in a covered Vessel, into the bottom of which there is some *Vinegar*; place the Vessel upon some gentle heat, or in Horse-dung; and the steams of the *Vinegar* will corrode the *Lead-plates*, and cause to come out of them a white Powder, like Flower, which gather off with a *Hare's-Foot*; and put the Plates again into the Vessel till they be all reduced into *Ceruse*. You may make use of any of these *Calx's* for the preparations which are to be made upon *Lead*; but the grayish powder mentioned first is the most convenient of all.

Salt or Sugar of Saturn.

TAKE a pound of grayish powder of *Lead*, put it into a great *Matrace*, and pour upon it three pounds of distilled *Vinegar*. Set the *Matrace* in digestion in a *Sand-Furnace* during the space of twenty four hours, in which you must shake the *Matrace* now and then; otherwise the *Calx* will harden in the bottom of the Vessel and endanger to break it. Then pour off the distilled *Vinegar* by inclination into another Vessel; you will find it charged with the substance of the *Lead*, and its acidity turned to a great sweetness. Put new distilled *Vinegar* upon the *Lead*, and proceed as before, mixing and keeping all the *Solutions*. Continue to put new *Vinegar*, to digest, and to pour off by inclination, till the distilled *Vinegar* dissolve no more *Lead*, nor become sweet, or till all the *Lead* be dissolved, which it will not fail to be, provided the *Calx* of *Lead* be well made. Then filtre all the *Solutions* through gray Paper, and put them into a *Gourd* with its *Alembick*, and *Recipient* in *Balneo Mariae*; and you shall first draw off an insipid Water, the dissolved *Lead* retaining all the acid Spirits of the *Vinegar*, which incorporate with it and make a very white *Cristalline Salt* like Needles, resembling

Saltpeter refined. This Liquor must not be distilled to *siccity*; but you must observe this proportion, that if you have dissolved a pound of *Lead* there must remain about four pounds of Liquor in the *Gourd*, to the end the Salt may *Christallize*. For when the Liquor is too clear, the Salt is too much diffused in it, and will not *Christallize*; and being too much deprived of moisture, the whole turns to a confused Mass.

Wherefore then take the *Gourd* out of the *Bath*, and set it in a cool place, during three or four days, at the end of which you shall find a good part of the Liquor turned into Salt. Separate the floating Liquor, and dry the Salt between two Papers. Afterwards put the Liquor which you had poured off by inclination, into a less *Gourd*, and distill off about a third part; then set the *Gourd* a day or two in a cool place, and you shall again find *Crystallized* Salt, which you shall dry as the first. Evaporate and *Crystallize* again the remaining Liquor, and reiterate the same operation, till you have reduced into *Crystals* all that is so reducible. And in case your Salt be not white enough the first time, dissolve it with the Phlegm of *Vinegar*, which filtre through gray Paper, and *Crystallize* as before; you shall thereby have a very fair Salt of *Saturn*. This Salt is a very good Medicine in the *Asthma*, and other diseases of the Breast, being given in some *Pectoral Decoction*. The Dose is from five
to

to fifteen grains. 'Tis also used outwardly with good success in Wounds, and Ulcers; for it kills and destroys the corroding Salts of them; it is likewise excellent for Inflammations, being dissolved in *Night-shade* water, or some other appropriate Water, and then applied. Moreover it serves well in *Lotions* for Inflammations and Itchings of the Eyes. But it is suspected inwardly for those that have weakness in the Kidnies, and parts necessary to Generation. And therefore in this case it must be used discreetly; and with great circumspection.

The Magistery of Lead.

Dissolve the *Calx* of *Lead* in *Vinegar*, Distilled as is taught in in the preceding *Chapter*. Pour off the *Solution* by Inclination, and pass it through gray Paper. Then put upon it some Oil of *Tartar, per deliquium*, and you will instantly see the Liquor as white as curdled Milk, whereon pour a good deal of common Water very clean; and let it settle, and the *Lead* will precipitate to the bottom in a white powder; and this is by reason of the Oyl of *Tartar*, which being an *Alkali* Salt dissolved, breaks the force of the distilled *Vinegar*, which had reduced the *Lead* into Liquor, and constrains it to let go

its former hold. Pour off the floating Liquor by inclination, and put some common Water upon the Powder, to *Dulcify* it, which pour away when it is well settled. Repeat this washing so often till the Powder be wholly freed from the *Acrimony* of the Salts. Then dry it and keep it for use.

This *Magistery* is exceeding white, and good for *Pomatusms*. But 'tis also used in *Unguents* and *Eye-Waters* as a good *Dificative*.

If out of curiosity you desire to reduce the *Salt*, or *Magistery* of *Saturn* into *Lead* as it was before; melt a little *Salt* of *Tartar* in a *Crusible*, then put thereto a little of this *Salt* or *Magistery*, and you shall see it presently return to *Lead*; for the *acid* Spirit of *Vinegar*, which kept the *Lead* in the form of a *Salt* or white Powder, is destroyed by the *Salt* of *Tartar*, by which it is at the same time both melted and reduced back to *Metal*.

A burning Spirit of Saturn, (as it is called) but rather, A Spirit of the Volatile Salt of Vinegar.

TAKE two pound of *Salt* of *Saturn*, well purified by several *Solutions* and *Crystallizations* with distilled *Vinegar*. Put it into

a *Retort*, so as to fill the same but half way, and place it in a *Furnace* of Sand, fitting thereunto a large *Receiver*. Lute the joynings well, and make the Fire gentle at first. There will come forth in the first place a phlegmatick Water and afterwards the Spirit, which will cause the resemblance of Veins in the *Receiver*, as when you distill *Aqua-vita*: for this Spirit is almost of the same nature, proceeding from the *Volatile Salt* of the distilled *Vinegar*, which the *Lead* fixt and retained in its dissolution. But when this Spirit is urged by the Fire, it forsakes the body whereunto it adhered. Encrease the Fire by little and little and continue it to make the *Retort* red. There will come forth a red earthy Oil towards the end, but in very little quantity; which Oil some account the true *Red Oil of Saturn*, but erroneously, it being nothing else but the more heavy and earthy part of the distilled *Vinegar*. The Distillation being ended leave the Vessels to cool: then unlute the *Receiver*, wherein are the Phlegm, the Spirit and the Oil confusedly together, and there remains a black earth in the *Retort*. You must rectify what is in the *Receiver*, in a little *Gourd* in *Balneo Maria*: The Spirit will come forth first, which is inflammable like that of Wine, but it will smell like the Spirit of *Lavender* or *Rosemary*: The Phlegm and the thick Oily Liquor will remain in the bottom of the *Gourd*. This Spirit is an excellent Remedy

against the *Plague*, *Putrid Feavors*, and *Hypochondriacal Melancholy*. The Dose from 4 to 12 drops in some convenient *Liquor*. The *Phlegm* may serve to wash *Wounds* and *fetid Ulcers*. The *Earth* left in the *Retort*, is very black whilst inclosed; but as soon as you have broken the *Retort*, and it takes *Air*, it grows hot of it self and turns from black to yellow, and at the same time is rarified to the eye. If you put it into a *Cra- sible* to melt, it returns easily to *Lead*.

CHAP. IV.

Of Tin.

TIN is an imperfect Metal by reason of the unequal composition of its principles; for it abounds with *Sulphur* and *Earth*. It contains a *Mercury* pure enough, but in little quantity, as also very little *Salt*, which is the cause that 'tis easy to destroy its *Metallick* form, and reduce it to an irreducible *Calx*. 'Tis called *Jupiter*, by reason of the affinity it hath with the *Jupiter* of the great *World*, and for that the Remedies made of it serve the for the Diseases of *Liver*, and the *Matrix*.

The Purification of Tin.

Fine *Tin* is purified after the same manner as *Lead*, in a great Iron Dish, by being melted on the Fire, and adding to it some little pieces of Soot or Wax, and taking off with a *Rod* or *Spatula* of Iron, the black Scum that rises upon it, and pouring the *Tin* thus depurated into a very clean *Bason*,

The Calcination of Tin.

T*IN* is Calcined in a Reverberatory Fire upon an edged Tile, as *Lead* is in the foregoing Chapter. Continual agitation will reduce it by little and little into a powder of an *Isabella* colour, provided the *Tin* be fine and not mixed with *Lead*; if there be *Lead* amongst it, the *Calx* will be white: and 'tis this last that the makers of fine Earthen Pots make use of for their Vernish. It may also be Calcin'd by the addition of *Sulphur*, as we have said in the foregoing Chapter.

The Salt of Jupiter.

MAny Chymists presume to affirm in their writings that the preparation of the *Salt of Tin* differs nothing from that of *Lead*, and that they are to be made after the same manner. We easily understand from hence, and from several other things contained in their Books, that they borrow one from another, and choose rather to offer to the publick unwarranted preparations, than to make experience thereof themselves. For 'tis impossible to dissolve the *Calx of Tin*, though very well Reverberated, in *Distilled Vinegar*, which nevertheless easily dissolves *Lead*. 'Tis true, the most corrosive *Acids* as *Aqua-fortis*, Spirit of *Nitre*, &c. dissolve it. But in as much as a great quantity of them is necessary for a little *Tin*; the Remedies drawn from it by help of those *Corrosives*, cannot but be very hurtful, But if you reduce *Tin* into Flowers by *Sublimation*, then it is so opened, that *Distilled Vinegar* can easily dissolve it.

Take a pound of fine *Tin*, either in *Calx* or Filings, and two pounds of well refined *Saltpeter*, and put them into a *Gourd* made of good earth that is able to resist the fire. Place the *Gourd* in a *Reverberatory Furnace*, stop well and lute the upper part of the Fur-

naco

nace round about the *Gourd*, all but the four *Registers*, by which the fire is to be governed. Fit upon the *Gourd* one over another three or four good Earthen Pots, pierced in the bottom, all but the uppermost which is to close all; that which is next the *Gourd* must besides have a little opening on one side for putting the matter in. Lute the joinings of the Vessels exactly, and put fire to the *Furnace* to heat the *Gourd* by degrees, till it become all red; then with a little Iron Ladle put in about an ounce of the Powder, and stop the hole immediately with a piece of Earth or Brick fit to it, which may be easily removed. It will make a great rumbling noise, in which the Volatile Spirits of *Saltpeter* carry away with them part of the *Tin*, which is sublim'd and sticks to the Pots like white Flower. When the noise is over, put in another ounce of the mixture, stopping the hole speedily, and let the noise pass. Continue this till all the Powder be spent, and then let the Vessels cool. After which, unlute them and you will find the Pots filled with the Flowers of *Tin*, like Meal. Gather off these Flowers with a Feather, and wash them well with warm water, to take away the *Acrimony* of the *Saltpeter*; continue these washings till the Flowers be well *edulcorated*, and then dry them by a gentle fire.

These Flowers thus dry'd put into a *Matrice*, pouring thereupon distilled *Vinegar* three fingers

fingers higher than the matter. Set this *Matraxe* on hot Sand to digest for three days, then pour off the *Solution* by inclination into another Vessel, and put new distilled *Vinegar* upon the remaining matter in the *Matraxe*, and set the same again to digest as before; then pour off the *Menstruum* by inclination. Repeat these Digestions with new *Vinegar* till the Flowers be all dissolved; then filtre all the *Solutions* together, and evaporate them with a gentle heate to *siccity*, and in the bottom of the Vessel you shall find the *Salt* of *Jupiter*; which in the next place must be freed from the *acidity* of the *Vinegar* it retains, by means of the Spirit of *Wine* in the manner following.

Put the Salt into a little *Glass-Gourd*, pouring thereupon good Spirit of *Wine* two fingers high; fit an *Alembick* to the Gourd, and a little *Receiver* to the *Alembick*, and set it to distil with a slow fire; the Spirit will carry off with it part of the *acid Salt* of the distilled *Vinegar*. Repeat this Distillation five or six times, always with new Spirit of *Wine*; and you shall have a *Salt* of *Jupiter* deprived of all *Acrimony*, and endued with very great virtues in all *Hysterical* Diseases. The Dose is from 6 to 20 grains in some convenient liquor.

The Magistery of Jupiter.

Dissolve four ounces of very fine *Tin* with thrice as much good Spirit of *Nitre* in a *Matrace* upon a fire of Sand. Pour the *Solution* into a great Glased Earthen Pan full of very clean Water, which by its quantity will weaken the Spirit of *Nitre*, and make it forsake the *Tin* which it had dissolved, and which will precipitate to the bottom of the Vessel in a very white Powder. *Edulcorate* this Powder by frequent washings with Water, and dry it in the shade; 'tis a very fair white, and serves for *Pomatum*s for the Face.

C H A P. V.

Of Iron.

Iron, called *Mars* by the Chymists, is an imperfect Metal, containing very little *Mercury* but much fixt Salt and *Terrestrial Sulphur*. It affords very excellent Remedies which produce admirable effects in many Diseases

eases, so that even the enemies of Chymistry are obliged to make use of it and to confess its Virtues when other Remedies fail of the effects desired.

The Purification of Iron.

IRon is purified and becomes *Steel* by means of the Horns and Hoofs of Animals, either cut small or grossly Powdered and mixt with *Charcoal* of some light Wood, as Willow or Tegel powdered and stratified with small *Iron* Rods, in Pots or *Furnaces* made on purpose. And being the Hoofs and Horns of Animals contain much Volatile Salt in them, this Salt by the help of the Fire penetrates the substance of *Iron* by its subtlety and reduces it into *Steel*.

The Calcination of Mars, and reduction into an astringent Crocus or Saffron.

TAke the filings of polisht *Steel*, or those of fine Needles; put the same upon a large flat Tile, which place in a *Glass Furnace*, or else in a *Reverberatory Furnace*, during seven or eight days, so that the Flame may touch it

it continually; and the filings will be turned into an impalpable Powder, Spungeous and of a brownish red. Wash the same five or six times with warm water, to take away what might remain of its *aperitive* virtue: then dry it and keep it for use. This Powder, called *Crocus Martis astringens*, is used for *Dysenteries*, *Lienteries*, Spitting of Blood, *Gonorrhœa's*, and other Diseases that need binding. The Dose is from 10 to 30 Grains, in Conserve of Roses, or Syrup of Quinces, or in some proper Water or Decoction. Note that the Chymists give the name of *Crocus*, or *Safron*, to Metals or Minerals, which by Fire either Actual or Potential are reduced into a red or reddish Powder.

Another Astringent Safron of Mars

TAKE three ounces of Filings of Steel, put it into a *Glass-Gourd*, and pour thereto by little and little twelve ounces of Spirit of *Nitre*, or of good *Aqua-fortis*. I say by little and little, by reason of the great *Ebullition* which arises, and when this is passed, clap an *Alembick* upon the *Gourd*, and draw off all the Humidity, which will be as insipid as Water, by reason that the *Steel* retains all the *acid* Spirits. There will remain in the bottom of the *Gourd* a reddish Mass, which
you

you must put into a *Crusible* upon a moderate fire, so as to make it red for three hours; and you shall have a very red Powder, to be employed outwardly for stoppage of Bleedings, and for drying of Wounds and Ulcers. This *Crocus* is also used in *Astringent Plaisters, Unguents, and Liniments*. But if you put but one ounce of Filings of *Steel* to six ounces of *Aqua-fortis*, and in the *Matrace* evaporate the same to *siccity* in a fire of Sand, you shall have a *Crocus* dissolvable in a Cellar into a red Liquor. 'Tis a very good Remedy for *Mundifying* any Ulcer, rendering the same capable of *cicatrification*, which it procures by the Astringent faculty derived to it from its *Vitriolick Earth*.

Another Aperitive Safron of Mars.

HEat a square piece of *Steel* in a Smith's Forge till it become very white and sparkle; have ready a large Earthen Pan full of Water; and take the *Steel* out of the Fire, holding it firm with the Tongs over the said Water, and apply to it the end of a roll of *Brimston*, and they will both melt drop by drop into the Water; but the *Steel* will cease when it begins to lose its whiteness; and then you must put it again into the Forge and repeat the application of the *Sulphur* till
all

all the *Steel* be melted and fallen drop by drop into the Pan of water. Pour the water out of the same by inclination, and put the *Steel* and *Sulphur* thus melted into a *Crusible*, which which being made red hot upon the Fire, the *Sulphur* will exhale and the *Steel* will remain, which you must beat to Powder and sift through a Hair Sive. Afterwards reverberate this Powder with a flaming Fire four and twenty hours, and you shall have an Aperitive *Safron* of *Mars*, of a red colour, and a great Remedy in *Cronick* diseases, the *Cachexie*, Obstructions of the *Liver*, *Spleen*, and *Mesentery*. The Dose is from 8 to 24 Grains, in the Conserve of *Marigold*, *Tamarise*, &c. Many use with good success the Filings alone finely powdered.

Vitriol of *Mars*.

TAKE three pounds of good corrosive Spirit of *Vitriol*, called improperly Oil, and nine pounds of Rain-water. Mix them together; then put a pound of Filings of *Steel* in a great *Matrace*, and pour thereon by little and little the three quarters of the mixture of Water and Spirit. Set the Vessel upon hot Sand for two days, during which, most of the Filings will be dissolved, which would

would not be without the addition of the Water, which hinders the Oil of *Vitriol* from being suckt up and congeal'd by the Filings of *Steel*; and the Liquor will become green. Pour it off by inclination into another Vessel; and if any Filings remain undissolved, put thereupon that which you reserved of the Dissolvent, and digest the same as before upon hot Sand. Then pour off what is clear by inclination into the first *Solution*, and throw away what remains in the bottom of the *Matrass*, as useless Earth, being but little. Filtre all the *Solutions*, and Evaporate them in an Earthen Pan upon hot Sand to the half. Then place it in a Cellar or other cool place for three days, in which time most of the Liquor will be Christallized like *Vitriol*. Pour off the floating Liquor into another Vessel, and having evaporated part of it, Christallize the rest as before. Repeat this Crystallization till all the humidity be evaporated, and all the solid substance be reduced into *Vitriol*. Then dry all the *Crystals* and keep them in a Glass, or Earthen Pot well stopt. One pound of *Mars* affords usually four pounds of *Vitriol*; which increase proceeds from *Recorperation* of the Spirit of *Vitriol*, joyning it self easily with the *Mars*, which is very apt to congeal and detain acids by its *styp-tick* virtue. The *Vitriol* of *Mars* is good against the *Cachexie*, and the obstructions of the *Liver*, *Spleen*, *Pancreas*, and *Mesentery*. But the use of it must be continued for some
time

time, as of other Remedies extracted from *Mars*; whereof the Dose likewise must be encreased in the continuance, and that by little and little till the Stomach rises against in, and then it must be diminisht. The Dose is from 3 to 15 Grains in Broth, or in some Conserve in form of a *Bolus*. With this *Vitriol* may be made also Mineral-waters, strong or weak, according to the intention. But commonly a Dram of *Vitriol* serves for two quarts of Water.

Another Aperitive Safron of Mars.

Reduce a square piece of fine *Steel* into small Plates, which strow upon an Earthen Dish well Glased, and expose the same early in the morning to the Dew in the Month of *May*, taking care to turn it now and then till the Dew be passed that day, and till the Plates in the Bason be dried by the Sun, or otherwise; then with a Hare's Foot carefully sweep together the little Powder which will be upon the Plates like rust. Continue the same Operation with like care the whole Month of *May*, or as long as the Dew lasts, daily gathering off the Powder, and keeping it for use. This Operation is sufficiently long and Tedious; but this *Safron* yields not to the first in its opening virtue, which is much encreased by the subtle and penetrating Spi-
rit

rit of the Dew, which unites itself with the *Steel*, and insensibly reduces the same into an impalpable Powder. The Dose of this *Crocus* is from 4 to 15 Grains in Obstructions, as the other Remedies extracted from *Mars*, to which it is not inferior in virtue.

Another Aperitive Safron of Mars.

TAKE a pound (or as much as you please) of *Vitriol* of *Mars* made with Spirit of *Vitriol*, as we have taught before: put the same into a *Crusible* amongst burning Coals for half an hour, or till it be quite red; then let the Vessel cool, and you shall find a reddish brown Powder, weighing about half the *Vitriol* put to *Calcine*; for the lighter and better Spirits exhale by the action of the Fire, which 'tis good to preserve; as you shall do by putting the *Vitriol* of *Mars* into a *Glass-Retort* well luted in a Reverberatory Fire, joyning thereto a great receiver, and proceeding in the same manner as we shall in the *Chapter* of *Vitriol* teach the Distillation of its Spirit. By this means you shall have a very excellent Spirit of *Vitriol* of *Mars*, which may be used with very good success where there is occasion for *acids*. In the bottom of the *Retort* there will remain a
Safron

Safron of Mars very fair and excellent, having all the virtues attributed above to the preparations of *Aperitive Safrons of Mars*.

An Aperitive Tincture of Mars by means of Tartar.

The preparation of this Remedy is very simple and easy. 'Tis improperly called a *Tincture*, being nothing but a *Solution* of the intire substance of *Iron* made with *Tartar*, which is a matter much abounding in *Acid* Salt. Take half a pound of Filings of *Steel*, well washed, and two pounds of good *Tartar* of *Montpellier*, or *Germany*, (which is best for this Operation) though either may serve, provided it be clean and *CrySTALLINE*. Powder the *Tartar*, and mix it with the Filings, and put all together into a great *Iron-Pot*. Pour thereon ten or twelve quarts of *Rain-water* or *River-water*. The Pot must be so great that a third part may be empty. Set it to boil on a good Fire, till it dissolve the *Tartar*, and make the *Acid* part thereof act upon the *Steel*, which you may observe by the swelling of the matter; for which reason the Pot must be very large and only half full; for otherwise it would run over. Continue the Fire a whole day together, and keep a Vessel full of boiling Water near the Pot to recruit

the consuming Water. In the mean time stir the Water continually, which will appear as white as Broth; and after ten or twelve hours boiling, leave it to settle; that which is thick will go to the bottom, and the thinner part will float above, being blackish and of a sweetish tast. Pour the clear off by inclination, and filtre it through a gray Paper. Then evaporate it in an Earthen Vessel with a gentle Fire to the consistence of Syrup, and keep it in a Phial for use, as a very good and sure Remedy against all obstructions of the *Liver, Spleen, Pancreas, and Mesentery*, and against *Cachexies, Dropsies*, Stopping of the Courses, and generally against all Diseases which require opening and strengthening; 'tis also very good against the Worms and putrifaction of the Stomach and Bowels. The Dose is from fifteen drops to half a Spoonful in in Broth, or in some proper Water or Decoction.

An Aperitive Extract of Mars.

TAKE one pound of very fine Filings of *Steel*, put it into a great Bottle, and pour to it eight quarts of *Must* or juice of Grapes newly pressed out; stop the Bottle and expose it to the Sun, and in fair weather forty days and nights, shaking the matter in
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it sometimes, the better to draw out the *Aperitive* substance of the *Steel*. At the end of which time filtre the Liquor through gray Paper, which you will find to have the colour and tast of *Iron*. Evaporate it to the Consistence a *Rob*, if you will have it in a liquid form, or to the consistence of an *Extract*; if you will mix it with *Electuaries*, *Lozenges*, or *Pills*. Let this be done with a gentle Fire in a Glass Vessel in *Balneo Maria*, or warm Ashes, to the end the *Extract* may not favour of burning, and you shall have a Medicine of great virtue, and not at all unpleasant. If you keep it in the consistence of a *Rob*, the Dose may be the same with the *Tincture* of *Mars* newly described. If you reduce it into an *Extract*, the Dose may be from six Grains to a Scruple, in some proper Syrup, Trosk, a rosted Apple, or the like you may also incorporate it with an equal quantity of *Aloes Succarine*, dissolved, depurated and boiled with Syrup of *Damask-Roses*, and according to art make a Mass of it, whereof you may form Pills, each weighing eight Grains, of good use for all sorts of Obstructions both of Men and Women. 'Tis enough to take one Pill before Supper for fifteen days, or three weeks. Some reinforce this Mass with *Gum Armoniac* or *Sagapenum*, and even with *Scammony* and other *Laxatives*; which I will not disapprove, being glad that every day something were invented to improve the excellent Medicines which Chymistry affords us.

An Astringent Extract of Mars.

THough this Preparation be very simple and the easiest in all the Book, yet it deserves to be mentioned for the good effects which it produces, and for the sake of those that are ignorant of both sort of *Pharmacy*. Take four ounces of Filings of *Steel*, put it into a Glased Earthen Pot, pouring thereto a quart of good deep red Wine, that which Wine-Merchants use to give a colour to their White-wine, set it to boil, and stir it about with an *Iron Spatula* till above three parts of the Wine be consumed; Filtre the remainder whilst it is hot and swims above the *Steel*; and then evaporate it to the Consistence of an *Extract*; Or if you will not be at the trouble, you may use this filtred Liquor, giving an ounce of it in Broth, fasting, for some mornings together, as a great Remedy for *Diarrheas*, *Dysenteries*, old *Hepatical Fluxes*, and other such Diseases. Being reduced into the form of an *Extract*; The Dose is from twelve Grains to half a Dram, in some Broth or other *Astringent* Liquor.

Salt of Mars.

TAKE half a pound of Filings of *Steel*, put it into a Glased Earthen Pan and sprinkle it with good Distilled *Vinegar* till it be like Past. Then set the Vessel in a *Bath* of Ashes till the Past be dried; then powder it, and moisten it again with Distilled *Vinegar* and dry it as before. Repeat this operation a Dozen times, to open the *Steel* well; Lastly, powder the *Steel*, and put it in a *Gourd*, in *Balneo Maria*, pouring thereto twelve pound of distilled *Vinegar*, and continue it in the Bath boiling till a third part of the *Menstruum* be consumed; then decrease the Fire, and when the Vessel is cold pour off the *Solution* by inclination into some Bottle, and having put new *Menstruum* to the *Steel* set the same in *Balneo* as before, stirring the matter now and then, till a third part of the *Menstruum* be consumed as before; pour off the remainder by inclination. Repeat this Operation thrice; and the Vessel being cooled mix all the *Solutions* together, and filtre them very exactly. Evaporate in *Balneo Maria* till there remain in the bottom but about an eighth part; then set the Vessel in a cool place for a day or two, in which time the Salt will partly be Crystallized. Pour off by inclination the Li-

quor floating above the Crystals into another glased Vessel, and Evaporate again. Repeat this Operation till you have drawn out all the Salt, which you must dry gently and keep for use. This Salt is improperly called so, as well as that of *Saturn*, being nothing but *Solutions* made with the *Acid*. Spirit of *Vinegar* which coagulates with the matter dissolved into the form of Salt; but this union may be easily dissolved by Fire, which drives the light Spirits of the *Vinegar* into the Air, the Metallick bodies remaining in form of an Earthy *Calx*, till by the extreme violence of a melting Fire the same be reduced into Metal.

Yet this hinders not but that whilst in the form of Salt they have their use in Physick; since the *Acids* wherewith they are prepared carry them into the most remote and difficult places; and these very *Acids* being corrected in some sort by the bodies which they retain, cannot act with so much violence as they would do being alone. This Salt may be used where ever there is occasion for the other *Aperitive* Remedies of *Mars*. The Dose is from 3 to 15 Grains in some *Vehicle*.

C H A P. VI.

Of Copper.

Copper is an imperfect Metal, consisting of a little Salt and *Mercury*, but of very much red and earthy *Sulphur*; nevertheless it is purer than *Iron*, and contains less Earth and little Salt; whence it may easily be mixt with *Gold* and *Silver* without rendring them brittle, whereas the least mixture of other Metals makes them so brittle that they are not malleable. The Chymists call it *Venus*, both by reason of the influences which possibly it receives from that Planet, and of the virtue it hath in Diseases seated in the parts of Generation. It affords not so many internal Remedies as *Iron*, by reason of its Vomiting quality, which is hardly corrected. But it yields more powerful ones than *Mars* for external Maladies. Wherefore we may well suspect the use of a Water lately cried up, whose virtue proceeds only from a fixt Salt of *Venus*, which being given in substance fails not to shew what it is by causing vomiting. And the use of the Water impregnated with this Salt, produces those nauseatings and inclinations to Vomit by irritating,
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corroding, and weakening the coats of the Vessels to such a degree that being incapable to retain the more subtle parts of the Blood it hath caused the death of many Patients under pretext of curing them of the *Dropsy* and other like Diseases.

The Purification of Copper.

TAKE thin *Copper* Plates, and cut them into pieces proportionable to the *Crusible*, then make a course Powder of three parts of *Pumice-stone*, and one part of *Sandiver*, or Salt of Glass: Stratify your Plates in a very strong *Crusible*, beginning and ending with the Powder, and set the *Crusible* in a very hot melting Fire. The *Copper* will be found melted in the bottom of the *Crusible*, and the *Pumice-stone* will be above it, having sucked up a good part of its earthly and impure *Sulphur*. This operation may be repeated twice or thrice, to purify the *Copper* the more and render it fitter for Chymical Operation.

The Calcination of Copper.

Copper may be Calcined into a Crocus in the same manner as Mars, by reducing it into Filings, and placing the same upon an edged Tile in a Reverberatory Fire during seven or eight days. It may also be Calcin'd by Stratifying the Plates with powder of Brimstone in a Pot that can endure the fire, covered with its covering, in the middle of which there is a hole to let the Sulphur exhale. Copper thus burnt is called *As ustum*. It may also be Calcin'd and reduced into Verdigrease by Stratifying the Plates in a covered Pot with the Husks, or Mother of the pressing of Grapes which have fermented with the Wine in the Fat; in the bottom of which Pot there must be a little Wine, over which little sticks are to be placed crosswise to keep the Plates from touching the Wine. The said Mother is also to be moistened a little before you Stratify the Plates with it; which render their Verdigrease after that the Mother being Fermented and heated, the *Vinous Tartar* remaining in the Mother being excited by the vapours of the Wine, become volatilized into Spirit, and as it ascends penetrates and corrodes the the Plates, and reduces them into Verdigrease. This preparation cannot

not be made in all places where Wine grows; because all Wines have not *Tartar* enough for this purpose. But *Montpelier* and other adjacent places afford much of it, because the Wines thereof abound with very pure penetrating *Tartar* proper for this effect.

Vitriol of Venus.

TAKE a pound of the Filings of *Copper*, put the same into a *Matrace*, and pour thereon three pounds of good Distilled *Vinegar*. Place it in digestion upon hot Sand for three or four days; then pour off the distilled *Vinegar* by inclination, and put some fresh upon the *Copper*, which digest as before. Repeat this by pouring off the *Solutions* by inclination till all the Filings be reduced into a green Liquor. Filtre it, and Evaporate the *Humidity* till there remain but about four pounds of Liquor. Then take the Vessel from the Fire, and let it stand two or three days in a cool place, and part of the Liquor will be Crystallized. Pour off as much as is not Crystallized, and having Evaporated the half, set it again to Crystallize as before. Continue this till all the dissolved substance be reduced into green Crystals, which you must dry and keep carefully. This Operation is made more easily with *Verdigrease*, because the distilled

Vinegar

Vinegar finds the same more open and fit for Dissolution than crude *Copper*.

Another Vitriol of Venus.

A *Vitriol of Venus* of a sky colour may be prepared by means of the *Acid Spirit of Vitriol*, in the same manner as the *Vitriol of Mars* is made.

Spirit of Venus.

TAKE a pound of the green Crystals of *Copper* or *Verdigrease* made with distilled *Vinegar*, put the same into a *Glass-Retort*, which place in a *Furnace of Sand*, fitting a great *Receiver* thereto. Lute the joints well, and make a moderate fire in the beginning. There will come forth first a *Phlegmatick Water*, next a *Spirit*, appearing in the *Receiver* in the form of *Veins*, as *Aqua vita* also doth; then you must encrease the fire, to drive out the white *Spirits* which will ascend in *Clouds*: at last a yellowish *Liquor* will come forth. The *Distillation* being ended, leave the *Vessels* to cool; and when they are unluted you will find in the *Retort* a black
Earth

Earth like Coal-dust, which you may keep in Powder, being very *Syptick*, and good to dry Wounds and Ulcers; it may also be reduced into *Copper* by a Fire of Fusion, only adding some *Salt-peter* and *Tartar* to it. What is in the *Receiver* must be put in a little *Gourd*, and set in hot Sand with its Head and Receiver; and all the Liquor distilled to driness with a gentle heat. You will have a very clear Spirit, excellent against all obstructions of the *Liver* and *Spleen*; as also against the *Epilepsy*, *Apoplexie*, and old pains of the Head; 'tis put into *Julips* to give them a pleasing Sharpness. It may also serve for the dissolving of *Corals*, *Pearls*, &c. but being distilled *Vinegar* doth the same, I would not advise any body to make use of a Spirit so laboriously made. And though some pretend that this Spirit acts upon Bodies without re-action, and may be drawn off by Distillation with the same strength it had before; yet I know the contrary by experience, having found that this Spirit as well as distilled *Vinegar* leaves the impression of its *Acrimony* in Bodies dissolved by it, whether *Pearls* or *Corals*; for which reason I cannot subscribe to all the commendations which they give to it.

A Volatile Vitriol and Magistery of Venus

TAke four ounces of Filings of Copper, put it into a *Matrass*, and pour thereon some *Acid Spirit of Salt Armoniac* prepared as is taught hereafter, to the height of three Inches above the *Copper*; stop the *Matrass* and set it in digestion upon hot Sand for some days. The Spirit will dissolve part of the *Copper*, but not with that violence as *Aqua-fortis* doth, but by little and little; (for *Aqua-fortis* will do as much in one hour as this Spirit can do in four days.) Pour off the *Solution* by inclination into another Vessel; and if any *Copper* remain undissolved, put new Spirit to it till it be all dissolved. Filtre all these *Solutions*, and evaporate the half in a covered *Gourd* upon hot Sand; set the remainder in a cool place to Crystallize for two days. Pour off the Liquor that swims above the Crystals into another *Gourd*, and Evaporate the half again, and set the rest in a cool place to Crystallize. Continue this till all be crystallized. Dry the Crystals gently and keep them carefully. This *Vitriol* hath something mysterious in it, and the preparation of it is the first step to come to the knowldg of the sweet *Sulphur* of *Venus* which *Van Helmont* recommends above all other things. If you
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set this *Vitriol* in a *Crusible* upon burning Coals, it all flies away. You may make an excellent Medicine of it by subliming it with *Salt Armoniac*, as follows. Reduce four ounces of *Vitriol* and as much of *Salt Armoniac* into a fine Powder, which put into a *Gourd* with its *Alembick* well Luted, and fit to it a *Receiver* well luted also; and by a fire of Sand sublime by degrees all that will ascend; after which let the Vessel cool, and having dissolved that which is sublimated in warm Water, filtre it, then pour upon it some Oil of *Tartar per deliquium*, which will precipitate a greenish Powder, which is the *Magistery* of *Venus*, and must be *edulcorated* by frequent Ablutions, and then dried. 'Tis a Sovereign Remedy for an old *Gonorrhoea*, being taken for some days from 6 to 12 Grains in some Conserve in form of a *Bolus*. You may keep apart a little Urinous Spirit found in the *Receiver*, which may be employed outwardly for Aches proceeding from cold humours.

A Liquor of Venus.

Dissolve an ounce of Filings of *Copper* in eight ounces of good *Aqua-fortis*, and evaporate the *Humidity* by little and little in a fire of Sand, till there remain in the bottom of the Vessel a green Mass, which
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being kept in a Sellar for some days will melt into a Liquor, and is useful to cleanse Ulcers and eat off dead flesh, and all Superfluities.

C H A P. VII.

Of Quicksilver.

Quicksilver is a Mineral body fluid, heavy and shining, consisting of a subtle Sulphureous Earth, and a Metallick Water of the same subtilty, both strongly linked and united together. 'Tis called *Mercury* from its conformity in its Actions with the *Celestial Mercury*, which frequently mixes its influences with those of other Planets, and according to its different Conjunction produces different Effects: so our *Mercury* easily joyns with other Metals, and diversifies its effects according to the quality which it gives or receives from the Metallick Bodies and Mineral Spirits with which it is joyned. Not but that alone, and without being joyned with others it can produce even surprizing effects, as may be seen in its preparations. Nevertheless there must be much discretion and prudence in the use of it; and there is oft-times rashness in those that employ it, as well through the
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little knowledg they have of the Nature of a body which varies it self after a thousand several manners, as in regard of the different complexions and tempers of the Sick and of the Disease in which it is used very frequently, and perhaps more often than need requires.

Quick-silver is found fluid in many places, being driven up by the Central heat to the surface of the Earth; and so it is found near *Cracovia* in *Poland*, but ordinarily we find it in sundry places involved in a Mineral earth, from which it is separated by distillation in *Iron-Retorts*, as I have seen in a Mine of *Quick-silver* near a Village as you go from *Gorits* a Town of *Sclavoniæ* to *Lubiana* the Capital City of *Carniola*. It is so plentiful that usually twelve pounds of the Mineral Earth which is grayish, yield upon melting in the *Iron-Retort* above four pounds of *Quick-silver*. There are also found in *Hungary* and *Transilvania* Mines of *Mercury* which are reddish and have some mixture of *Solar Sulphur*; for which reason the *Mercury* coming from those places is esteemed better than that which partakes not of *Gold*. But since *Mercury* passes through many hands before it comes to us, and so may be sophisticated, besides what *Heterogeneous* mixture it may have in the Mine, it is fit that it be well purified before it be employ'd upon the Body of Man.

The Purification of Mercury.

There are several Purifications of *Mercury*. Some are contented only to wash it with good *Vinegar* and *Salt* and when it is dry to pass it through *Leather*. But being it may carry with it *Lead* or *Bismuth*, or some other Mineral, wherewith possibly 'tis mixt, this way of purifying is not sufficient. Others put the *Mercury* into a *Retort* and distill it into a *Receiver* half full of *Water*; and if it has been encreased by *Lead* or *Bismuth*, these Metals will remain in the bottom of the *Retort* whilst the *Mercury* goes pure into the *Receiver*. But the best way of purifying *Mercury*, and the fittest for all Chymical Operations, is to revive *Cinabar* into fluid *Mercury*; by which means you are sure to have pure *Mercury* as it comes from the first hand; because all *Cinabar* is made near the Mines of *Mercury*, and is put into that form for more easy transportation. Moreover the mixture of the *Mercury* with *Sulphur*, by means of which *Cinabar* is made, and its sublimation doth in some sort graduate and perfect it. Lastly the Reviving of *Cinabar* into fluid *Mercury* by Filings of *Iron* delivers it from all impurity. But since we resolve to use the fluid *Mercury* revived from *Cinabar*,

nabar, 'tis requisite first to shew the preparation of Artificial *Cinabar*.

The Sublimation of Mercury into Cinabar, and the reviving of Cinabar into fluid Mercury.

Melt a pound of common *Sulphur* in a wide Earthen Pan; then put three pounds of *Mercury* into a Shamoy skin, and gently squeez the same through it, so that it come out by little and little like small Rain, and fall immediately into the Pan which contains the melted *Sulphur*. In the mean time continue stirring the *Sulphur* and keep it in Fusion till the *Mercury* be insensibly incorporated with it, then let the matter cool, which will be black; powder it grossly and sublime it in an *Aludel*, or Earthen Subliming Pot with a close Fire; and you shall have a very fair *Cinabar*. If the *Mercury* were sophisticated with *Lead*, *Bismuth*, or any thing else, you will find the same in the bottom of the Subliming Vessel; so that you may be assured of the goodness and pureness of this *Mercury* converted into *Cinabar*. The ordinary use of *Cinabar* is for Painting, as also in *Fumigations* to provoke *Salivation* in the *POX*; 'tis likewise used in *Ointments* for the *Itch*, and other faults of the Skin.

Now

Now to revive *Cinabar* into fluid *Mercury*; Take a pound of this *Cinabar*, or of that which is sold in the Shops, and as much of Filings of *Iron*, beat them together, and put the mixture into a *Retort* of Glass or or Earth well Luted; place this *Retort* in a *Furnace*, and put Coals round about it till it be quite covered; then put lighted Coals above, so that the Fire may kindle by degrees; fit a *Receiver* to the *Retort* half full of Water. And when the *Retort* begins to be red, the *Mercury* will come into the *Receiver* drop by drop. Encrease the Fire, and continue it till there come no more forth. Having poured away the Water, dry the *Mercury* and keep it for use. The Filings of *Iron* remaining in the *Retort* will be much Rarified, and black and encreased in weight, because it retains all the *Sulphur* which was in composition of the *Cinabar*; which *Sulphur* leaves the *Mercury* to adhere to the *Iron*, by reason of the *Acid* Spirits contained in the *Sulphur* which are united to the *Iron*.

Red Precipitate,

PUT four ounces of this *Mercury* revived from *Cinabar* into a *Matrace*, and pour thereunto six ounces of good *Aqua-fortis*. Place the *Matrace* in warm Sand till all the

Mercury be dissolved; which is usually done in a quarter of an hour; then pour off the *Solution* into a *Retort*, and distill in a fire of Sand all that will come forth. *Cohobate* the Distillation twice, and at the end of the second *Cohobation* encrease the fire till the *Retort* be red hot; then leave the Vessel to cool, and breaking it you shall find in it a red shining Mass, which you must powder in a Marble Mortar. This *Precipitate* is of use for *Venerical* Diseases; some take it at the Mouth from 4 to 8 Grains in Pills, or in some Conserve in form of a *Bolus*. 'Tis also used with success in *Pomatums* for the *Itch*, *Tetters*, and other faults of the Skin; in which case you must take notice that the *Aqua-fortis* be not made but of *Salt-peter* and *Alum*, because that with *Vitriol* is too violent and corrosive. It also serves for *Ulcers* and *Cancers* as well to mundify as to consume their proud flesh and other superfluities. But as for the internal use, you must lessen its corrosiveness by putting it into an Earthen Dish, and pouring on it good Spirit of Wine, and burning the same; which must be repeated thrice; and then you may use it inwardly with more safety.

Here I must admonish the Surgeons and others who buy *Precipitate* of certain vagrant persons, that they try it by putting a little upon burning Coals; for if any of it revive into fluid *Mercury* as soon as it feels the Fire, 'tis a sign it is mixt and sophisticated
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with *Minium*, which is nothing else but *Calcin'd Lead* which retains the Spirit of *Aqua-fortis* which before kept the *Mercury* in form of a red Powder; so that the *Mercury* re-assumes its first form; which, true red *Precipitate* doth not; for being put upon a burning Coal, it all exhales presently; the corrosive Spirits and the *Mercury* being strictly united and having no such body as *Lead* to divide them, they exhale together in the Fire.

Turbith Mineral.

TAKE four ounces of *Mercury* revived from *Cinabar*, and sixteen ounces of Oil of *Sulphur* or *Vitriol*; put them together into a *Glass-Retort*, which set in hot Sand for twenty four hours; after which, fit a *Receiver* to it and encrease the Fire by degrees; much Phlegm will come forth first, because the body of the *Mercury* retains back the acid Spirits of the *Vitriol* or *Sulphur*; continue the Fire till there come forth at last a little of *Acid Spirit* which the *Mercury* could not withhold. Then let the Vessels cool, and you will find in the bottom of the *Retort* a white Mass, which beat in a *Glass Mortar*, and pour on it a good deal of hot Water, upon which it will instantly turn yellow. *Edulcorate* it

well with warm Water, and then dry it and keep it. This Powder purges powerfully upwards or downwards, being mixt with purgative Pills or Electuaries. 'Tis employed for the cure of Venereal Diseases. The Dose is from 3 to 6 Grains.

The violence of this Powder may be moderated by burning Spirit of Wine upon it and stirring it in the mean time; and this for six times together. Which done, you may use it with more safety, and augment the Dose to 8 or 9 Grains.

White Precipitate.

Dissolve eight ounces of the same *Mercury* in a great *Matrace* with ten or twelve ounces of good *Aqua-fortis*, upon hot Sand; and being dissolved pour upon it four or five times as much warm Water to break the strength of the corrosive Spirits; add to it afterwards about eight ounces of Sea-Salt well purified, and you shall see the *Mercury* fall to the bottom in a white Powder. Let it settle well, and pour the Liquor into another Vessel. Then wash and *Edulcorate* the *Precipitate* with warm water till all the *Acrimony* of the Salts and the Spirits be taken from it; then dry it in the Shadow. Drop gently some Oil of *Tartar per deliquium* upon the

the first *Lotion* kept apart, and it will *Precipitate* part of the *Mercury* which the common Salt could not, and you will find in the bottom of the Vessel a red Powder which also wash and *Edulcorate*, as the white. You may also reserve the first *Lotion*, and drop into it gently Spirit of Urin, which will *Precipitate* some of the *Mercury* in a grayish Powder. Thus you may have from one sort of *Solution* three sorts of *Precipitate*, which may be indifferently used in *Pomatus* for the *Itch*, *Morphew*, *Tetter*s, &c. Where 'tis to be noted that you must never use it for the Face, at least not long, because it will spoil the Teeth and weaken the Brain, the Nerves, and Membranes in their source and Original, and it has been observed to cause Deafness in some persons, of which no other cause could be conjectured but the applying such Remedies to the Face, but the first *Precipitate* made with common Salt may be taken at the Mouth for Venereal Diseases, it purges both upwards and downwards. The Dose is from 4 to 8 Grains. If you put this white *Precipitate* into a *Marrace* and sublime it without any addition in Sand, you shall have an excellent sweet Sublimate, of which you may give from 20 to 30 Grains in some Mass of *Pills*, without fear of Vomiting; for the Sublimation alone corrects its violent quality.

Corosive Sublimate.

Dissolve in a *Matrice* a pound of *Mercury* with a pound of good *Aqua-fortis* upon a moderate Fire of Sand. Pour off the *Solution* into an *Alembick*, and Distill off about half the *Humidity*, which you may throw away. Let the rest cool, and it will coagulate into a Salt or *Vitriol*. Mix this *Vitriol* of *Mercury* with one pound of *decrepitated Salt*, and as much of *dephlegm'd Vitriol*, both powdered; put this mixture into a Glass *Gourd* with its Head, and place it in a *Furnace* of Sand, adapting to it a *Receiver*. Distill with a very gentle Fire all the *Phlegm* that will come out; then encrease the Fire one degree, to make the *Mercury* ascend by little and little; it will unite with so much of the Spirit of *Salt* or *Vitriol* as is necessary for *CrySTALLIZATION* and *Coagulation*; and you will see it stick to the sides of the *Gourd*. Continue the Fire twelve or fifteen hours, always in a moderate Degree. For if the heat be not sufficient, there will be no *Sublimation*; but if it be too great, either the Vessels will fly, or the *Sublimate* will melt and fall back upon the *Faces*. Let the Vessels cool afterwards, and you will find the *Mercury* Sublim'd to the top of the *Gourd*, which

which must be broken, to separate that which is fair and Crystallin from the *Caput Mortuum* in the bottom, and from that which is in the Head.

You may *Sublime Mercury* without dissolving it first in *Aqua-fortis*, by beating it with double its weight of dry'd *Vitriol* and as much *Decrepitated Salt*. But being there needs much time to beat the *Mercury* before it be incorporated with the Powders, and the *Atoms* or Steems issuing from it are hurtfull to the Brain, we prefer the manner already described.

The Sublimation of Mercurius dulcis.

BEat a pound of *Corrosive Sublimate* prepared as above in a Mortar of Marble or Glass, with a Wooden Pestle, and mix it with eight or ten ounces of *Mercury* revived from *Cinabar*, stirring it so long till the *Mercury* appear not at all, and the mixture become gray; put this Powder into a Vial so as to fill it half; place this Vial in a *Sand-Furnace*, and give Fire by degrees for seven or eight hours. Afterwards let the Sand cool, take out the Vial and break it, and you shall find in the bottom a little quantity of light Earth, but above and in the middle the sweet *Sublimed Mercury*, and towards
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the neck of the Vial some little of *Corrosive Mercury*, which you must separate. The *Sublimate* of the middle will be compact and sweet enough, but it must be beaten again in a Marble Mortar, and resublim'd alone twice more, separating the Earth from it each time, and that which is Sublimed in the top of the Vial. Keep the *Sublimate* which you find in the middle, which will be well dulcified and fit for all uses. The Dose of this *Mercurius dulcis* is from 6 Grains to 30. 'Tis to be mixt with some Purgatives in a *Bolus* or *Pills*; but is never given alone, to avoid *Salivation*. Its use is chiefly against Venereal Diseases and Worms.

Observe that all the preparations of *Mercury* may be revived in like manner as *Cinabar* with Filings of *Iron* or *Quick Lime*, which attract to themselves and retain all the Spirits which fixed the *Mercury* and gave it several shapes. Also that in the preparations of *Mercury* as well *Corrosive* as sweet, you must beware of touching any Metal, least the *Corrosive Salts* attract the colour, and take away its whiteness.

C H A P. VIII.

Of Antimony.

Antimony is a Mineral body near approaching to the nature of Metal, consisting of two sorts of *Sulphur*, the one very pure, fixt, and little different from the qualities of *Solar Sulphur*; the other combustible, like common *Sulphur*. It also consists of much Metallick, Fuliginous and indigested *Mercury*, but more concocted and solid than common *Mercury*, and of a very little course and Salt Earth. It comes from divers places both of *France* and *Germany*: The best hath long shining veins, between blew and reddish. Having well chosen it, you must separate it from its combustible *Sulphur*, which hinders the activity of the Remedies extracted from it; for which purpose several courses have been practised, of which we shall chuse only those that are absolutely necessary for the use of Physick, rejecting such as are superfluous, which serve chiefly to consume Coals and break Vessels.

The Ordinary Regulus of Antimony.

TAKE a pound of good *Antimony*, twelve ounces of *Tartar of Montpellier*, and five ounces of *Nitre*; put them together in powder; then set a great *Crusible* in a *Wind-Furnace* upon a little *Tile*, that it touch not the *Grate*, and that it may receive more heat; make it red hot amongst the burning *Coals*, and get a *Cover* fit to the *Crusible*. Take about an ounce of the said mixture with an *Iron Spoon*, put the same into the *Crusible*; and cover it at the same time with its *Cover*. The *Antimony* will be presently *Calcin'd* with a great noise, which they call *detonation*; which being passed, put more matter into the *Crusible*, covering it as before. Continue this till all the Matter be in the *Crusible*; Then give a good *Fire of Fusion*; and the Matter being melted put it into an *Iron Cornet* or *Cone* greas'd within, and at the same time strike the *Cone* with the *Tongs* to make the *Regulus* fall to the bottom; when 'tis thoroughly cold turn up the *Cone*, and you shall find a lump of *Regulus* in the bottom and the *Faces* on the top of it. Separate the *Regulus* with the stroke of a *Hammer*, and keep it by it self; as also the *Faces*, of which you may make the *Golden Sulphur*

Sulphur of *Antimony*, by boiling the same in common Water, and filtering the Decoction; upon which pouring a little distilled *Vinegar* by degrees, you shall see a red *Sulphur* of *Antimony* *Precipitate*, which you must *Edulcorate* by several *Lotions*, and then dry it. Many call this Powder *Sulphur Aureum Diaphoreticum*; but improperly; for 'tis a strong Vomitive. The Dose is in substance from 2 to 6 Grains. It may be also infus'd in Wine, as *Crocus Metallorum* is, to make an *Emetic* Wine.

Regulus of Antimony with Mars.

TAKE half a pound of the points of Hors-nails, put them into a good *Crusible*; in a *Wind-Furnace*, and cover the *Crusible*; give a Fire of Fusion, as soon as the Nails are very red, put to them a pound of good *Antimony* grossly powdered, and clap on the Cover, laying Coals above it, that the Fire may be very violent, and the *Antimony* presently melted so as to act upon the Iron and reduce it into Dross, with which the impure Sulphureous part of the *Antimony* unites at the same time that the *Mercurial* and pure part separates from it. You must have an *Iron Cornet*, or *Cone* upon the Fire, and rub it with Wax and Oil; and when you see the

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the matter well melted, throw into it by little and little three or four ounces of *Salt-peter*: I say by little and little, lest the *Nitre* make the Matter boil out of the *Crusible*. When the Matter has done sparkling, put it into the heated *Cone*, which strike with the Tongs to make the *Regulus* fall to the bottom. When it is cold, take it out of the *Retort* and separate it from the *Faces* with the blow of an Hammer. These *Faces* are nothing but the Sulphureous and Earthy part of the *Antimony* mixt with the *Nitre* and some part of *Mars*, making a Mass together; which at first is very compact; but in a few days it rarifies it self into a very light Powder resembling the Dross of *Iron*. The *Regulus* will not be pure enough at the first fusion, and therefore it must be melted in a new *Crusible*, and being melted put to it three ounces of crude *Antimony* in Powder, and make them flow together with a quick Fire. This addition of *Antimony* consumes the remaining impressions of *Mars* by its *Sulphur*. The matter being well in Fusion, cast in by little and little two or three ounces of *Nitre*; and the *Ebullition* being ceased, pour it all into a hot and Oil'd *Cone* or *Cornet*. and proceed as before, and you shall find the *Regulus* much purer than at the first melting. Melt it once more, and add to it a little *Salt-peter*; and when the *Ebullition* is over, put It into a *Retort*, proceeding as before; and the *Faces* will be grayish. Reite-
rate

rate the Fusion the fourth time ; adding to it some more *Salt-peter* ; and you will see that the said *Salt-peter* finding no more impurity in the *Regulus*, the *Faces* lying at the top will be white or yellowish ; and besides the *Regulus* will have upon its Surface the figure of a Star, which is the true sign of its perfection.

You may use either *Regulus* to make *Cups* and *Bullets*, or *Pills* which they call *Perpetual Pills*, because their virtue is never exhausted. For Wine put into a Cup made of *Regulus*, and changed every day, will always Purge and Vomit ; and a little Bullet of *Regulus* may be swallowed against the *Colick* and the *Iliack Passion* ; and when 'tis passed with the excrements, it may be washed and serve again a thousand times, never losing its quality, substance, or weight, but always working by the same irradiative quality.

The Flowers of Antimony.

PLACE an *Aludel* or other Earthen Pot resting the Fire in a *Wind-Furnace*, and fit above it four or five of the same earthen Pots proportionate to the said *Aludel*, and open both at the top and bottom, except the uppermost which must serve for a Head.

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Lute the joynings well, and let the Pot placed upon the *Aludel*, have a hole on the side with a stopple of the same Earth, to be put to and removed easily. Give Fire by little and little, and encrease it till the *Aludel* be all red. Then throw into the hole about two or three Drams of good *Antimony* in powder, stopping the hole immediately; open the same again about half a quarter of an hour after to put in the like quantity of powder of *Antimony*. Continue this Operation till you have put enough in. In the mean time maintain the Fire so that the *Aludel* may remain always red hot; and when you have employ'd *Antimony* enough, let the Vessels cool and unlute them: gather off the Flowers sticking to the sides of the upper Vessels, which will be of several colours, according as your Fire has been more or less violent. In the *Aludel* you will find some part of the *Antimony*; though some affirm that all the *Antimony* ascends up in Flowers; but experience shews the contrary; and the total *Sublimation* thereof can only be made in open, not in close, Vessels.

Another

Another preparation of Flowers of Antimony
with Salt-peter.

Reducce into fine powder one pound of *Antimony* and three pownds of refined *Salt-peter*; mix them together: then take an *Aludel*, or an Earthen Subliming-pot, having an hole in the middle of the side, and a stopple of good Earth; place it in a little *Furnace* in a naked Fire, fit a Glass head upon it, and a *Receiver* to the Head. Lute well all the joynings, and give Fire by little and little till the *Aludel* begin to be red at the bottom. Then open the hole, and throw in about half an ounce of the mixture of *Antimony* and *Salt-peter*; stop the hole immediately, and the Spirits of the *Salt-peter* will ascend with great impetuosity, and carry up with them some part of the *Antimony*, which will stick to the *Alembick* like Flowers. The noise being ceased, continue to throw into the *Aludel* new powder, stopping the hole and letting the *Detonation* pass. Continue this till all be spent. Then cease the Fire, and the Vessels being cold unlute them. In the *Receiver* you will find a Spirit of *Nitre* impregnated with the *Sulphur* of *Antimony*; and in the Head or *Alembick* the white Flowers of *Antimony*: but in the Pot you will have

a white fixt Mass consisting of the heavier parts of the *Antimony* and the *Salt Alkali* which is in the *Nitre*; *Edulcorate* the same by several *Lotions*, and free it from all impression of the *Salt-peter*. Afterwards dry the powder and you shall have a *Diaphoretick Antimony*, or *Ceruse of Antimony* well prepared. It may be made also of the *Regulus of Antimony*, as we shall shew hereafter.

The Flowers in the *Alembick* must be *Edulcorated* with Water, to take away the acidity of the Spirits of the *Salt-peter*, then dry'd and kept. They vomit strongly, and are used in inveterate Diseases, and especially against *Melancholy*, *Agues*, and all sorts of Obstructions.

The Dose is from 3 to 6 Grains in some Conserve. These Flowers thus prepared may be used more safely than those made without *Nitre*, which in some sort digests and corrects them. The acid Spirit is excellent against the *Cholick* and obstructions; it also provokes Urine. The Dose Is from ten to thirty Drops in some convenient Liquor.

The *Ceruse of Antimony* drives out by insensible transpiration all putrefaction and superfluity in the Body. 'Tis used with happy success to consume *Serofities*, and against *Scabs*, *Pox*, &c. The Dose is from 10 to 30 Grains in Broth, or some convenient Liquor.

Another Preparation of Flowers of Antimony.

PUT a pound of *Regulus* of *Antimony* into an *Aludel*, and fit some Pots over it, as is before taught; place the Vessels in a *Furnace* and give fire by degrees at first; but as soon as the *Aludel* is very hot, give a violent Fire and consume it for the space of twenty four hours, or till all the *Regulus* be ascended in very white and light Flowers, which gather off with a *Hare's Foot* for use. The virtue of these Flowers differs not from the others, and they may serve in all Diseases requiring a powerful evacuation.

Diaphoretick Antimony.

IN the making of the Flowers of *Antimony* with *Salt-peter* we have already shewed the way to make *Diaphoretick Antimony*, or the *Ceruse* of *Antimony*: but the operation being a little troublesome, we shall shew one more easy.

Take a pound of good *Antimony*, and three pounds of refined *Salt-peter* being powdered

dered apart; mix them together: then take an Earthen Pot not glased proportionate to the quantity of the Powder, make it red hot in the Fire in a *Wind-Furnace*, and put into it about an ounce of the said mixture which will be Calcin'd immediately with a great noise. The *Detonation* being ceased put another ounce of matter in; and do so till all be spent. There will remain in the bottom of the Pot a Mass as white as Snow, containing in it the *Salt Alkali* of the *Salt-peter*, and the more fixt parts of the *Antimony*; for the Volatile Nitrous Spirit unites with the Volatile Sulphureous parts of the *Antimony*, and they exhale together. The Pot being cool'd, break it, and pour a good quantity of warm fair Water upon the white Mass to take away the Saline parts; stir the Liquor often, then let it settle, and pour it off by inclination. Put new warm Water upon the Matter, stir it and leave it to settle; and repeat this *Lotion* so often till the white Powder remaining in the bottom be wholly freed from the *Acrimony* given it by the *Salt-peter*. Dry this Powder by rowling it to and fro in Cap-paper, and then expose it to the Air or Sun, and you shall have a *Ceruse* of *Antimony* well prepared.

This preparation may be made with the *Regulus* well purified, adding thrice the weight of good *Salt-peter*, and Calcining and Edulcorating as above; it will be whiter and purer than that made with crude *Antimony*.

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But observe also that the *Regulus* makes no *Detonation*, because its superficial *Sulphur* is separated from it, this being partly the cause of the noise, when it is agitated by the *Nitrous Spirits*. The virtues of these two preparations of *Diaphoretick Antimony* are like those attributed to it in the preparation of the *Flowers of Antimony* with *Salt-peter*. Observe also that when it hath been kept many years, it returns to its first nature, and loses the qualities acquired by its preparation. Whence it comes to pass, that the Patient is frustrated of the benefit of the Medicine and the Physician of the credit he expected from it.

Crocus Metallorum, or, the Safron of Metals.

TAKE a pound of good *Antimony*, and as much purified *Salt-peter*, each powdered grossly a part, and mix them together; then make an earthen Pot red hot amongst burning Coals, and put into it two or three ounces of the mixture, covering the Pot immediately with a Cover or Tile. It will make a great noise, and cast forth a great Smoak, which you must avoid. Continue to put the mixture in, till all be spent. Then encrease the Fire till the matter melt; which done take the Pot from the Fire, leave it

to cool, and break it. You shall find in the bottom a Mass of the colour of Liver of *Antimony*, and white *Faces* upon it, which take away, and keep if you please to reduce any *Calx* of Metals into a Body. You may powder the *Liver* of *Antimony*, and you shall have a *Safron* of *Metals* well prepared, from which you may by several *Lotions* separate some Nitrous Particles remaining in it: but many use it without washing or *Edulcorating*.

If you wash it with warm Water, the first *Lotion* will carry off the greatest part of the Nitrous Salt with some portion of the lighter parts of the *Antimony*; so that if the same be filtred through gray Paper, it will be a very clear Liquor; but by putting some *Acid* to it, it will precipitate a very subtle reddish Powder, which you must let settle, *Edulcorate* and dry: It hath near the same virtues as are attributed to the Flowers of *Antimony*,

An Extract of Antimony.

TAKE four ounces of *Crocus Metallorum* prepared as above, and eight pounds of *Must*, put them together into a Glass-bottle, and proceed as is taught in the preparation of *Extract of Mars* made with *Must*, or
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juyce of Grapes; and you shall have a vomiting Extract, of which the Dose is to be increased or diminished according as it has been more or less Evaporated. The Dose is usually from 6 to 24 Grains.

Butter or Oil of Antimony, and its Cinabar.

Pulverize and mix a pound of *Sublimate Corosive*, and as much *Antimony*; put them together into a *Retort* which place in a Fire of Sand, fitting a *Glass-Receiver* to the said *Retort*; give Fire gently, and when you see a Gummy Liquor come forth, continue a moderate Fire till no more issue out. Towards the latter end encrease the Fire, and when no more drops will out, take away the *Receiver*, and encrease the Fire till the retort be red hot, to make *Cinabar* of *Antimony* ascend, as it will do to the neck of the *Retort*, which break when it is cold, and gather off the *Cinabar*.

Note that in this preparation the *Acid Spirits* of the *Salt* and *Vitriol*, which kept the *Mercury* in Crystallin form, or *Corosive Sublimate*, leave the *Mercury* to fasten to the *Reguline* part of the *Antimony*, which they carry with them through the *Retort* in form of a thick Liquor; but the *Mercury* joyns
with

with the *Sulphur* of *Antimony*, and is sublimed with it in form of *Cinabar*. The *Butter* of *Antimony* is a good *Caustic* being applied with a *Feather*; it eats and consumes proud *Flesh*, and cleanses *Ulcers*. It must be rectified once more in another *Retort* to separate the impurities adhering to it. After which it is also more proper to make *Mercurius Vita*, or the Powder of *Algaroth*.

The *Cinabar* of *Antimony* is a *Specifick* against the *Epilepsy*, and is mixt with the *Magistry* of *Coral* and *Pearl*. The Dose is from 8 to 15 Grains. If you put this *Cinabar* with an equal quantity of *Salt* of *Tartar* into a *Retort*, you may draw off the *Mercury* alive in a graduated Fire; and the *Antimony* will remain with the *Salt* of *Tartar*; which may afterwards be dissolved with *Water*, which filtre and *Precipitate* the *Sulphur* of *Antimony* with distilled *Vinegar* or some other *Acid*; then *Edulcorate* it by washing, and you shall have the true *Sulphur* of *Antimony*; from which you may draw the *Balsom* of *Sulphur* which is distilled Oil of *Anise-Seed*, as we shall shew in the *Chapter* of *Sulphur*, and much better than that which is drawn from common *Sulphur*.

Another

Another Butter of Antimony.

TAKE four ounces of *Regulus* of *Antimony* well purified, and one pound of *Sublimate Corosive*, powder them apart, then put them together into a *Glass-Retort*; which place in a Fire of Sand, and give Fire at first gently; having Luted slightly a little *Receiver* to the *Retort*. There will come forth a Gummy Liquor which easily congeals and sticks to the neck of the *Retort*, which becoming stopt at length, and the Fire continuing, is apt to break for want of Air. To avoid which accident, hold a burning Coal to the neck of the *Retort*, which immediately melts the *Butter* and makes it drop into the *Receiver*. When no more comes forth, take away the *Receiver*, and substitute another half full of Water. Then encrease the Fire till the Sand be red hot, and there will drop out about thirteen ounces of fluid *Mercury* which was before in the *Corosive Sublimate*, which being changed by the addition of the *Regulus*, and the privation of the *Corosive* Spirits which forsake the *Mercury* to fasten on the *Regulus*, resumes its first form. If it had been mixed with common *Antimony*, which is very Sulphureous, it would by virtue of the said *Sulphur*
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be converted into *Cinabar*, as we have observed in the preparation of the *Butter* of *Antimony* with common *Antimony*.

This *Butter* has the same virtues as the former, and differs nothing from it, saving that the *Emetic Powder* or *Algaroth* is whiter.

Powder of Algaroth.

TAKE about half of your *Butter* of *Antimony*, depurated by rectification; put it into an Earthen Pan with a quart of warm Water, and you shall see it precipitate presently in a Powder as white as Snow; the Water having weakened the *Corosive* Spirits which kept the *Reguline* part of the *Antimony* in dissolution, and constrained them to quit the Body. The Precipitation being finisht, stir it again, and then let it settle, and pour off the Liquor by inclination, which is to be kept a part; for this first *Lotion* contains in it all the Saline Spirits which adhered to the *Antimony*. It hath a very pleasant *Acidity* and is therefore the Philosophical Spirit of *Vitriol*. Having washed and *Edulcorated* the Powder, dry it and keep it.

The Dose of this Powder is from 2 to 6 Grains. 'Tis employed to cleanse the viscidities and impurities of the Stomach; it purges

ges both upwards and downwards. 'Tis good against the *Dropsy*, being mixt with other Purgatives to divert its Vomitive power downwards.

The first *Lotion* is used in *Julips* for *Fevers*, rendering the same tart and agreeable.

Observe that all Vomiting Medicaments, especially those of *Antimony*, must be taken with great caution. I advise those that use them to keep in Bed or near a Fire, and to fortify their Breast well; with which caution these Medicines are of great use. The Vomiting must be furthered either by putting the Finger down the Throat, or with fat Broths or warm Beer. But be sure not to drink any thing cold that day; for it would hurt the Somach much, and consequently all the parts that draw their nourishment from it. Nor must you sleep during the vomiting, but keep your self awake and in action. Lastly, These Remedies are not fit for those that have a long Neck, a weak and narrow Breast, ill Teeth and a weak Head.

Mineral Bezoar.

TAKE the other half of the *Butter* of *Antimony*, weigh it, and put it in a good large *Matrace*; pour upon it by drops an equal weight of good Spirit of *Nitre*. Avoid the

the hurtful vapours issuing from it, and when you have poured in all the Spirit, and the dissolution is done, pour it into a little *Alembick*, and distil it to *Siccity* on a Fire of Sand. Pour again the like quantity of Spirit of *Nitre* upon what remains in the Body of the *Alembick*; the Spirit of *Nitre* will work no more; however Evaporate it by distillation to *Siccity*. Put on new Spirit of *Nitre* the third time, and Evaporate it as before, The matter in the bottom of the *Gourd* will be white, dry, and friable. Reduce it into fine Powder, and keep it carefully. This Powder is good against Poison, which it expels from the Center by Sweat. It is used also in all diseases caused by Serosities. The Dose is from 5 to 20 Grains, in Broths or other convenient Liquors.

Observe, that all these Powders are nothing but the Particles of *Regulus* of *Antimony* disguised, and that they act differently according to the nature of the Salts or *Corrosive* Spirits wherewith they are involved: and they may be easily reduced into *Regulus* by means of some reductive Salt, which takes away their covering, so that they return to *Regulus*, which you may again prepare indifferently as before.

Glass of Antimony.

TAKE *Antimony* in powder as much as you please, Calcine it with a gentle Fire in an earthen Dish not glased but resisting the fire; make the Calcination under a Chimney in an Airy place, and avoid the Sulphurous exhalations of the *Antimony* which are very hurtful, to the Breast especially. Stir the Powder during the Calcination, to keep it from clotting; which happening, powder it again in a Mortar and re-calcine it, and continue the Calcination till the *Antimony* smokes no more, and be reduced into Powder of the colour of Ashes, and deprived of its superficial *Sulphur*, which would hinder its Vitrification, or at least render it Opaque Glass. Then put this *Calx* into a Fire of Fusion in a very good *Crusible*, placed upon a little Earthen Plate. Give a violent Fire, and keep it so that the matter be in continual Fusion till it become very *Diaphanous*; which you shall know by putting into it the end of a little Iron-rod, to which some little matter will stick, which you may knock off with a little Hammer; and when the matter is very transparent, pour it into a flat Copper Dish, and you shall have a very fair Glass of *Antimony*, yellowish, drawing towards red

red, prepared without addition of any thing.

Some use this Glafs of *Antimony* in substance powdered, and mixed with some Conserve, Trofch, or other solid form. 'Tis a potent vomit. The Dose is from 3 to 6 Grains. You may also make an Emetic Wine with it by infusion, as with *Crocus Metallorum*.

The Correction of the Glafs of Antimony.

POWDER finely two ounces of *Glafs of Antimony*, prepared as above, and three ounces and half of *Nitre* well refined; mix them together; then set an Earthen Pot not glased, and resisting the Fire, in a *Furnace* amongst burning Coals, and having made it red hot, put into it a spoonful of the Powder; which being red hot also, put another in; and so continue by little and little, till all the Powder be heated red in the Fire. After which take the Pot from the Fire, and when it is cool, powder the matter finely, and *Edulcorate* it with two quarts of warm Water, which being poured on stir it nimbly and pour off the thick Water into another Vessel, leaving the courser Powder in the bottom of the first; and as soon as it is settled pour off the Water by inclination, and dry the Powder for use, being a very good and com-

commodious Vomit for all ages. The Dose is from 3 Grains to 20, in infusion of White-wine, or some other Liquor. You may likewise make a Syrup of it by infusing two ounces of this Powder in three quarts of juice of Apples, or Quinces well depurated, or White-wine in *Balneo Maria*, during 24 hours, filtering the Infusion afterwards through gray Paper, and boiling it gently with three pounds of fine Sugar in a Vessel of Silver, or Earth well glased, to the consistence of a Syrup. The Dose is from 2 Drams to 6, tempered with two or three ounces of Spring Water. 'Tis a very good vomit, and oftentimes gives two or three Stools very gently.

Laxative Emetive Tartar.

TAKE four ounces of good *Cream of Tartar*, powder it finely, and pour upon it in a *Gourd* covered with its Head, as much Spirit of *Salt Armoniac* as to cover it two fingers high; set it in a Cellar twenty four hours. After which, set this matter in a little glased Pot in a *Furnace* of Sand, adding an ounce of *Glass of Antimony* finely powdered. Then pouring to it a sufficient quantity of Water, make it boil for six or eight hours, filling the Pot from time to

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time. Afterwards filtre and evaporate upon hot Sand till it come to have a little skin on the top; then set it to cool in a Cellar, that it may the better CrySTALLIZE. 'Tis a very excellent Medicine. The Dose for aged persons is from 10 to 15 Grains; and for the younger, from 1 to 6.

CHAP. IX.

Of Mineral Cinabar.

THere are two sorts of *Cinabar* in use, the one artificially made of common *Sulphur* and *Quick-silver*, as is taught in the *Chapter of Mercury*; the other natural, composed by Nature of much *Mercury*, some portion of pure *Sulphur*, and some *Earth*. Which three are so united that they make a compact body, of a very fair red colour, which is more or less deep according to the pureness of the Mineral, and the place where it is found. 'Tis brought to us from several places, as from *Transilvania*, *Hungary*, and other parts of *Germany*: but the best is found in *Corinthia*, being preferable to all others either for preparations or to be used in substance; for 'tis an excellent Remedy for Diseases proceeding from sharp *Serosities*, which

which it corrects and carrys off by the pores. 'Tis used also mixt with some other Specificks for an inveterate *Gonorrhœa*. The Dose is from 10 to 25 or 30 Grains.

The Reviving of Mercury from natural Cinabar, and the separation of the Sulphur thereof at the same time.

TAKE a pound of good natural *Cinabar*, powder it finely, and mix it with a pound of good Salt of *Tartar*; put this mixture into a strong and well luted Earthen *Retort*, and placing in a *Furnace* with a naked Fire, fit a *Receiver* to it wherein put some cold Water. Give a gentle fire at first, which increase by little and little to make the *Retort* red gently. Then you shall see drop forth about eight ounces of fluid *Mercury*, and sometimes eleven, according to the goodness and pureness of the *Cinabar*. Let the Vessels cool, and break the *Retort*, in which you shall find a reddish Mass, which you must boil in a Vessel of Glass, or good Earth, with four quarts of Water to the consumption of a third part. Then Filtre the Liquor, which will be red; and the coarse unprofitable earthiness will remain in the Filtre. Into this red filtred Liquor distill drop by drop some good distilled *Vinegar*, or other *Acid*: and

the *Sulphur* will be precipitated in a very fine Powder, which you must Edulcorate by several *Lotions* with warm Water. When it is dry, you shall have the true *Sulphur* of Natural *Cinabar*, to be used as an excellent Remedy in diseases of the *Lungs* and *Breast*. The Dose is from 6 to 15 Grains in some Conserve, or other convenient *Vehicle*.

The Precipitation of the Mercury of natural Cinabar without addition.

TAKE several good Glass *Matraces* of half a pint; with long necks, which Lute well with good Lute capable to resist the Fire: put into each four ounces of *Mercury* revived from *Cinabar*, and place them in a *Sand-Furnace*. Stop the Orifices of the *Matraces* slightly to hinder any thing from falling into them. Give a fire of the first degree for three weeks, at the end of which encrease the Fire another degree, and continue the same during three whole Months, encreasing the Fire from three weeks to three weeks, so that in the last three weeks the Sand may be red hot. The *Mercury* will be turned to a very red and shining Powder, which serves with good success against the *POX*, and other accidents. Two or three Grains made up into Pills with some Conserve

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is a very good *Sudorifick*, and you may encrease the Dose to six Grains. It not only causes Sweat, but Purges by all the *Emunctories*, and corrects the corruption of the humours. 'Tis a very excellent Remedy, which in many cases gives satisfaction both to the Sick and to the Physician.

C H A P. X.

Of Bismuth, or Tin Glass.

Bismuth is a sort of *Marcasite*, and a Sulphureous earthy Mineral found usually in or near *Tin-Mines*. 'Tis seldom used but outwardly; and its chief preparations are the *Magistery* and the *Flowers*. *Tin* is near of kin to *Bismuth*, but contains a purer *Sulphur*. It may be prepared after the same manner, and its preparations have almost the same qualities and virtues.

The Magistery of Bismuth.

Powder two ounces of *Bismuth*, and putting them into a *Matrace*, pour thereon six ounces of good Spirit of *Nitre*. Place the

Matrazze upon hot Sand till the *Bismuth* be all dissolved, as it will be in about half an hour. Pour the *Solution* hot into a great Earthen Pan containing eight or ten quarts of Spring Water, and the mixture will become like Milk, till growing clearer, the *Bismuth* forsaking the Spirits of *Nitre* which held it dissolved will be precipitated to the bottom in a white Powder. Which being settled, pour the Water off by inclination, and put fresh to it; repeat the *Lotion* so often till the Powder be well Edulcorated; then dry it in the Shade and keep it for use. 'Tis a very good *Cosmetick*, serving to beautify the Face by being mixt in *Pomatum*, or in the Waters of *Nymphsea*, *Wild-Tansy*, and others. 'Tis also used for the *Itch*, and all maladies of the skin.

The Flowers of Bismuth.

B*ismuth* as well as *Zink* may be sublim'd with the addition of *Salt-peter*, or without addition, in the same manner as *Antimony*, to which we refer the Reader for avoiding of vain Repetition. The Flowers of *Bismuth* and *Zink* work great effects in Plaisters, to sweeten the *Acrimony* of the corroding humour of *Ulcers*, and to consume their superfluous *Serosity*. The Flowers prepared

pared with the addition of *Salt-peter* may be turned into *Liquor* by melting in a *Cellar* like *Salt* of *Tartar*.

C H A P. XI.

Of common Salt.

There are three sorts of *Common Salt*. That which is made out of *Salt-Springs*, *Sal Gemma*, or *Fossible Salt*, and *Sea-Salt*. The first is made by *Evaporating* the *Salt Water* in great *Leaden Pans*, at the bottom of which the *Salt* is found very white. *Sal Gemma* comes naturally such in many places, as near *Cracovia* in *Poland*, where there is a very plentiful *Mine* of it, out of which they dig vast pieces like a *Diaphanous Rock*. *Sea-Salt* is made on the *Sea-shore* in *Pits* during the *Summer*; the humidity of the *Sea-Water* being drawn up by the heat of the *Sun*, the rest remains dry. Any of them is equally useful for *Physick*; for though they differ in form, yet being dissolved, filtered, and *Crytallized* each apart, there is no difference in the *Crytals* either as to taste or figure. Nevertheless *Sea-Salt* is most used as most commodious and common in our *Country*, and 'tis purified as follows.

The Purification of Salt.

Dissolve what quantity you please of *Sea-Salt* in six times as much Rain Water, and set it in a Vessel of Pewter, Copper, or glased Earth upon a little Fire; Filtre the *Solution* through gray Paper, and having Evaporated all the Humidity, you shall have a very white and well purified *Salt*.

The Calcination of Common-Salt.

PUT what quantity you please of *Sea-Salt* into an Earthen Pot which resists the Fire, cover the same with its covering and put Fire round about it (which they call *Ignis rota*) and when the Salt begins to be hot, it will crackle and be reduced into Powder; continue the Fire, (but moderately) till the Salt make no more noise. Then let the Pot cool, and you shall find the Salt calcined and deprived of all superfluous humidity. This is called *Decrepitated Salt*; The Chymists use it to *Regalise Aqua-fortis*, as we shall shew in the following Chapter of *Nitre*.

The Spirit of Salt.

ARtists have tried divers ways to extract the Spirit of *Salt* with ease. Some distill *Calcin'd*, or *Decrepitated Salt* alone, and without addition with a strong Fire; but besides that Salts being in Fusion penetrate and break all vessels, they pertinaciously withhold the Spirits. Others attempt to reduce *Salts* into Spirits, and afterwards into sweet Crystals by means of an Earthen *Retort* with a hole in the top, by which they put some drops of Water upon the *Salt* which must be melted in the said *Retort* with a strong Fire, and then they stop the hole till the vapour of the Water put into the hole be passed into the *Receiver*; and thus they continue till according to their opinion all the *Salt* be converted into Spirit. But as we have shewn that the Vessels containing Salts melted in a very violent Fire, cannot resist long; and since Salts retain their Spirits whilst they are in Fusion, I conceive no body should amuse themselves with such preparations. The true way to Extract this Spirit with ease is, to mix *Salt* with some Body that may hinder its Fusion, but it must be such a Body as may communicate nothing of its own, as Potters Clay, or Bole.

Take

Take therefore two pounds of *Common-Salt* not *decrepitated* (because in this Calcination it loses part of its Volatile Spirits, especially being *decrepitated* with a gentle Fire without Fusion) dry it in a *Bason* with a gentle fire in order to be finely powdered, and mix it with eight pounds of *Potters Earth*, or *Bole* pulverised in like manner; put this mixture to a *Glased Retort*, so that the third part be void, and place it in a close *Reverberatory Fire*. Fit a great *Glass-Receiver* to the *Retort*, luting well the joynts, and give a very small Fire the first six hours, during which the *Phlegm* will come forth; then encrease it a little during other six hours, and the *Volatile Spirits* will begin to come forth and appear in the *Receiver* like white Clouds. Continue to encrease the Fire from six hours to six hours to the utmost violence. The whole operation will be finished in twenty four hours. After which leave the Vessels to cool, unlute them, and keep the Spirit in a very strong Vial. The Odour of it is sufficiently sweet, its savour agreeably *Acid*, and its colour yellow as Gold.

This Spirit may be rectified by an *Alembick* in *Balneo Mariae*, and about three quarters drawn off by distillation, which will be *Phlegm* and some Spirits mixt confusedly together; the other quarter left in the *Gourd* will be a more corrosive Spirit, improperly called Oil, which keep apart from the other. But note that the corrosive Spirit must be

be put into a very strong Vial of very good Glass; otherwise it will corrode the same.

The Volatile Spirit is an excellent Remedy against the Stone and Gravel, it powerfully dissolves the *Tartar* and *Viscosities* of the Body, it opens the obstructions of the *Liver* and *Spleen*; it gives great help to the *Dropsy* by quenching thirst; it cures the *Faundies*, and hinders a *Gangrene*; and being mixt with Oil of Sope it asswages the pains of the *Gout* and dissipates the *Nodosities*.

The Dose of this Spirit is from 10 to 30 drops, or else to a gratefull acidity in convenient Liquors. The Corrosive Spirit may be employ'd for dissolving of Metals.

C H A P. XII.

Of Nitre, or Salt-peter.

Nitre, or Salt-peter is a Salt partly Sulphureous and Volatile, and partly earthy; the tast of it is Saltish and bitter. 'Tis drawn out of the Earth, and out of the ruins of Houses, Vaults, and Cellars, especially out of Stables, by reason of the great quantity of Volatile Salt in the Urine and Excrements of Animals, which is united to the Salt of the Earth by the continual action of the Air.

Authors

Authors call it sometimes *Cerberus*, the *Infernal Salt*, the *Dragon*, *Serpent*, &c. But we stand not upon names. As for the choice of it, it must be white, crystallin, in long *Hexagonal Needles*; the tast must be *Acid*, inclining to Sourness or *Acerbity*; and if it exhales totally from a burning *Coal*, 'tis a sign of its goodness and pureness; but if it leave any remainder upon the *Coal*, it contains too much impurity, in which case it must be purified before it be employed for *Chymical Operations*.

The purification of Nitre.

PUT what quantity of *Nitre* you please into a *Copper Bason*, and pour upon it three or four times as much *Rain-Water*. Make it boil upon a little *Fire* till the *Nitre* be dissolved, then strain it through a woollen *Cloath* into an *Earthen pan*, which expose in a cold place twenty four hours. At the end of which you shall find the *Nitre* reduced into fair transparent *Crystals*. Pour off the *Water* into a *Bason*, and *Evaporate* a third part of it, and set the rest to *Caystallize* as before. Continue this till all the *Salt-peter* be turned into *Crystals*; but the first *Crystals* contain the purest of the *Salt-peter*, and therefore must be dried and kept apart,
for

for preparations to be used at the Mouth. The other Crystals may serve to make *Aqua-fortis*, or other things of less consequence.

Mineral Crystal, or Sal Prunellæ.

Melt a pound of well purified *Salt-peter* in a *Crusible* that resists the Fire and penetration of Salts, and when it is very fluid, throw into it by little and little an ounce of flowers of *Sulphur*; which being exhale, cast the *Salt-peter* into a very clean Bason, and spread it abroad; then breake it and keep it dry in some vessel well stoppt. 'Tis an excellent Remedy against the putrid malignant Fevers called *Prunella* or Burning, from whence 'tis termed *Lapis Prunella*. The Dose is from twelve Grains to one Dram in ordinary *Ptisane*, or some other convenient Liquor.

Some make use of purified *Salt-peter* without preparing it with *Sulphur*; which I disapprove not, because the *Sulphur* carries away with it part of the Sulphureous Volatile Salt of the *Salt-peter*, and so deprives it of the purest part of it self.

An Antifebril Salt, or a Salt against Fevers.

TAKE two ounces of purified *Salt-peter*, and two ounces of Flowers of *Sulphur*, powder them, and put them into a good large *Retort*; pour thereon six ounces of the Water of distilled Urine, and place it in a *Sand-Furnace*, so that the Sand be not higher than the matter, and that two thirds of the *Retort* be out of the Sand in the Air. Fit to it a great *Receiver*, but Lute it not, because the Spirits issue out of these matters with such violence, that if there be no air, the Vessels break. Begin to distill with a very small Fire, and when no more humidity comes forth, encrease the Fire by little and little, but not too hastily; for as soon as the *Sulphur* and the *Salt-peter* begin to melt, they will flame, and drive out their Spirits impetuoussly in red fumes into the *Receiver*; which being all come forth, let the Vessels cool, and you shall find in the bottom of the *Retort*, being broken, a fixt Salt of a bitterish tast, which you must put into a little earthen *Gourd*, and pour upon it the Spirit contained in the *Receiver*, to unite it to its proper body. Reject as useles the Flowers of *Sulphur* sublimed in the *Receiver*, and cover the *Gourd* with another Vessel, and set it upon

pon hot Sand for three or four hours, during which the fixt Salt will be dissolved in its proper Spirit. Filtre the *Solution* and Evaporate it gently to *siccity*; you shall have a Salt white as Snow, of a very agreeable *Acid* tast, which you must keep in a Vial well stoppt. 'Tis a very excellent Remedy in continual and intermitting *Fevers*. It powerfully resists putrifaction, and opens all the obstructions of the body. 'Tis given in the beginning of fits, in some convenient *Liquor*. The Dose is from 8 to 30 Grains.

Sal Polycrestes, or of many uses.

THis Preparation comes in place, because *Nitre* is the Base of it. Take a pound of purified *Salt-peter*, and a pound of *Sulphur*; reduce them together into powder; then take a good Earthen Pot that resists the Fire and has a flat bottom. Set it in a *Wind-Furnace* with Coals round about, which kindle by degrees to preserve the Pot; and when the Pot is red hot, put in about two ounces of the mixture and stir it: the matter will flame presently, and the Volatile parts of the *Nitre* will exhale with part of the *Sulphur*. When the Flame is ceased, put two ounces more in, stirring the same continually. Do thus till all the mixture be employ'd. Then Cal-
cine

cine it by stirring it six hours more, during which the matter must be always red hot without melting; which would retain the burnt odour of the *Sulphur*, and the Salt would be grayish: but with these cautions you shall have a Salt of a Rose colour without smell, and of a bitterish taste. It may be used without more preparation; or if you desire it yet purer, dissolve it in a good quantity of warm Water, and having Filtred it, Evaporate it gently in some glazed Earthen Vessel till it have a scum upon it; then set it in a Cellar, and it will CrySTALLIZE at the bottom and sides of the Vessel. The Figure of this Salt is square, much like that of common Salt. 'Tis used against obstructions of the *Liver, Spleen, Pancreas, and Mesentery*; it unloosens *Viscous* matter and Purges gently downwards. The Dose is from two Drams to six. 'Tis usually dissolved overnight with Spring Water, and taken the next morning. Persons whose Nervous parts are weak and delicate, must wholly abstain from all sorts of preparations of *Nitre*, as *Crystal Mineral*, and *Sal Polycrestes*; which are not to be put into other compositions but to sharpen them and make them more penetrating, or to temper their heat; in which case the dose must be less than that of the other Medicaments; as for example, with the weight of two or three ounces of *Sena* it suffices to put half a Dram or two Scruples of Mineral Crystal, or twice as much of *Sal Polycrestes*.

Spirit

Spirit of Nitre.

TAKE two pounds of *Salt-peter* refined in Powder, and eight pounds of common Bole or of Potters Earth dry'd and powdered; mix them together, and put them into a great *Retort* so that the third part thereof be empty; place the same in a close *Reverberatory Fire*, fitting to it a great *Receiver*, and Luting the joynts very well. Let the Fire be gentle at first, and encrease it from six hours to six hours to the utmost violence. A Phlegmatic Water first comes out, then a Spirit, which during the distillation appears as red as Fire; which redness proceeds from the internal *Sulphur* of the *Salt-peter*, and has given occasion to some Authors to term this Spirit the *Blood of the Salamander*. The distillation is usually finish'd in twenty four hours; which ended, let the Vessels cool, then unlute the *Receiver*, mollifying the Lute with wet Linnen; and keep the Spirit in a strong Vial.

'Tis a good Remedy against the *Colick*, and against all obstructions, *Fevers*, and the *Pestilence*. The Dose is from 6 to 20 drops in some convenient Liquor.

Aqua-fortis.

THOUGH *Aqua-fortis* is made several ways, and sometimes with the addition of *Alum*, *Vitriol*, *Verdigrease*, and other things, yet we shall insert the preparation of it in this *Chapter* of *Salt-peter*, because tis this which gives it its principal dissolving virtue. It has its name from its force of dissolving almost all Metals, and Minerals, even Gold too if it be Regalised by the addition of *Salt Armoniac* or common *Salt*. Now, to make good *Aqua-fortis*, take three Pounds of *Salt-peter* and as much of *Vitriol*, or green *Copperas*; mix and powder them grossly, and put them into a Luted *Retort* in a close *Reverberatory Furnace*; fit a large *Receiver* to the *Retort*, and having Luted the joynts exactly well, give a very gentle Fire for eight hours to make the Phlegm come forth; then increase the fire one degree, and you shall cause reddish Spirits to stream out; keep the Fire in that condition four or five hours; then encrease it by little and little to the utmost violence, quite opening the covering of the *Furnace* and that of the *Ash-hole*. Continue the Fire till the heat of the *Receiver* abate, and wait not till it become clear; for though you should continue the Fire many days, the

Spirits

Spirits would be in continual agitation by the heat. But as soon as the *Furnace* and *Vessels* begin to lose their heat, the *Spirits* settle to the bottom and the *Receiver* grows clear. This operation is usually finisht in twenty hours. The *Vessels* being cool, unlute the *Receiver*, and keep the *Water* in a strong *Bottle* well stoppt with *Wax*.

You may also make *Aqua-fortis* with *Roche Alum* and *Salt-peter*, and sometimes with addition of other ingredients; but being the preparation of these *Waters* is not different from this, I will not enlarge this *Book* with them, I will only give notice to the *Reader*, that the *Aqua-fortis* made with *Roche Alum* and *Salt-peter* is to be preferred before that made with *Vitriol* for preparing red or white *Precipitate*, which is to be employ'd for diseases of the skin. Which is also to be observed in the preparations of the *Precipitates* above described, according to the different intention of using the said *Remedies*.

Aqua Regia, or, Water to Dissolve Gold.

THis *Water* takes its name from its virtue of dissolving *Gold*, the *King* of *Metals*. Its *Base* is *Spirit* of *Nitre* or *Aqua-fortis*, which becomes *Regal* by the addition of *Salt Armoniac*, or *Common Salt*, in manner following.

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Take four ounces of *Salt Armoniac* unpurified and pulverised, put it into a great *Matrace*, and pour upon it a pound of good *Aqua-fortis*; place the *Matrace* upon Sand moderately hot, that the *Aqua-fortis* may gently dissolve the *Salt Armoniac*. Stop not the *Matrace* lest it should break, and avoid the vapors which rise when the *Aqua-fortis* begins to act upon the *Salt Armoniac*; for they are fierce Spirits which cannot be condensed any more, and are very hurtful. As soon as you shall see the *Salt Armoniac* dissolved, remove the *Matrace* from the Sand, and when it is cold put the Water into a Vial, and stop the same with a Bladder and Wax.

Another Regal Water.

PUT into a *Retort* half a pound of *Sea Salt* or *Sal Gemma* in Powder, and pour thereon a pound of good Spirit of *Nitre*, or good *Aqua-fortis*; then distil in a Sand Fire into a *Receiver* till the *Salt* remain dry in the bottom of the *Retort*, and keep the water in a Vial well stoppt.

Another

Another Regal Water.

TAKE a pound of *Sea-Salt*, or *Sal Gemme*, and as much of good *Salt-peter*; powder them finely, and mix them with eight pounds of common *Bole powdered*; then distil them with a *Retort* in a *Reverberatory Fire*, in the same manner as we have directed the distillation of *Spirit of Nitre*, and you shall have a *Regal Water* which will easily dissolve *Gold*. These three sorts of *Regal Water* are equally good.

C H A P. XIII.

Of Salt Armoniac.

THE *Salt Armoniac* of the Ancients was found in divers parts of *Asia*, and particularly in *Lybia*, in places where the *Camels* of *Caravans* rested, whose *Urine* was imbibed in the *Sand*, and the *Volatile Salt* thereof was sublim'd by the *Rays* of the *Sun* to the surface of the *Sand*; and they of the *Country* gathered it up to sell to other Na-

tions. But the modern *Salt Armoniac* is compounded of *Sea-Salt*, Chimney-Soot, and the Urine of Animals. These three are so artificially mixt and incorporated, that though the *Sea-Salt* be very fixt, yet being mixt with the Volatile Salts of Urine and Soot, there arises a Compound of them, which though less Volatile than the said Salts, yet cannot resist the violence of the Fire: for if you put it into a *Crusible* amongst burning Coals, it flies all away. But this composition may easily be destroyed by separating the Volatile Salts from the *Sea-Salt* by the addition of some matter to fix and retain it. As for the manner of preparing it, I will not encrease this Book by setting it down, since the said Artificial Salt is commonly and cheaply enough to be had from the Druggists. But since it is usually full of impurities, we will begin with the purifying of it.

The Purification of Salt Armoniac.

POWDER a pound of *Salt Armoniac*, and dissolve it in a *Gourd* upon hot Sand with three pounds of Rain-water; filtre the *Solution* through gray Paper, and Evaporate it to *Siccity*, and you shall have a very pure Salt as white as Snow. This Salt provokes Sweat and Urine, and resists putrifaction. 'Tis used

in Quartan Agues, and outwardly against *Gangrenes*, and in Eye-waters. The Dose is from 8 to 24 Grains in some Broth or other convenient Liquor.

The Flowers of Salt Armoniac.

Pulverize together a pound of *Salt Armoniac* and as much of Common Salt, and put them into a *Gourd* covered with its head, and place the same in a *Sand-Furnace*; give a gentle Fire at first, encreasing it by little and little till you see the *Salt Armoniac* ascend into the Head like Meal; then continue the Fire in the same degree for five or six hours. After which let the Vessels cool, and gather off what is ascended into the Head, and mix it with new Salt, and sublime as before; Repeat this thrice, and you shall have Flowers well purified.

These Flowers being purer than *Salt Armoniac* simply purified by *Solution*, *Filtration*, and *Coagulation*, act with more efficacy; so that the Dose is but from 4 to 12 and 15 Grains. Their use is for *Cronical Diseases*.

They may be also prepared with Filings of Steel, mixing an equal quantity thereof with *Salt Armoniac*; and the Flowers have the more force and virtue, in that they are

impregnated with a portion of *Mars* which encrease their aperitive virtue.

The Urinous Volatile Spirit of Salt Armoniac.

WE have shewed in the beginning of this *Chapter* that *Salt Armoniac* is compounded of the Salt of Urine and that of the Soot of Chimneys (which are very subtle and Volatile Salts) and of *Sea-Salt*, which is an *Acid Salt* and more fixt than the other two. These three Salts mixt together make but one, which holds a mean between the Volatility of the two former, and the fixedness of the latter. and though this mixture seems perfect, and the conjunction of these Salts of several families inseparable; yet when you well understand their qualities and properties, you will separate them very easily. The ensuing operation will instruct you. Powder and mix together a pound of *Salt Armoniac* and as much of Salt of *Tartar*; make them into a Past with four or five ounces of Water, which put into a Glass *Gourd*, whereunto fit an *Alembick* with a *Receiver*, and having luted the joynts exactly, place the *Gourd* in a *Sand-Furnace*. Begin the distillation with a moderate heat, which encrease by little and little. As soon as the the matter begins to heat the Salts will

will act upon one another, and the *Sea-Salt* will joyn with the Salt of *Tartar*, and they will both remain in the bottom of the *Gourd*. But the Urinous and Fuliginous Volatile Spirits will be loosned from their Fetters, and ascend through the *Alembick* into the *Receiver*. Continue a moderate Fire till all the Spirits are gone out, then encrease in by little and little to make the Flowers ascend, which will stick to the Head and the upper part of the *Gourd*. The whole oderation requires eight or ten hours. Let the Vessels being cool be unluted, and you shall find the Urinous Volatile Spirit in the *Receiver*, and the Flowers in the Head and upper part of the *Gourd*, and in the bottom thereof, a fixt Mass containing the *Acid Sea-Salt* with the Salt of *Tartar*. These three substances must be kept apart. The Volatile Spirit is one of the most excellent Remedies that can be invented; for it opens all obstructions in general, and acts powerfully by Sweat and Urine. 'Tis very good in *Fevers*, especially the putrid, in *Palsies*, *Epilepsies*, *Hysterical fits*, and the *Plague*, resisting all corruption. It likewise asswages the pains of the *Gout*, applied externally. It may be Sublimed into a Volatile Salt, by putting it into a long-neck'd *Matrace* with a suitable *Alembick* having a large *Betty*, and placing the same in a very moderate Sand-fire. For this fiery Salt upon the least heat leaves its Phlegmatick Water which kept it in a liquid form. But 'tis better

ter to leave it in a liquid form than to sublime it into Salt, which is hard to be kept; whereas the Phlegm restrains it and hinders its activity; for which reason it may be given from 8 to 30 drops, but the Dose of the Salt is but from 3 to 8 or 9 Grains.

The Flowers in the *Alembick* are nothing but part of the *Salt Armoniac* which was not closely mixt with the Salt of *Tartar*. They are of the same use as *Salt Armoniac* well purified. But the Mass remaining in the bottom of the *Gourd* affords an *Acid Corrosive Spirit*, as follows.

The Acid Spirit of Salt Armoniac.

Reduce into fine Powder the Mass remaining in the bottom of the *Gourd* after the foregoing distillation, and mix it with four times as much Bole in Powder. Put the mixture into a *Retort* of Glass or Earth well Luted, and distil it in a close *Reverberatory Fire*, observing exactly in this distillation all the circumstances described in the distillation of common Salt. You may rectify this Spirit in an *Alembick* in *Balneo Maria* and it will ascend easily.

This Spirit is one of the greatest Dissolvents that we know; for it dissolves *Gold*, *Copper*, *Iron*, &c. and Volatilizes them in an
Alem-

Alembick by means of reiterated *Cohobation*. Besides which, 'tis the most agreeable *Acid* that Chymistry hath invented. Some drops being given in Broth to those that have *Fevers*, for it tempers the inward heat by its subtlety and sharpness. It is also more Diuretical than other Corrosive Spirits. The Dose is from 6 to 30 drops, or to an agreeable Acidity.

The fixation of Salt Armoniac.

THIS fixation is made by mixing *Salt Armoniac* with some body that may hinder its exhaling in a violent Fire. To which purpose serve the *Alkali* Salts of Plants, of the *Calx* of Egg-shells, and other Shells, of quick Lime, and of the *Calx* of divers Minerals, and amongst others of *Zink*, *Lapis Calaminaris*, and *Hematites*. Yet these Bodies cannot totally fix the whole body of *Salt Armoniac*, but retain only a part of it, namely the *Sea-Salt*, letting go the Fuliginous and Urinous part which flies into the Air. The most usual way is to take equal quantity of of quick Lime and *Salt Armoniac*, and to put them powdered together into a good *Cru-sible* amongst burning Coals. You shall presently see the Urinous Spirits disintangle themselves and fly away, but the common Salt
which

which entered into the composition stays behind with the quick Lime, and being melted therewith runs in the *Crusible* like Oil. Cast this melted matter into a Bason or Mortar heated, and let it cool. You shall have a transparent Mass like Cryстал, which may be reduced into little parcels whilst it is a little warm, and kept in a Vial well stop't with Wax. 'Tis a very good *Caustic*, and serves commodiously for *Canteries*. If this Salt be left to the Air, it dissolves in a few dayes into Liquor, which you must Filtre. It serves for the Resuscitation of Metals into fluid *Mercury*, as some think.

C H A P, XIV.

Of Roche Alum.

THE name of *Alum* is given to divers matters. *First*, There is a sort of *Talc*, which they call in *Latin* *Alumen scissile*, because it may be cut into transparent Leaves like Glafs. There is another Species called *Alumen Plumosum*, or *Lapis Amiantus*. But these serve but little for Physick, and therefore I shall only insist upon *Roche Alum*, which is a Mineral Salt, Earthy and *Acrimonious*, full of an *Acid Spirit*. It is often found

found condensed in the Veins of the Earth, and sometimes 'tis drawn from Aluminous Springs, by Evaporation. It is likewise found in Mineral Stones, from which it is drawn by dissolving the same in Water, and afterwards Evaporating it. It is seldom used for inward use, but often in *Gargarismes* for inflammation of the Throat. It heals *Cancers* of the Mouth, strengthens the Gums, and consumes the Spongy Flesh and other superfluities of Wounds and Ulcers. But it may be used inwardly too, as in the *Dropsy*, and difficulty of Urin, from one Scruple to half a Dram in some convenient *Vehicle*, being prepared as follows.

The Purification of Alum,

POWDER and dissolve of *Roche Alum* in sixteen pounds of Rain-Water; Filtre the *Solution*, and Evaporate and CrySTALLIZE it in a cool place, as you would proceed with any other Salt; and by this means you shall have it pure and fit for all preparations.

The Distillation and Calcination of Alum.

PUT into a great Glased *Retort* two pounds of *Alum* purified, so that three quarters of the *Retort* be empty, to leave room for the *Ebullitions* of the *Alum*. Place the *Retort* in a close *Reverberatory Fire*, and fit a large *Receiver* to it. Make the Phlegm come forth with a little Fire, which encrease by degrees till the Spirits begin to stream forth in white Clouds. Then open the *Registers* by little and little, and continue the Fire to the utmost violence, after which let the Vessels cool. You shall find in the *Receiver* an *Acid Spirit* mixt with a good quantity of Phlegm, And having broken the *Retort*, you shall find the *Alum* there Calcin'd into a very white and light Mass. Rectify and separate the Spirit from its Phlegm, putting into a Glass *Retort* all that was in the *Receiver*, and placing the same in a *Sand-Furnace*; as you distil with a little Fire, the Phlegm will come forth first, and as soon as you tast the drops *Acid*, change the *Receiver*, and continue the Fire till all the Spirits be ascended and there remain nothing in the *Retort* but a little Earth which the Spirits had brought away with them in the first distillation, This Spirit is good in *Fevers* being taken in ordinary drink;

tis

'tis very Diuretick and opening, and is very proper for *Cancers* in the Mouth. But being unpleasant in tast, Spirit of Vitriol may serve in its place upon all occasions. The Phlegm is very good in Eye-waters, for inflammations of the Eyes; it is also good for the *Erysipelus* and to wash Sores and Ulcers. The Calcin'd *Alum* is employed outwardly to dry and consume superfluous flesh in old *Ulcers*, and Sores. It may be likewise Calcined in a *Crusible*, or upon a Plate, but we have taught the way to make benefit of all its parts.

Observe that neither *Roche Alum* nor *Vitriol* need any mixture of Bole, or other fat Earth powdered, when you distil them, as *Common Salt*, *Sal Gemma*, *Salt-peter*, and others have to hinder their melting; because Vitriolick and Aluminous Salts contain a sufficient quantity of Mineral Earth of difficult fusion.

A Febrifugous Salt of Alum.

Powder half a pound of Calcin'd *Alum*, and put it into a *Glass-Gourd*, and pour upon it two pounds of good distilled *Vinegar*. Digest them in hot Sand till the *Alum* be dissolved; Filtre the *Solution* and after Evaporation of the third part, set the rest to Crystallize in a Cellar. Pour off by inclination
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the Water above the Crystals, and Evaporate and Crystallize again till you have drawn out all the Crystals; which dry and mix with a like quantity of *Nutmegs* and Mineral Crystal; of which being finely powdered you may with happy success give a Dram in intermitting *Fevers*, especially such as proceed from corruption and abundance of Humours. This Powder is taken in Wine or some other proper Liquor in the beginning of the fit.

C H A P. XV.

Of Vitriol.

Vitriol is a Mineral Salt near of kin to *Roche Alum*, but containing in it some Metallick substance, especially Iron or Copper. There are several sorts of it, which differ in colour and tast by reason of the divers substances wherewith they are mixt. That which is blew, compact, and in great Crystals is called *Vitriol of Cyprus*, though it comes from *Hungary*. It is very bitter and sharp, because it contains much of the substance of Copper; and though the dearest of all, yet it is not better worth; and I would not advise any body to make use of it except for Eye-water or outwardly by reason
of

of the violent Vomitings which it causes. There is another sort of *Vitriol* which is greenish, and of a sweetish tast, and in small Crystals; being found in *Sweden*, *Liege*, and other parts of *Germany*. The best is most compact and dry, which being rubbed upon Iron, does not dye the same with the colour of *Copper*; which colour shews it to be mixt with Copper, and consequently more hurtful; whereas by not tincturing the same it shews that it partakes more of Iron, and is fitter for all preparations, whatever many many Authors say to the contrary. There is also white *Vitriol*, which comes from *Vitriol-Springs*, and is not charged with any Metallick substance, which gives the colour to other sorts of *Vitriol*. All the several *Vitriols* are formed by Nature in the entrails of the Earth; but they are also made by evaporating the Springs which contain them, as also by the Dissolution, Evaporation and Crystallization of *Marcasites* or *Vitriolick-Stones*. But since *Vitriol* is usually charged with impurities, we will begin with its purification.

The Purification of Vitriol.

Dissolve in Rain-Water what quantity of *Vitriol* you please; put the *Solution* into Pitchers or Bottles, and set it to digest in

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Horse-dung, or *Balneo Maria* for eight or ten days; during which, much earthyness will separate to the bottom; Filtre the Liquor, and having Evaporated about the half, Crystallize the remainder; Evaporate again the Water above the Crystals; and so continue to Evaporate and Crystallize till all be turned into Crystals.

Vomitive Vitriol called Gilla.

Dissolve in Rain-water, or *May-Dew*, half a pound of white *Vitriol*, and reduce it into Crystals, as is shewn in the Purification of *Vitriol*; reiterating the Dissolution, Filtration, and Crystallization four times. You shall have a *Vitriol* well prepared, fit to be used in *Tertian* or other *Fevers* proceeding from corruption of humours in the first Region; for it evacuates gently by Vomit. It likewise kills Worms, and resists putrefaction. The Dose is from 20 Grains to half a Dram in Broth, Cordial-waters, or some other Liquor. Yet some go as high as a whole Dram; but this Dose is a little too strong for our Climate.

The Calcination of Vitriol.

That which is commonly called the *Calcination of Vitriol* is nothing but an exsiccation and deprivation of its superfluous humidity, which is effected either by ordinary Fire or the Rays of the Sun. The former is thus, Put twelve pounds of *Vitriol* into an earthen Pot not Glased, which place amongst burning Coals; and the *Vitriol* will soon be reduced into Water. Boil it to the consumption of the humidity, and till it become a hard compact Mass of a whitish gray colour. If you continue the Fire longer, till the Pot be red hot, the Mass will become yellow and at length of a reddish brown, which is that which they call *Colcothar*, wherewith Blood is stanch'd; it is also used in *Lethargies*, being put up the Nose, to awaken the stupid senses by sneezing. 'Tis also a great Desiccative for Sores and Ulcers.

The second Calcination is made by exposing it thinly spread to the Beams of the Sun in *July*, stirring it often that it may be better penetrated by the Sun, and reduced into a Powder as white as Snow, very light, and less weighty than the *Vitriol* by a third part. This is that which they call the *Sympathetick Powder*, which they pretend cures Wounds after

and admirable manner, being applyed upon Linnen dipt in the Blood of the Wound. But note that *Roman Vitriol* is required to the making of this Powder.

The Distillation of Vitriol.

TAKE eight pounds of *Vitriol* dried in the Sun, which is to be preferred before any other, as well by reason of the impressions it may receive from him, as because it is more open, Spongy, and apt to part with its Spirits. But in defect thereof, take *Vitriol* dried in the Fire to whiteness and no more: put it into an Earthen *Retort*, and place the same in a close *Reverberatory Furnace*, and fit to it a large *Receiver*, Luting the joynts thereof exactly. Let the Fire be small during ten or twelve hours, in which time all the Phlegm will come forth; then open a little the hole of the top of the *Furnace*, and the *Ash-hole*, to encrease the heat a little, and drive the Volatile Spirit into the *Receiver*. But govern the fire well; for if the first Spirits be never so little overstirred, they issue so impetuously that they break the *Receiver*. Encrease the Fire at the end of other twelve hours by opening the hole above, and the *Ash-hole* a little more than before; and continue to augment it by little and little to the utmost violence

violence; which continue during three or four days, and you will see the *Receiver* continually full of white fumes; but when the red drops begin to appear, cease the Distillation and let the Vessels cool; for 'tis a sign that the *Vitriol* begins to be deprived of all the Spirit it had, these red drops being the Cautic part of it.

Note that if you continue the Fire twelve days and nights, the *Receiver* will be found continually full of a white mist: you must also observe that *Vitriol* thoroughly dried in the Sun will yield its Spirits sooner because it is finer and more Spongy, than that which is dried at the Fire, which is more compact and retains its Spirits more obstinately; when your Vessels are cold, unlute your *Receiver* with wet Linnen, and pour out all that it contains into a body, unto which you must presently adapt an *Alembick* with a *Receiver*, Luting all the joynts exactly, that the Volatile Spirit may not fly away; set your Body in *Balneo Maria*, and distil with a very gentle heat the Volatile, Sulphureous and sweet Spirit, and when you have separated three or four ounces, change the receiver, that no Phlegm may come over into it; preserve this Spirit in a good Viol very exactly stopped. Fit too another *Receiver*, and augment the Fire till the *Balneum* do boyl; by this means the Phlegm will rise, and you must continue the fire till no more come; so the *Acid* Spirit will remain in the Body, which

cannot rise with the heat of the boiling Bath. Pour that which remains into a *Retort*, and set it in a *Sand-Furnace*, and fit a *Receiver* thereto, and distill about half of this *Acid Spirit*, which will be clear as Rock-water. You may either reserve and keep apart that which remains in the *Retort*, or changing the *Receiver* push on and encrease the Fire, and make it all distil over and keep these two Spirits severally.

The Volatile Spirit, the sweet *Sulphur* which rises first is very penitnant, and esteemed very effectual againgst the falling Evil. Its Dose is from 12 drops to one Dram, in any appropriate Liquor. The Phlegm is proper for inflammations of the Eyes, and to temper the *Acrimony* of *Erisipela's*, and to cleanse Wounds and Ulcers.

The first Spirit that ascends next after the Phlegm, is very *Diuretick* and *incisive*, and much used in hot and malignant *Fevers*; it restores the Appetite, and opens all obstructions, the Dose is augmented or decreased according as its acidity is more or less agreeable with compliance to the Patients tast.

The last Spirit is improperly called the Oil of *Vitriol*, and is no other than the weightier and more *Caustring* part of the *Acid Spirit*; it is principally used for dissolving Metals and Minerals.

The fixed Salt of Vitriol.

PUT that which remains in the *Retort* after your distillation, which will be a Mass as black as a Coal, into an Earthen Vessel, and pour Rain-water thereon by little and little, for if this Mass be not a while exposed to the Air, it will when it comes out of the *Retort* do the same thing as quick Lime: continue so to pour Water thereon, till it rise four or five fingers height above it, after set it in an earthen Pot to digest in hot Sand for seven or eight hours, stirring the matter often to promote the *Solution* of the Salt, after Filtre and Evaporate the *Solution* till a film rise thereon, and let it shoot into Crystals; pour off and Crystallize the Water also which swims on the first Crystals, and continue to Evaporate and Crystallize it till it be all crystallized. These Crystals are reddish at first, but being dried and brought into Powder, they are as white as Snow. This Salt is nigh in its effect to Vomitive *Vitriol*, but its Dose is less, only from 8 to 20 Grains.

You may after all proceed to sweeten the Earth which remains in the Filtration, and make use thereof with assurance for to stay the immoderate Fluxes of the Belly, and spitting of Blood, and to dry and heal up

Wounds and Ulcers, and in like manner to mix with *Stiptique-Ointments* and *Plasters*.

Sulphur of Vitriol.

PUT into a Glass-Body two pounds of purified *Vitriol*, and one pound of the Filings of Steel mingled together, pour upon them distilled *Vinegar* to the full of one Fingers height, set an Head on the Body, and place it in hot Sand, and fitting a *Receiver* thereto, give it a small Fire at the beginning to make all the moisture rise by little and little; after augment the Fire from degree to degree, till you have made the Sand red hot; when your Vessels are cold take out, and powder what remains in the bottom of the Body, and digest it in a *Marrace* with fresh distilled *Vinegar*: surmounting the matter three or four Fingers height, in *Balneo Maria* for three days; then you will find the *Menstruum* coloured, which decant off, and put again new *Vinegar* upon your matter, and digest it a new, and decant and reiterate the same operation until your *Vinegar* be tinged no more; then Filtre all the decanted Liquor, and pour thereon good Oil of *Tartar*, a sufficient quantity to precipitate all the *Sulphur of Vitriol* to the bottom, which you must afterwards sweeten with warm Water, and then

then dry it. This is a good Remedy for the *Asthma*, and for the diseases of the Breast. Its Dose is from five to twelve Grains in any Pectoral Conserve or Confection.

There are some who pretend to make thereof a *Laudanum* without *Opium*, and prefer this Remedy above it, but experience hath given us to know the difference betwixt this *Sulphur* and its effects, and those of *Opium* duly prepared.

C H A P. XVI.

Of Crystal of the Rock.

C*ystal*, and all Stones generally, as well Precious and Transparent, as common and Opacous, have hard and unmalliable bodies, coagulated, and hardened by the forcible action of a Salt and Stone-generating Spirit. Their different colour, hardness, and purity, speaks only the difference of the Womb wherein they were produced. But our principal design being to shew their preparation, we will here teach that of *Rock Crystal*, which will serve for other Stones of the same nature.

The Tincture of Crystal.

Make your *Crystal* red hot in burning Coals, and quench it in a *Bason* full of Water, in which it will fall to pieces, so that it may easily be brought into impalpable Powder; of which take four ounces, and of Salt of *Tartar* purified one pound, and put them well mingled into a great *Cru-sible*, which being empty to two third parts, cover it with its cover; place it in a *Wind-Furnace*, and give it a small Fire at the beginning, lest the matter should rise and run over the *Cru-sible*, but when it begins to fall again, augment your Fire by little and little to the highest violence, and so continue till the matter dissolve, and become clear as Oil, and transparent as Glass; which you may know by putting into the matter a little Rod of Iron, unto which some small part thereof cleaving will serve you for a proof; and when it is very transparent cast it into an hot Mortar, and it will congeal immediately: beat it into Powder whilst it is yet hot, and divide it into two parts, and put one half thereof quite hot in a clean, dry, and hot Body, and put thereon good rectified Spirit of Wine by little and little to the height of four fingers, then put upon this another

Bolts-

Bolts-head so to make up a circulating Vessel; Lute well the joynts, and set it in hot Sand, and digest it so that the Spirit of Wine may boil for three or four days and nights continually: your Spirit of Wine will fill it self with the Tincture, and having decanted that off from the matter, put new to it, and proceed as before, and continue to put to new, digest, and decant, till the Spirit draw no more colour: then Filtre all the Tinctures and distill them with a *Glass-Body* and Head in *Balneo Marie*, and draw off three fourth parts, and it shall be as good Spirit of Wine as before, and the red Tincture will remain in the Body, which you must put in a *Viol*, and close it well.

Note that this Tincture is made better, if you take *River-Pibbles*, which are coloured within with red, green, and blew veins; both these tinctures open all Obstructions of the Body: They are serviceable in *Melancholick* and *Hypocondriac* diseases, for the *Dropsy*, and *Scurvy*. The Dose is from ten to twenty drops, in *White-wine*, or some other *Liquor*, using them continually.

The

The Liquor of Crystal.

PUT your other half of your dissolvable Glass of Crystal which you reserved in a Glass Plate, and expose it in a Cellar or other moist place, and in a few days it will be dissolved into a Liquor, which being Filtred through Cap-Paper, will be clear as Rock-water; this Liquor is very *Diuretic*, given from 20 to 30 drops in any agreeable Water or Decoction.

Note that if you put upon this Liquor any Acid Corrosive Spirits, they will both together in a moment be converted into a dry, and sufficiently hard Mass.

Magistery of Crystal.

Take one pound of the aforesaid Liquor, and put it into a *Body* with five or six pounds of Distilled Rain-water, after pour thereon good Spirit of *Nitre* drop by drop: this Spirit will cause a great *Ebullition*, be- it works upon the saline part contained in this Liquor, and the Salt at the same time by a certain counterworking joyns it self with
the

the Spirit, and takes from it its Corrosiveness; so that the substance of the *Crystal* is precipitated to the bottom in a fine and Snow-white Powder, which you must sweeten well and dry.

This *Magistry* is very proper to strengthen the *Stomach*, having a virtue to destroy the acidity of humours, and to sweeten them, and hinder their fervour which causeth an appetite, you may take a Dram in Wine after food.

Note, that if you Evaporate and Crystallize the first and second *Lotions* of this Powder, you may extract thence very fair and good *Salt-peter*, which proceeds from the incorporating of its Spirit with *Salt-Alkali* of *Tartar*.

CHAP. XVII.

Of Coral.

There are divers Salts of *Coral* differing one from another in colour and hardness, of all which the red is the best, which must be chosen of a good red, well compacted and shining: it is diversly prepared, and may serve for a model to *Pearls*, *Crabs-eyes*, and such like. We are nevertheless obliged to give notice, that better effects are to be expected from these

these sorts of Stones reduced only on a Marble to an impalpable Powder, than when they are corroded by *Acid* Spirits, and precipitated with Salts; for Nature knows very well of her self to make these kinds of dissolution in Man's body; and as the *Acid* Spirits lose their *Acrimony*, and sweeten themselves by working on these Bodies, we may believe that Nature makes the same operation in our Stomachs, when they are oppressed with any *Acidity*, which is the cause of many diseases.

Salt of Coral.

Coral being a body softer than *Crystal* needs neither be Calcined nor quenched as *Pibbles*, for so soon as you put it in the Fire it becomes white and loses its fair Tincture, which is very Volatile, and wherein consists a part of its good properties, and virtues. We must therefore be contented to reduce it into an *Alkohol*, or impalpable Powder, and to put four ounces thereof into a pretty large *Bolts-head*, and to pour thereon very good distilled *Vinegar*, to four fingers height; a great *Ebullition* will arise presently by the working of the distilled *Vinegar*, and counter-working of the *Coral*, for which cause it is necessary that the *Bolts-head* be large, that nothing may be lost. The working being over, place the *Bolts-head* upon hot Sand for
 twenty

twenty four hours, at the end whereof you shall find the *Vinegar* changed in an almost Insipid Liquor. Its Acidity being destroyed by its working upon the *Coral*; decant this Liquor into some Vessel, and pour fresh distilled *Vinegar* on the *Coral*, and repeat the same Operation as before until the *Coral* be almost all dissolved, and there remain in the bottom an undissolvable earthiness in a small quantity: Filtre the *Solutions* first mingled together, through Cap-Paper, and Evaporate them to driness in a Glass-Body in *Balneo Mariae*.

Unto Salt of *Coral* is attributed a virtue to purify the mass of Blood, and it is given to the Sick in Melancholy cases. The Dose is from 6 to 20 Grains in some convenient Liquor.

Magistery of Coral.

Dissolve the *Coral* as we have now said, with distilled *Vinegar*; but instead of Evaporating away the *Solution*, instil thereon drop by drop good Oil of *Tartar* made by *Diliquium*, and you shall see immediately the *Coral* precipitated to the bottom of the Water in a very white Powder, which must be dulcified by many washings. It is serviceable for the same purposes as the Salt, but for that it worketh less forcibly. Its Dose is greater, it may be given to the weight of one Dram.

The

The Tincture of Coral.

MAny have imagined that they knew how to draw the Tincture of *Coral*, and almost all Authors have given us thereof preparations as true as *Esop's Fables*. For many would draw this Tincture with Spirit of *Oak Wood*, — of *Guaiacum*, &c. Others with the Spirit of the Crusts of Bread, and such like: and having set the *Coral* to digest in these *Menstruums* (which rectified are clear as Water) because they are exalted by the digestion, by reason of a Salt Volatile *Sulphur* which they contain, seeing the colour red in the *Menstruum*, without considering that the digestion had given it this colour, as well alone as without *Coral*; they took the shadow for the substance, and a forreign Tincture for the *Coral*. Others amuse themselves with a Calcination of *Coral*, either alone or with *Nitre*: but the *Coral* remained white, and lost its Tincture with the least heat of the Fire, which they regarded not at all; but this notwithstanding they forbore not to put a good Spirit of Wine upon the Body, which by digestion, and the help of a fixed Salt of *Nitre*, with which the *Coral* was Calcined, is exalted and becomes red, as the Tincture of the Salt of *Tartar*. By such or such like means
some

some imagine they may obtain a true Tincture of *Coral*, to which without reason they attribute surprising effects. I could yet give the Reader many more examples to keep him from relying on many ridiculous receipts, but I content my self with this one word by the way: And as I pretend not to put any Preparation in this little Treatise, of which I have not made trial with my own hands, I will here give forth my manner of a Tincture of *Coral*, which seemes to me reasonable and true.

Take four ounces of good red *Coral*, which make into a subtle Powder and mingle with like quantity of *Salt Armoniac*, sublimed three times with *Decrepitated Salt*, as we have taught you in the *Chapter of Salt Armoniac*. Put this mixture into a small *Body* and *Head*, set it on a small *Sand-Furnace*, and fit a *Receiver* to them, Lute well the joynts of the Vessels, and give a small Fire at the beginning, augmenting it by little and little, you shall first see a Volatile Urinous Spirit arise, which will separate it self from the fixt *Sea-Salt*, which Volatile Salt is contained in the Flowers of the *Salt Armoniac*, and which fixed Salt joyns and incorporates it self with the Earthly substance of the *Coral*; after that this Volatile Spirit, which is small in quantity, shall have ascended and passed into the *Receiver*, you shall see the Flowers rise and stick to the head of the *Alembick*, and upper part of the *Body*, which will be tinged with

divers colours as red, green, blew, very pleasant to behold, and contain in them the true Tincture of *Coral*; the Earthly part of the *Coral* white as Snow, remains in the bottom of the *Body* with the fixt *Sea-Salt*, which contained the Flowers of the *Salt Armoniac*, continue a moderate fire (for a great heat needs not for this operation) untill no more rise: The whole Operation may be done in a few hours: Then let the Vessels cool, and gather diligently what is Sublimed, and put it in a *Bolts-head*, and pour upon it a good Spirit of Wine to the height of four fingers, digest this some days in *Balneo Maria*, and it will be filled with a very red Tincture, and will rob the Flowers of all their pretty colours which they had before, for they remain in the bottom of the *Bolts-head* white like the Flowers of *Salt Armoniac*. Filtre the Tincture, and draw from it three fourths by an *Alembick* in *Balneo Maria*, and the Tincture will remain perfect in the bottom of the *Body*, which must be kept in a well stop't Viol.

This is a Sovereign Remedy to strengthen the Bowels, in opening Obstructions, it purifies the Blood by Sweat and Urine. Its Dose is from 6 to 24 drops in some convenient Liquor.

Another

Another Tincture of Coral.

THE Tincture of *Coral* which we here discover is in use among many, and though it be not a true tincture of *Coral*, but rather an exaltation of the *Sulphur* contained in the Spirit of Wine which is used for the *Menstruum*, and is exalted rather by the fixed *Sal Nitre*, wherewith the *Coral* is Calcined, than by the Tincture in the *Coral*, we will not forbear to give you a description thereof.

You must take one pound of Powder of good red *Coral*, and two pounds of *Salt-peter* purified, mingle and grind them together in a Mortar, after put this mixture in an Earthen Pot that can endure the Fire, set the Pot amongst coals in a *Wind-Furnace*, which you must kindle gently at first, that the matter be hot by little and little, and that the sudden violence of the Fire cause not the pot to break at first, but when it is red hot you must continue a pretty violent Fire the space of six or eight hours: then let the Vessel cool and break it, and powder the Snow-white Mass which you will find therein; put this into a long-neck *Bolts-head*, and pour thereon a good Spirit of Wine to the height of four fingers, and set the *Bolts-head* in digestion in Sand for two in days, which time the Spirit of Wine will

be filled with a red Tincture, which must be poured off, and new Spirit of Wine put thereon, and the digestion continued in hot Sand, and again pour more off and on, till the Spirit of Wine be no more ringed. Then take all the Tinctures together, and put them into a *Body* of Glass, with and *Head* and *Receiver* well Luted, distill off all your Spirit of Wine with a very gentle heat, there will remain in the bottom a yellowish Powder approaching towards a red, of a lixiviat tast. The Spirit of Wine drawn from it it may be reserved for the same or other uses; but the Salt which remains in the bottom of the *Body*, must be set in a Cellar with the *Body* open. The reddish Salt will be dissolved by attracting a moisture to it into a reddish Liquor, which must be kept in a Viol for use, which is this; Take two pounds of good *Spanish* Wine, and an ounce of the said Liquor, and mingle them in a Glass Bottle well stopped, and let them stand together in a cold place for the term of eight days; the *Spanish* Wine which was white will become red as Blood.

This Tincture is given to purify the Mass of Blood for the Falling-Sickness, for to strengthen the Stomach, and to cleanse away all *Viscosities*, from half a Spoonful to a good great Spoonful every morning fasting, and continuing the use of it for some time.

C H A P, XVIII.

Of Quick-Lime.

QUICK-lime is made of Pibbles or common Stones by a Calcination in a *Furnace*, and is practised by Peasants themselves, it furnishes us with external Remedies, and amongst others the Water whereunto they have given the name of the *Corrosive Water*, and the *Salt* or *Caustick Stone*, which we will describe, not insisting upon many other preparations well or ill founded, and little in use.

The Eating, or Corrosive Water.

TAKE two pounds of good *Quick-Lime*, well Calcined and newly made, put it into a great Earthen Vessel, and pour thereupon by little and little ten pounds of Rain-water, and leave them together for two days, stirring them often, after let the *Lime* settle, and decant the Water which swims above and filtre it, and put it into a large Glass Bottle, and put to it one ounce of Powder of *Corrosive Sublimate*, which will change from white to yellow, and descends to the bottom of the Vessel

fel: of this Water being settled, you may make use to mundifie Wounds and Ulcers, to consume the superfluities therein, and chiefly for *Gangrenes*, and in these cases the expert Chirurgion may add thereto on occasion, a fourth or a third part of the Spirit of Wine; the same thing may be observed in the diseases of the Eyes, and it may be tempered with appropriated Waters, and sometimes with Rain-water, as the Artist thinks fit. The Calx which remains in the Vessel may be sweetened, dried, and kept for all outward diseases which need *Desiccation*.

The Caustic Stone.

TAKE one pounds of *Quick-lime*, and two pounds of *Pot-ashes*, beat them together into powder, and Calcine them in a convenient Pot in a Potters *Furnace*, after make a Lye with them and Fountain, or River-water, which Vapour away till it be dry, and there will remain a very sharp Salt. This you must put into a good *Crusible*, and melt it in a *Wind-furnace*, and when it is well melted; cast it into an Earthen Bason, as in the *Mineral Crystal*, and after break it into little pieces whilst it is yet hot, and put it into Vials well stopped with Wax; for otherwise these Stones will dissolve by attracting the moisture of the Air. The use of this *Caustic Stone* is too well known for me to insist upon it.

C H A P. XIX.

Of Arsenick.

A *Arsenick* is a Mineral fuliginous and partly inflammable, as common *Sulphur*: there are three sorts of it, the first white which keeps the name of *Arsenick*; the second yellow, named *Orpiment*; the third red, called *Realgar*, or *Sandarack*; there is no difference in their preparation, that of the white will suffice for all. The principal preparations of this Mineral are, *Regulus*, *Caustic Oil*, *Liquor*, and *sixt powder* which are used outwardly with happy success, and some are bold to make use thereof inwardly, which I advise not, because nature furnisheth us with other Remedies enough, less dangerous, and more safe.

Regulus of Arsenick, or Orpiment.

Beat into powder one pound of *Arsenick* (or *Orpiment*) with six ounces of *Pot-ashes*, and mix them with one pound of soft *Soap*, put them

them into a good large *Crusible*, covered with another *Crusible* with an hole pierced through the bottom, through which the venomous Vapours may pass away; set this *Crusible* in a *Wind-Furnace*, and give it a little Fire at the beginning, still augmenting it by little and little, till the matter be melted, when the matter is well melted cast it into a deep picked Iron, *Cornet*, *Cone*, or *Ingot*, made hot and appointed with Wax and let it cool, you will find a small *Regulus* in the bottom, grained almost like the *Antimonial Regulus*.

Oil, or Corrosive Liquor of Arsenick.

BEat into Powder equal parts of *Regulus* of *Arsenick* and *Corrosive Sublimate*, put them into a small *Retort*, place it in Sand, and give a gradual Fire, and force over a gummy Liquor, which will distil like Butter of *Antimony*; this Liquor hath the same properties with that of *Antimony* but it is more violent. When the *Butter* is raised chang your *Receiver*, and encrease the Fire a little, to make the *Mercury* come over, which distils into the *Receiver* alive and running; for the Spirits which held it before in the form of a *Crystalline Salt*, forsake it and betake them to the *Regulus* of *Arsenick*.

Tee Fixt Liquor of Arsenick.

BEat and mingle one pound of *Arsenick* with two pounds of *Salt-peter*, melt them in one or more large *Crusibles* leaving of each one third part empty, by reason of the great *Ebullition*; and for the same cause the Fire at the beginning, and for two hours must be moderate, but when the *Ebullition* ceases, augment and continue the Fire till the matter smoak no more, and till it be liquid like Oil in the bottom of the *Crusible*: Then cast it into an hot Mortar, and when it begins to cool beat it to Powder, and expose it to the moist Air that it may dissolve into a Liquor, which Filtre and keep in a Vial. It is used against malignant Ulcers, from the *POX*, *Cankrous* or *Fistulate*, and it is mixt with proper Waters to diminish its force.

C H A P. XX.

Of Sulphur.

S*ulphur* is a Resine, or earthly Grease, mingled with an *Acid* and *Vitriolick Salt*. There are two sorts of it, the one they call quick

quick, which is such as it comes out of the Earth; the other is common yellow *Sulphur*, which is taken out of the first by melting, or else out of Mineral-waters, from whence it is separated by Evaporating their humidity. You must make choice of that which is made up in small Rols being yellow, inclining towards green, casting a fair clear blew flame, that goes not out, and leaves no earthiness behind it. Its internal use is principally for the Diseases of the Breast. It is also used against the *Plague*, because it resists putrification, and outwardly to resolve Tumors, to heal the *Itch*, *Scabs*, *Tetter*s, and other external Maladies. It is diversly prepared.

Flowers of Sulphur.

TAKE a *Body* of good Earth, set it in a *Furnace* with an open Fire, yet so that it be encompassed well with Clay and Bricks, so that the Fire may neither appear nor breath out on high, but only through Holes or Registers, and the neck of the *Body* must be above the *Furnace*: Make a little Fire at first, that it may heat the bottom of the *Body* by little and little: afterwards put thereunto half a pound of powdered *Sulphur*, and immediately fit an *Head* to your *Body* without Luting it, and encrease your Fire one degree;

gree; and when you see the *Alembick* begins to fill with Flowers, be careful to continue your Fire in the same degree, for if the Fire be too hot the *Sulphur* that is already Sublimed will melt and fall down, and if the Fire be not strong enough, the Flowers cannot rise; when the Head is sufficiently full of Flowers, take it away, and at the same time set another in its place, and gathering out the Flowers empty this Head that it may be ready to set in the place of the other when it shall be full; and when you judge that your half pound of *Sulphur* is almost Sublimed, put another half pound into the *Body*, and continue your work with a regular Fire, changing your Head from time to time, collecting the Flowers, and putting new *Sulphur* in the *Body*, till you have a sufficient quantity of Flowers; and continue the Fire till there remain in the *Body* nothing but a very small quantity of light Earth. Note, that all the *Sulphur* rises in Flowers without any separation of any thing, save a little light Earth in very small quantity; so that this Sublimation is not properly a Purification but a Rarification only, whereby the *Sulphur* is divided into very small particles, more dissolvable in their *Menstruums* and more easy to mingle in Compositions, and more proper to be used in the Maladies of the Breast. The Dose of the Flowers is from 10 to 40 Grains, in a New-laid Egg, or any Confiture, Opiate, Extract or Conserve.

The Acid Spirit of Sulphur.

THE greatest part of these who have attempted any thing in Chymical Operations have imagined that they could draw from *Sulphur* an *Acid Spirit*, not only in great quantity, but easily, and that by several Instruments which every one invented severally for his own use; but when their pretended *Acid Spirit* is well examined, it is found to be nothing but Phlegm, or a Spirit of *Sulphur* made with *Salt-peter*. The true and most easy method is this.

Provide a large well baked Vessel of gray Earth, in the midst whereof set a little Earthen Dish with the bottom upwards, and thereon place another more large, which must be of good Earth, and which will endure the Fire well, in which there is a pound of melted *Sulphur*, put into this *Sulphur* some burning Stone Coals, such as are those of *Liege*, to kindle it, and cover the Earthen Vessel with a Bell Glass, either hanging on a Cord or supported by three small pieces of Glass, for the brim of the Bell-Glass must not touch immediately the Earthen Vessel, but must have the distance of a Fingers thickness round about, that the *Sulphur* may burn continually and not go out, and the smoaky fumes of the

Sulphur

Sulphur may exhale, so that the Spirituous *Acid Salt* of *Sulphur*, may be rarified and dissolved into Liquor, and cleaving to the Bell, fall down thereupon drop by drop, into the Earthen Vessel. When the *Sulphur* is consumed put in more, and so continue this work till you have sufficient. Note, that you must moisten your Bell at first, and work this in a moist time, between the two *Aequinoxes*, if it may be. The properties of this Spirit differ not from those of the Spirit of *Vitriol*; some believe them to be more specifick against the *Plague* it self. It is given in Julips, and other Liquors to the degree of an agreeable sharpness.

Milk, or Magistery of Sulphur.

TAKE four ounces of Flower of *Sulphur*, two ounces of *Salt of Tartar*, and six pounds of Rain-water, put them all into a Stone-Pot, and boil them in a *Sand-Furnace* five or six hours; in this time the *Sulphur* will be dissolved and the Liquor become red; Filtre it warm, and mingle it after it is filtred, with Water five or six pounds more, afterwards pour upon it by little and little some good distilled *Vinegar*, or other *Acid* in its stead; the Liquor will be immediately turned into *Milk*, and the *Magistery* will be pre-

precipitated by little and little to the bottom of the Vessel, decant off the Liquor which swims above, and sweeten the Powder by many washings with hot Water, after dry it and keep it.

The use of this *Magistery* is like that of the Flowers, but the Dose is less, because it is more open; and five Grains of this Powder avail more than ten of the Flowers, and ten Grains of the Flowers more than twenty Grains of common *Sulphur*.

Balsom of Sulphur.

PUT into a *Bolts-head* two ounces of Flowers of *Sulphur*, and pour thereon eight ounces of Oil of *Turpentine* well rectified, set your *Bolts-head* on Sand, and give it a small Fire at the beginning, and encreasing by little and little till your *Sulphur* be dissolved, which will be done in four or five hours in a sufficiently moderate heat: the Oil of *Turpentine* will be tinged with a Ruby colour, and will dissolve all the *Sulphur*; but whilst the Vessel cools, one part of the *Sulphur*, which the Oil cannot hold up in its liquid form, reincorporates or congeals again. You must pour out that which is clear and red into a Viol, and keep it well stopt.

This Oil cures the Ulcers of the *Lungs*, it is good against the *Plague*, and against all contagious Diseases, both to heal and preserve from

them. Its Dose is from 5 to 15 drops in some convenient Liquor. An excellent Oil for outward uses may be made with Oil of *Linseed*, instead of Oil of *Turpentine*, and this Oil is incomparable both for healing *Contusions* and *Ulcers*, for it is an *Anodine* and sweetens the *Acrimony* of humours.

C H A P. XXI.

Of *Ambergreece*.

A *Ambergreece* is a sort of Balsom, rising from the bottom of the *Sea* altogether liquid, but it is congealed and hardned by the coagulative Spirit of the *Sea-Salt*, and Rays of the Sun, it is commonly found on the *Indian* Sea-shore. It is not always of an equal goodness, nor of the same colour, which proceeds from the lesser or greater impurities it meets with in its congelation. The best is gray inclining to yellow, of a sweet and fragrant Odor, and melting easily in heat. *Ambergreece* is one of the noblest works of Nature, and needs no great preparation, producing such as it is unprepared great effects, both for strengthening the Heart, Stomach, and Brain, and for refreshing the Vital and Animal Spirits. But its Bituminous quality hindering it from mixing easily with watery Liquors, we to obtain our design therein and reduce it to an *Essence* as follows.

Essence

Essence of Ambergreece.

TAKE two Drams of good *Ambergreece*, and one Scruple of good *Levant Musk*, powder them well, and put them into a *Bolts-head*, and pour on them four ounces of good Spirit of Wine, fit to your *Bolts-head* another linner, Lute well the joints, and set it to digest in Horse-dung moderately hot for some days, then whilst it is yet hot pour off the tinged Wine, for this *Essence* congeals of it self, and melts again with the least warmth of the hand: It augments Seed, and makes man or woman capable for Generation; it is taken from 10 to 15 drops in *Spanish Wine*, or Meath, or other Liquor.

C H A P. XXII.

Of Karabe, or Amber.

K*Arabe* usually called *Yellow Amber*, or *Succinum*, is a Rosin or Bitumen very pure and well digested, which distills out of the Veins of the earth into the Sea, where it is hardned by the congelative Spirit of the *Sea-Salt*; there are of it several sorts, of which the white is best, next to it the yellow, and the black after the yellow. It is used in Powder without other preparation, for *Catharres*, *Gonorrhoea's* and *Whites*; but reduced into Oil, and Volatile Salt, it obtains thereby very great virtues, as we shall after shew. *Distil-*

Distillation of Amber.

TAKE three pound of Amber grossly beaten, put it into a large Retort, leaving it half empty; set it in a sand-Furnace, and fit thereto a large Receiver; lute the joynts very exactly, and give it gradual heat: there comes over first a Phlegm, then a Spirit, and after an Oyl and volatile Salt mingled confusedly: Encrease and continue the Fire till nothing more come over, then let all cool, and take away the Receiver; you will find in the Retort a black matter like *Asphaltum*: pour into your Receiver about two pound of hot water, and shake it well together with all the substances found in it, to the end that the volatile Salt sticking to the sides of the Receiver or mingled in the Oyl may be dissolved therein: after pour all out into a glass Viol, and separate the Oyl from the Water, containing in it the volatile Salt and spirit of Amber.

The Rectification of the Oyl of Amber.

MINGLE the Oyl separated from the other matters, with so many sifted ashes as will suffice to drink it up, and make a pretty dry mass;

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then

then put this mass into a Retort, and distill it in a pretty gentle fire: the first Oyl that comes over will be pretty fair and clear, you must keep it apart for internal uses: continue and encrease the fire by little and little to raise your red Oyl; when no more comes over, cease your fire, and keep your Oyls severally. The first is excellent against the Apoplexy, Epilepsie, Palsie, and all the Diseases of the Mother, and against the retention of Urine: its Dose is from three to ten drops, in any proper Liquor: the red Oyl may be used in Unguents and Plaisters; it fortifies the Nerves, and dissipates Swellings; and it is with good success rubbed into Paralytick Members.

The Sublimation and Purification of the Volatile Salt of Amber.

TAKE the aforesaid Liquor separated from the Oyl, which contains in it the Phlegm, Spirit, and volatile Salt of Amber; filtre it, to separate the oily substance the better from it: and put it into a Bolts head with a long neck, and pour thereon drop by drop good Spirit of Salt, which will cause a great boiling up in the glass, because of the action it hath upon the volatile Salt of Amber; for this Salt is nigh to the nature of the volatile Salt of Animals: when the ebullition is over, put the Liquor into a Body, and cover it with an head, and distilling it in a sand-Furnace, draw off the insipid water; for
the

the volatile Salt of Amber hath by re-action killed the acidity of the Spirit of Salt, and abides with it in the Stills bottom: after all the insipid water is come over, augment your fire one degree, to cau'e your Salt to sublime, which rises and cleaves partly to the head, and partly to the top of the body of your Still. Let your Vessel cool, and gather carefully the volatile Salt, which will be very subtle and penetrant, and will have the taste of sublimed *Sal armoniac*. But to make it yet more subtle, you must mingle it with equal quantity of pure Salt of Tartar, and put this mixture in a small body and head, and sublime it in a sand-Furnace, and the Salt of Tartar will remain with it all the spirit of Salt which was united and incorporated with the Salt of Amber in the first sublimation: and this Salt thus re-sublimed will be very pure and white as Snow, and must be kept in a Viol, very exactly well stopped, for it is so penetrant and volatile, that it cannot be long kept without much trouble.

Both these Salts are used against all Obstructions in the Body, against the Paltic and retention of Urine, and against the Jaundies; it evacuates strongly by Sweat and Urine; The Dose of the former is from 20 grains to 2 dram, but the second (which is purified to an higher degree) is given only from 4 to 15 grains, in some agreeable Liquor.

We will here finish the Section of Minerals, being assured that those who well understand the process of the Preparations which we have described, will be capable of an infinite of others which we thought not pertinent to be mentioned.

SECTION II.

Of Vegetables.

NOW that we have shewn the preparation of Minerals, in the most clear manner that possibly we can, we now prepare to do the same in Vegetables, intire, or in parts, such as are, Roots, Wood, Barks, Rosin, Gum, and other Excrecences, Leaves, Flowers, Seeds, and Fruits: and albeit the Family of Vegetables be extended almost to an infinity, we will be content by sufficient Examples to shew all their principal Preparations; and that we may proceed therein orderly, we will begin with Roots, which are the inferiour part of Plants, and we will rise from thence gradually to their tops. All Vegetables, whole or parts, may be reduced by Fire into their five distinct Substances; but in regard this cannot be done without leaving bad impressions on their Spirits and Oyls, Artists have found out other ways, and have contented themselves by means of some *Mentruums* to draw out from them what is best, and not to amuse themselves in an exact separation of all their parts, of which the most are unprofitable.

CHAP.

C H A P. I.

Of Jalap Root.

Jalap is a root the Ancients knew not, which comes from the *Indies*. It ought to be weighty, in colour betwixt gray and black, and resinous veins ought to appear in it when broken, it is of a sharp and biting taste. But its principal virtue consists in its Resinous substance, which is separated, as follows.

Put eight ounces of powdered Jalap into a bolts-head, and pour thereon good Spirit of Wine to the height of four fingers above it, close it well, and set it to digest in *B. M.* for two or three dayes; in the mean time the Spirit of Wine will be tinged of a violet colour, decant it off into another Vessel, and pour on fresh Spirit of Wine, digest and decant as before, and do this the third time; then mingle and filtre all the tinctures, and put them into a great glazed earthen Vessel, and pour thereon three or four pound of pure Water, which will break the Spirit of Wine, and force it to let fall the resinous substance of the Jalap, which it held dissolved, which by little and little precipitates to the bottom and sides of the Vessel: pour off the Water into a Body, and draw off the Spirit of Wine by

Distillation; it may serve as formerly for like occasions: wash well the refine with clean Water, to take from it the odour of the Spirit of Wine, then dry it in the Sun, or with a gentle heat, and when you would use it, reduce it into an impalpable Powder. The Jalap which remains is light and insipid as ashes, whence the Salt is extracted.

The Refine of Jalap purges Serofities, and therefore is used with happy success in Dropsies, and all Diseases which come of abundance of Serofities: It's Dose is from five to fifteen grains; in some Conserve, or Extract made up into a Bolus, or in Powder, with Tartar vitriolate; but the safest way is to powder this Refine, and beating it together with Almonds, or the cold Seeds to dissolve it in an Emulsion thereof, or in the yolk of an Egg in some broth, to sweeten the acrimony of this Refine, and to divide its parts, and hinder them from fastning to the Tunicles of the Stomach or entrals: which is many times the cause of super-purgations. The same precaution may also be used in the administration of other Resinous Remedies taken from Scamony, Agarick, Turbith, and others, whose preparations ought to be like this of Jalap.

C H A P. II.

Extract of black Hellebore.

THIS Preparation will serve for a Model for the Extracts of all other Roots, whose principal substance is a juyce dissolvable in Water, such as are Mechoacan, the root of Esula, wild Cucumber, Rhubarb, and others. Take one pound of black Hellebore roots, dry or green, beaten grossly, put them in a Body, and pour on them five or six pound of distilled rain Water, and cover the Body with a blind Head, and digest in hot Sand two days; strain the liquor through a linnen cloth, and squeeze the residue a little, whereon put fresh water and digest as before; after strain, mix with the former, and filtre it, and evaporate it in an earthen vessel to the consistence of an Extract, which must be kept in a Pot well covered.

This Remedy is used in all Diseases which come of Melancholy. It is seldom given alone, but mixt with some Purgative, because taken alone it works violently up and down, but so mixed it purges only downwards. The Dose is from 12 to 30 Grains.

 CHAP. III.

*The Extract of Angelica, and Conservati-
on of all its virtue.*

PUT six pound of good Whitewine on one pound of beaten Angelica root in a Body, cover it with a blind Head, and digest it in a vaporous Bath for two or three days, then take away your blind Head, and set to an Head and a Receiver, and lute well the joynts; then begin to distil with a gentle heat in *B. M.* and continue till you have drawn off about three pounds of Water, which will contain what ever is volatile in the Angelica; keep this Water in a Viol well stopped: let your Vessels cool, strain and press strongly out what remains in the Body, and clarify it by a tongue-filtre; and after evaporate it in a glased earthen Vessel in a Stove-heat of *B. M.* to the consistence of an Extract: calcine what remains in the press, reduce it to Ashes, make thereof a Lye with Filtre, and evaporate to a Salt, and joyn it to the Extract, vvhich keep in a Vessel vvell stopt. This Extract is a true Cordial and bezoarick: it is opening and penetrant, and causes Svveat; it provokes the Terms, helps against the suffocation of the Mother, resists Poyson, and the Plague, especially if it be taken in its ovvn Water. Its Dose is from 10 to 30 Grains;

Grains; the Water contains no less virtues than the Extract, for it includes the more volatile and noble part of this root.

In this manner you may draw the Water, Extract and Salt of all Roots, vvhich abound in a sulphureous and volatile Salt, vvhich may be knowvn by their aromattick and fiery scent and taste: such are the *Valerian*, *Masterwort*, *Mea* or *Spignel*, the *Carluce Thistle*, *Calamus Aromaticus*, *Zedoary*, *Galangal*, and such like.

C H A P. IV.

Of Rose-wood, or lignum Rodium.

WE will give only two Examples of the preparation of Wood, which may serve for all others. The first shall be of *Lignum Rodium*, or *Rose-wood*, which contains two profitable Substances, the one Spiritous and Watry, the other Sulphurous and Oily, and both these Substances very Sable and Volatile; so that they must be distilled with a *Worm* or *Refrigerant*. The second sort shall be of the Wood *Guaiacum*, which contains also two volatile substances, a Spiritous and Oily one, both which are closely united to their Body, and cannot well be separated from it, but by the stronger heat of a Retort. For the first, choose the weightiest, and best scented

Rose-wood

Rose-wood, raspe it finely, and put four pound of it with one of *Saltperre* into an Earthen Pot, and poure thereon ten pound of *Rain-water*, let it soak therein eight or ten days, and stir it from time to time; by this means the *Saltperre* will penetrate the Sulphurous parts of the Wood, and dispose them to separate: After, put all with ten pound of water more in a Copper Still, placed in its Furnace, with its Refrigerant and Receiver fitted thereto; lute well the Joints, and distill gradually the Spirituous Water and Essential Oyle, which come over together confusedly; and note that this Oyl falls to the Bottom of the Water, contrary to the most part of other distilled Oyls; continue your distillation till your waters come over Tasteless, and forget not to refresh your Refrigerant with change of water many times during your distillation; which being ended, decant your Spirituous water from your Oyl, which you will find in the bottom of your Receiver in very small quantity, keep it apart. This Oyl and Water are principally used for Perfumes; and not taken inwardly as safely, yet they may.

All Wood which hath in it a Sulphurous sweet scented and subtle Substance, as the yellow *Stantal* or *Sanders*, *Sassafras* and others, may be distilled in the same manner.

C H A P. V.

*Of Guaiacum Wood, and its Reduction
into five different Substances.*

THis single Operation will shew the Reader the means to reduce Vegetables into Phlegm, Spirit, Oyl, Salt and Earth. Take four pound of the Raspings of the Wood *Guaiacum*, put them in a well luted Retort of gray Earth or Glass, set it in a close reverberating Furnace, and fit to it a large Receiver unluted, and give it fire gradually, there comes first over an insipid Phlegm, and after a volatile Spirit, which when you perceive by it, a pungent taste to come, put away the Phlegm into another Vessel, and keep it apart, and fit your Receiver again to your Retort, and new lute the joints well, that none of the Spirit be lost, which is very penetrant: neither must you press it by too strong a fire, for it will either press through the joints of the Vessel or break the Receiver: and in this and all other Distillations of Volatile Spirits, the Artist had need of Patience and Dexterity, if he will not lose that he seeks for: maintain your fire in a very moderate state for seven or eight hours, after encrease it by little and little, and continue it till all the Spirit and Oyl be come over: These two Substances come over together;
but

but after the Vessels are cold, and the Receiver taken away, they may be easily separated: pour all that is in the Receiver into a Tunnel lined with filtering Paper and set in a Viol, the Spirit will pass through the Paper, and the Oyl will remain behind; set your Tunnel on another Viol, and making an hole in your Paper let the Oyl run into the Viol, which you must keep apart.

The Retort contains but the remains of the Wood reduced to a Coal, which put in an open Vessel on hot Coals, and burn it to ashes, from which (as from all other ashes) you shall draw the Salt by Dissolution, Filtration and Evaporation, as we shall teach you where we shew the manner of Extracting Salt *Alkali* from Vegetables. After the Salt is separated there remain some insipid ashes, which they call the damned Earth. The Spirit unrectified will serve to wash Cancrous, Fistulate and Corroding Ulcers; but is very biting, and may be tempered with its Phlegm which came over at the beginning of the Distillation. It is rectified in *B. M.* with a body, that it may be used internally against the *Pox*, for it chaseth out that venom by Urine and Sweat, and sometimes by insensible Transpiration: its Dose is from twenty drops to a Dragma in some specifick Decoction: the Oyl is rectified by mingling it with ashes and putting it in a Retort in a Sand-Furnace, and drawing off a clear Oyl freed partly from its ingrateful scent, the ashes retaining what is more gross in the said Oyl: It is used against the *Epilepsie*, to facilitate Womens Deliverance,

Deliverance, and to bring away the after-Birth. Its Dose is from three to six Drops in some Liquor : it may be used unrectified to scall Bones, to heal old Ulcers and Nodes, and to put with Cotton into rotten Teeth, in which it cauterizes the Nerve and so makes it insensible of Pain. All Wood, as *Juniper*, *Box*, *Lime-tree* and all the rest may be distilled as *Guaiacum*.

C H A P. VI.

Of the Distillation of the Spirituous Water and Essential Oyl of Cinnamon.

WE will address our selves (without insisting on its Description) to the Separation of the spiritous and oily substance of Cinnamon, whose Preparation will serve us for example in other aromattick Barks, as of Citron, Oranges, &c. As also of Nutmegs, Cloves, Pepper and other Spices. Take four pounds of Cinnamon of a red colour, strong and sweet scent, of a pungent and a little astringent taste, beat it grossely, and put it into a gray Earthen Pot, pour thereon two pound of rain-water, with half a pound of Saltpetre, to help its Penetration during its maceration, which must be for four days, which being ended empty all the matter into a tinned Copper Body, adding thereto twelve pounds of water; place the Still in its Furnace, and fit to it its Refrigerant and Receiver, luteing well their joints : give from the beginning a pretty good fire, to help

help the Oyl to come over with the Spirits, but not too great, that they may not be dissipated; and this Observation is general, that the Sulphurous parts are strongly fixed in the Body of the Spices, and are separated from them with difficulty, but they are also easily dissipated after their separation; you must therefore distill them in such manner that one drop do readily follow another, and continue that degree till the Water which comes over have no more strength: change your Water carefully now and then in the Refrigerant, during the Distillation, that the Spirits may the better condense and not evaporate: when the Distillation is ended, separate the spirituous Oyl, which settles at the bottom of the Recipient, in very small quantity, for you will hardly draw half an ounce of Oyl from four pounds of Cinnamon, which half ounce contains in it the principal Virtue of all the quantity of Cinnamon whence it was drawn; so that one single drop is sufficient to impregnate a great quantity of Liquor with its Virtue: but to mingle it (as other æthereal Oyls) more easily with Liquors, they make thereof a sugared Oyl, mingling it with powdered Sugar, whereby it being divided into imperceptible parts, they are mixt with the Water, and cannot after be united into an oily Substance.

This Oyl provokes the Terms, speeds the Birth, refreshes the Spirits, sharpens Digestion; it is used in Faintings, and the Diseases of the Stomach and Mother, which proceed of a cold cause; the Dose is half a drop in any Liquor. The Water obtains almost the same properties, but it acts
not

not with the same efficacy : its Dose is from one to two Spoonfuls.

Note that other Barks and Spices afford a greater quantity of Oyl, of which the greater part swims on the Water, and is separated by a thread of cotton, as we shall shew in the Distillation of Wormwood-oyl.

The residue may be dried, and reduced to ashes, that the *Sab alkali* may be extracted out of it ; but as these Salts differ not in their Virtues from other sorts of vegetable *alkalies*, we shall not insist at all on their description.

Another Cinnamon-Water.

They that desire onely a good Cinnamon-Water, without regard to the oyl, for which a greater quantity of Cinnamon was needful, must prepare it as follows. Take four ounces of good Cinnamon well bruised, and put it into a Body, and pour thereon Bugloss, Burrage and Balm-water, *a.* eight ounces, cover the Body with a blind Head, digest in a slow heat 2 dayes, then put in its place a Head and Receiver, and distill till there remain in the bottom of the Still not more than a third of the Waters, which shall be emptied of the Spirituous substance of the Cinnamon. The use of this Water is the same as the former, but it is more cordial.

The Tincture and Extract of Cinnamon.

Almost all Barks contain in them a Resinous and Sulphureous substance, which constitutes their principal Virtue: to separate this internal Substance from its gross Body, we must employ spirituous and sulphureous *Menstruums*, such as Spirit of Wine, and other Vegetable burning Spirits: we will give an Example in Cinnamon, which will serve for all other Barks. Put four ounces of good well-bruised Cinnamon in a Bolthead, and pour thereon one pound of good Spirit of Wine; fit well another Bolthead to this, to make a Vessel for Digestion, close well the joints, and let them digest three or four dayes in a gentle heat; the Spirit of Wine will fill it self with the substance of the Cinnamon, and will tinge it of a fair red; pour off and separate the Tincture, filtre and keep it in a viol well stopt.

If you would reduce this Tincture into the form of an Extract, put it in a small Body, and lute well thereto an Head and Receiver, and distill off the Spirit of Wine, which will be impregnate with the volatile substance of the Cinnamon, and the Extract will remain in the bottom of the Body in the form of hony.

The Tincture refreshes the Spirits, fortifies the Stomach, thins and dissolves all viscous matter
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more than the simple Cinnamon Water: its Dose is half a Spoonful in some appropriate Liquor. The Extract strengthens the Stomach more than any other Remedy made out of Cinnamon, because it contains in it a part of the fixed Salt, and of the subtler Earth, which hath a restraining power. The Spirit of Wine drawn from the Extract is impregnate with the Spirit of Cinnamon, and may be mingled in Liquors for the use of weak Persons, for it is very comfortable, and helps Digestion.

CHAP. VII.

The Distillation of the Ethereal Oyl and Balsome of Turpentine.

WE place the Chymical Preparation of Rosins and Tears issuing from the Bodies of Trees, after that of Barks; and begin with the Distillation of Turpentine. Put four pounds of Turpentine in a large Retort, whereof three fourth parts must be left empty, place it in a sand-Furnace, fit a Receiver to it, and begin your Distillation with a slow Fire: there rises first a volatile Spirit, and subtle oyle clear as Rock-Water; but after you have drawn ten or twelve ounces, fail not to empty what is come over in-

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luting the joynts, a yellow oyl will come over, of which you may draw also ten or twelve ounces, and empty that apart into a Viol, and then setting to the Receiver the third time, and encreasing the Fire by little and little, the red oyl will come over, which is the Balm; and when it begins to thicken put out your Fire, else it will be over-thick, and that which remains in the Retort will be charcked, but in case you keep no more Fire to it, it will be good colophonia.

The Watry Spirit mingled with the first æthereal Oyl, contains in it part of the volatile Salt of Turpentine, it contains also in it an acidity capable of dissolving Stones; but we will speak thereof more largely in the Chapter of Gum Ammoniac, which aboundeth in this Spirit more than other Tears and Resins.

The æthereal oyl must be separated from the Spirit by a Tunnel: it is used in attenuating and dissolving the Gravel in the Reins and Bladder, it provokes Urine, and helps in Gonorrhœas and Ulcers in the neck of the Bladder: its Dose is from five to fifteen drops in some agreeable Liquor.

The yellow and red Oyl differ not from the former, but their strong smell is the cause they are not used save outwardly in ill-thriven Members, Scyrrous Tumours, and old Ulcers.

The *Colophonia* is the more earthly part of the Turpentine, it consolidates and dries, its principal use is in Plaisters.

The same circumstances may be observed in distilling Mastich, Olibanum, Gum Elemmi, Tacamacha, Sandarat, Ladanum, Storax and Benjamin: but this last, in that it abounds in a volatile Salt which separates with the least heat of Fire, we will handle apart in a particular Chapter.

CHAP. VIII.

Of the Sublimation of the Flowers of Benjamin, and Distillation of its Oyl.

PUT four ounces of good Benjamin in a pot glazed within, and having a Rabet or Crest, and fit thereto a picked Coronet, or Cone of Paper well glued together, and a Foot high, whose opening must be proportionable to the pots mouth, that it inclose it, and be tied with a pack-thread round about the Crest or ledge of the pot; which place on a sand-Furnace, and give it a small Fire; for this sulphureous and subtle Salt rises easily when the Benjamin begins to melt; continue the Fire in the same degree, and about half an hour after loose the coronet or cone, and gather the Flowers with a feather which are risen, and nimbly set a fresh cone or coronet in the place of this, which you must keep

in readines for that end when you remove the first, and continue the same Fire, and change again your cone or coronet, and gather the Flowers every half hour, till you observe that the Flowers begin to turn oily, then cease your Fire, and gather and keep your Flowers carefully.

These Flowers are given in Diseases of the Lungs and Breast, and to them that are Asthmatick: The Dose is from four grains to six in any Conserve or Lofenge.

CHAP. IX.

Of the Distillation of Gum Ammoniac.

THIS Gum is produced by a sort of Fern (*ferula*) which they call the Ammoniac-bearer, to distinguish it from the other sorts, which produce *Galbanum*, *Sagapenum*, *Opopanax*, and *Euphorbium*, in all which Gums the same method of operation may be observed, which differs not from that of Rosins and Tears; but these sorts of Gums are filled with plenty of volatile Salt and Spirit, wherefore we handle them apart.

Take one pound of good Gum Ammoniac in drops, and put it into a great Retort, so that three fourth parts thereof may remain empty, for as soon as it begins to melt with heat, it puffs up greatly,

greatly, fit to it a large Receiver, and lute the joynts exactly, and proceed gradually in your Distillation. An oyl comes over, and plenty of Spirit, and that which remains in the Retort, is mightily rarified, black as a cole, and of no value. Separate the Spirit from the Oyl by a tunnel lined with paper, as you are taught above.

The Spirit possesse very great Virtues, which proceed onely from the volatile Salt which is contained in it. But in that it is mingled also with an Acid, which hinders its activity, and diminishes its Virtue, I will give you the means to separate these two Spirits capable to produce very different effects. Take one ounce of Coral, or Crabs eyes, or other stony matter in powder, and having put them in a Retort large enough, pour upon them eight ounces of this Spirit, set your Retort in a sand-Furnace, fit unto it a large Receiver, and lute the joynts exactly, after give it a very small fire, that the acid Spirit may by little and little be applyed unto the Coral, which will retain it till the sulphureous Spirit be distilled over into the Receiver, and rises first of all; but afterwards there ascends a stinking phlegm which must not be mingled with this Spirit, and may be distinguished by its picquant taste; which so soon as you perceive to cease, take away the Receiver, empty what is in it, and keep it carefully in a well-stopped Viol. This is a great Remedy for purifying the mass of the Blood, to heal the Scurvy, and cure all Obstructions: it is used also against the Palsie inwardly, and the

Oyl outwardly, mingled in Unguents: It is also a Specifick against the Plague, and all Diseases arising from putrefaction: its Dose is from six to twenty drops in some proper Liquor.

The Oyl resolves and softens the Scirrhus and hardness of the Spleen, dissipates Nodes, and is useful in the hysterick Passion: and all these good effects proceed from its volatile Salt, with which it is intimately mingled.

CHAP. X.

Of the Preparation of Aloes.

A Loes is a very bitter juyce which they bring us from *Arabia*, in a solid Form in skins. The more impure is called Caballin, the mean sort is called Hepatique, and the best is called Succatrine, which ought to be neat, glittering, and of an high and lively colour, and of this you are to make use. Its principal Virtues are to purge gently Phlegm by strengthening the Stomach, to kill Worms, and resist Corruption. It is purified by dissolving it in distilled Waters, or in juyce of Roses, Violets, or other, and after filtering and coagulating it, as we here teach. Take and put half a pound of Aloes Succatrine in a glass Body, and pour thereon one pound and an half of juyce
of

of Violets, put on a blind Head, and set it in digestion 48 hours, in which time the Aloes will be dissolved in the juyce, and if there be any earthy part therein, it will sink to the bottom; decant the Solution, and filtre it, after that evaporate it in a glazed dish over a vaporous Bath, and reduce it into a mass. Of this you may make Pills of the weight of six or eight grains, of which take one half an hour before Supper, to loosen the Belly sweetly, and to evacuate (almost insensibly) the gravel and viscous matter in the Stomach: there are made of it also small Pills of the bigness of a Pins head, which they call Pills of *Frankford*: this mass is termed *Aloes violata*, as that dissolved in juyce of Roses is called *Rosata*.

Extract Panchymagogen.

After that of Aloes, we will insert here the *Extract Panchymagogen*, which is commonly the base of all purgative Extracts, because this Preparation may serve for example to all the other compound Extracts.

Take the pulp of *Coloquintida* ʒij , Agaric, Scamony, *a.* ʒj , black Hellebore ʒij , Powder of *Diarrhodon Abbatis* ʒij , Aloes succatrine ʒx . Bruise the black Hellebore, chop the pulp of *Coloquintida*, put them together into a Bolts-head, and

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pour

pour upon them good Spirit of Wine, to four fingers height, stop well the mouth of the Bolthead, and in another put the Powder of *Diarrhodon Abbatis* apart, and pour thereon also Spirit of Wine to the same height; chop also the *Agaric*, and bruise the *Scamony*, and put on them an excellent Spirit of Wine, which may extract their *Rosinous* substance; keep the *Aloes* apart, and put the three Boltheades well stopt in digestion on hot ashes for three dayes, during which the *Menstruums* will fill themselves with the inward Virtues of these grosser Substances; decant off the Tinctures each apart in a several Viol, and put new *Menstruums* on the matters remaining in the Boltheades, and set them again to digest, so the *Menstruums* will draw out whatever of good there is in them: after mingle all your Tinctures of *Hellebore*, *Diarrhodon*, and *Coloquintida*, and put the *Aloes* thereto which you kept apart, and digest them in a slow heat for eight hours, and your *Aloes* will be dissolved, save only some earthy part; filtre your Solution through Paper, and the Tinctures of *Agaric* and *Scamony*, and set them all together in *B. M.* in an Alembick well luted with its Receiver, and distill off about 3 fourth parts of the Spirit of Wine, which may serve again for the same use; empty what remains in your Alembick into a glazed earthen dish, and proceed to evaporate it in *B. M.* to a consistence fit to be made into Pills.

This is a very good purgative, and evacuates sweetly what is superfluous in the Body: its Dose is from 5 to 30 grains.

It may be made specifick for Venereous Diseases by adding thereto one third part of *Mercurius dulcis*.

C A A P. XI.

Of the Preparation of Opium.

O*pium* is condensed Poppy-juyce : the best comes from *Thebes*, and is drawn by slashing the Poppy heads when they are almost ripe, and this is much to be preferred above the juyce which is wrung forth by the Press from the whole Plant, which is called *Meconium* : but the first being very rare, we make use of the other, which must be chosen black, compact of an offensive smell, and soporiferous, sharp and bitter in taste, flaming at the Fire, but not with a black flame, dissolvable in Water, and its solution must be brown and not yellow, and being broken it ought to glitter within. Its easiest and best Preparation is this : Cut it into very thin and small slices, and spread them on a broad earthen glazed dish, and set them on a small-coal fire, and stir the *Opium* frequently, which grows soft at first, and after hardens by little and little, the fire must be continued till it may be crumbled betwixt the Fingers ; in the *interim* the hurtful fumes

fumes of it must be avoided, which proceed from the Narcotick, stinking, and malign Sulphur of *Opium*. Put your *Opium* thus torrified into a Bolts-head, and put thereon distilled *May-dew*, four fingers high, stop the Bolts-head, and set it in Digestion in *B. M.* four days, in that time the *Menstruum* will be filled with the best substance of the *Opium*, and will have a reddish brown Colour; pour off the Tincture into another Vessel, and put on fresh distilled dew on the remaining matter, to compleat the Extraction of what purity it hath; after filtre the whole, and evaporate it in *B. M.* to the consistence of an Extract; by this means you shall obtain a well-prepared *Opium*, discharged of all its Narcotick Sulphur and Earthiness, which you may use in occasions wherein it is commonly employed.

Its principal Virtues are to pacifie irritated Spirits, to provoke sleep, to stay the immoderate fluxes of the Belly, to sweeten the acrimony of Humours: it is used after general Remedies against defluxions on the Breast, against hysteric Diseases, to appease the torments of the Gout, and other internal pains, taken by the mouth, and applied outwardly; the dose is from half a grain to two grains.

Authors give divers descriptions and preparations of *Laudanum*. Some prepare *Opium* with Vinegar, or other acids, but acids having a contrariety to the internal sulphureous volatile and saline part, which gives unto *Opium* its principal virtue, they wholly destroy it; others make an Extract with the Spirit of Wine, which they af-
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terwards draw off by Distillation ; But inasmuch as the Spirit of Wine doth mingle it self intimately with the particles of the *Opium*, which agree with its sulphureous nature, and carry them away with it in the Distillation, that which remains in the bottorn is nothing but an earthly substance, deprived of all its principal virtues ; this happens not in the use of dew, which is a light and subtile *Menstruum*, which evaporates with the gentlest heat, without taking away any thing of the virtue of the Body wherewith it is mixed. Therefore I recommend to the Reader this simple Preparation, of which he may make use as of a good *Laudanum*, which may be made Specifick against the risings of the Mother by addition of a drop of Oyl of Amber, and against other Diseases by commixture of proper Remedies, or agreeable Vehicles.

CHAP. XII.

Of Leaves and their Preparations.

Leaves and Stalks of Plants contain in them divers Substances, as other parts, and differ not onely in their natural mixture, but in this also, that one or other principle is predominant in the one or the other : and this obliges us to give thereof

thereof sundry Examples, to make known the diversity of their Preparation, according to their divers predominant principles. First, we will treat of those which abound with Phlegm, and are almost insipid; such are the Purslane, the Lettuce, Pellitory of the Wall, Garden-Nightshade, &c. Secondly, those which contain much Phlegm, with a tartarous Salt, (which gives them an aerid taste) which have no scent; of which sort are the several kinds of Sorrel, and such like. In the third place, those which have a bitter taste, and abound with a nitrous and tartarous Salt, and have no scent, as Carduus, Succory, Hops, Fumitory, &c. In the fourth place, those which abound in a volatile sulphureous Substance, subtle and airy, as are Marjoram, Rosemary, Sage, Time, Organy, and an infinity of others. We will give you five Examples which will serve in general for drawing from all Plants whatever of good they contain.

CHAP. XIII.

Of Lettuce.

Lettuce and other herbs which are nigh thereunto in their nature, do readily yield what good they contain, when their leaves are full of juyce, and ready to shoot up into stalks. Beat then

then a good quantity of them in a Marble Mortar, and press out the juyce from them so ordered, let it stand for some hours, that the more gross parts may settle, pour off the more clear into a glass Body, and if you have ten pounds of juyce, distill thence six pounds of Water in a sand-Furnace, which will be much and incomparably better than that which the greater part of covetous and ignorant Apothecaries draw with addition of store of Water, in a brass Refrigerant, which cannot but have the very hurtful qualities which it draws from the brass, and it were better to give Fountain, than such Water unto the sick.

Take the juyce which remains in the Body, and put it through a cloth-strainer to clarify it, and evaporate it to the consistence of a Rob, whereto you may add a little Sugar to keep it the better: you may make use of this Rob dissolved in its own Water, and thereof compose somniferous and refrigerating Remedies for Cholerick Diseases: Its Dose is from one to two drams in five or six ounces of its own Water: these Juleps are better than those wherein they mix many ounces of Syrups, whose Sugar may cause new fermentations.

Another

*Another Distillation of Lettuces, and other
juicy Herbs.*

THe great use of distilled Waters hath forced the Artists to invent a sort of tinned Cauldron, large and flat, whereon they set an head of fine Pewter fitted to the Cauldron, of which, and its Furnace, we will here give you the plainest description we can possibly.

Cause a brick Furnace to be built, square without, and round within, of about two foot Diameter above, with four holes and Registers at the four corners, an ash-hole, grate and hearth, and made from the grate up to the top taper like a basket, for the better governing the fire: your Furnace being thus framed, cause a Cauldron to be made of iron plates, of a flat bottom, and of the height of six or seven inches, with a small bordure of a breadth proportionable to the Diameter of the Furnace, so that it joyn not wholly to the walls of the Furnace, that the heat may be communicated quite round: place also two iron bars cross the Furnace, about eight or nine inches above the grate, to support the iron Cauldron, which you shall set in the Furnace, and lute it round about to the Bordure, so that the top of the Furnace, save the four Registers may be all fast and closed; this being done, prepare also a
Caul-

Cauldron of Copper tinned, flat in the bottom, and proportionable to the wideness of the iron Cauldron, so that it may be set within it without touching its sides at the distance of half an inch: this Cauldron needs not be above eight or ten inches high: in this Vessel we put the herbs to be distilled; this Cauldron must have an head of Pewter, of a flattish round top fitted to it, and when you would distill any herb, first put sand to the height of an inch and an half in the iron Cauldron, then set your Copper Cauldron upon the sand, and fill it almost quite up to the top with whole leaves, cover it with its head, fit to its Receiver, and give fire by little and little, till the Water distill drop by drop, and then keep that degree, till all the moisture of the leaves reduced into vapour be condensed into Water, and that the leaves be so dry that they may be powdered: so you shall draw a Water impregnate with the smell and virtue of the Plant; for the sand interposed hinders the violent action of the Fire, which otherwise would burn the Herbs too much, and cause the Water to taste of burning. This Instrument is not only proper to draw Water off from all juicy Herbs (except the acid) but also from Flowers, as Roses, Lillies, Water-lillies, wild Poppies, and others. The Herbs which remain after the Water is drawn off, may be burnt to ashes, and the Salt extracted; but being that Plants contain little Salt, or none at all, till they attain their perfect maturity, that is, in the time betwixt their Flower and Seed; we advise not to
seek

seek for fixed Salt in tender Herbs. This Instrument with its Furnace is represented in the third Table.

CHAP. XIV.

Of the Distillation of Sorrel.

BEing that all Sorrels abound in Phlegm and essential acid Salt, we will shew the way to separate these two Substances. Take a good quantity of Sorrel, whilst yet all its virtue is in its leaves, and draw from it the juyce, and let it fettle one day, that its gross impurities may fall to the bottom; pour off the clear into one or more Glafs bodies, and distill off about two third parts in *B. M.* strain the juice which remains in the bottom of the Body, through a cloth-strainer to purifie it; then put it into a Body, then draw off the superfluous moisture in *B. M.* till that which remains in the bottom come to the consistence of a Rob: then put the Glafs body in a cellar for some dayes, and you will find part of the juyce turned into a Salt figured like Tartar; decant the Liquor off which swims on the top, and dry the essential Salt; Let this Liquor evaporate a little more in a cellar again, and part of it will again be chrySTALLIZED
into

into Salt, which put to the former : and being this Salt is also mixed with impurities, dissolve it in its own Water distilled, filtre and cause it to evaporate, and chrySTALLIZE as before, and you shall have the essential Salt of this Plant, wherein its principal virtue consists ; this Salt opens the obstructions of the Liver and Spleen, it retards putrefaction, quenches thirst, recovers the Appetite, strengthens the Stomach ; it is used with good success in Fevers : its Dose is from 20 grains to a dram, in its own Water, or Broth. If you please you may evaporate the juyce to the consistence of an Extract, which hath almost the same Virtues.

CHAP. XV.

Of the Blessed Thistle.

THE Blessed Thistle, and all other sorts of Thistles, with Fumitory, Succory, and such like, which have almost no scent, and are of a bitter taste, approaching towards a sour, contain store of Phlegm, and a nitrous essential Salt ; and we will shew the separation of these two substances, rejecting the rest as of little profit.

Having store of the Blessed Thistle when it is ready to shoot out its stalk, pound it in a marble

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Mortar, and juyce; settle, and distill it, as we have taught in the last Chapter, and you shall have a Water which shall have all the properties attributed to this sort of Water. The juyce which remains in the bottom must be clarified, and evaporated to the consistence of an Extract; or if you will make its essential Salt, you must proceed as you did with Sorrel, and your Salt will come near in taste to Nitre, but it will not be so transparent, for it will alwayes retain some black clamminess from its Extract, which may be separated, and it is purified by Solution in its proper Water, by filtering it through paper in a Tunnel wherein a few of its ashes were put; and then evaporating it till a film rise on the top, and placing it in a Cellar to chrySTALLIZE, you shall have a Salt that doth altogether resemble Salt-petre in shape and taste, and cast on hot coals it burns like Salt-petre. They who desire only the *Carduus*-Water, may distill it in sand from the leaves, in the Instrument which we have described, whose figure is in the third Table, and they shall obtain an excellent Water, indued with greater Virtues than that drawn by *B. M.* for the stronger heat of the sand makes a part of the volatile Salt rise confused with the phlegmatick Water, and makes it more virtuous. The virtue of the essential Salt is great in hot Fevers, and contagious Diseases, for it casts out forcibly the venom from the centre by sweat: The Dose is from 6 to 30 grains.

C H A P. XVI.

Of the Distillation of Cresses.

THe juicy Herbs which contain store of sulphureous and volatile essential Salt, such as are Cresses, Brook-lime, Chervil, Scurvy-grass, and infinite others of the same nature, may be distilled and reduced into an Extract, or essential Salt, after the same manner as the Plants we now treated of: but inasmuch as their principal virtue consists only in a spiritual and fiery substance, we will here teach the means to separate it. Take a great quantity of Water-cress when it begins to flower, which is the time when they are in their greatest force, and delay not till they be fully flowered, nor till they begin to dry, for then their whole virtue is concentrated in their Seed, wherein the Spirits are enclosed, and cannot easily be thence extracted, as may be done whilst they are yet in their Leaves; wash the Cresses very clean, and beat them in a marble Mortar: and note that you must have at least forty pound of this Herb, for if you have not a sufficient quantity, the fermentative Spirit cannot be brought out of power into act, and the Plant would sooner rot or grow acid than ferment; put a sufficient quantity of powdered leaves in-

to a Barrel opened only on one side, and pour thereon Water so hot as you can endure with your hand without scalding, double quantity to that of the Leaves, and mingle them well together with a staff: cover it on the open part immediately with double clothes, to keep in the spirits the best that possible may be; and leave it so for half an hour, or a little longer, then put to it thrice so much more Water as you did at first, so that there may be about five times so much Water as Leaves; but this latter Water must be cooler than the former: put thereto at the same time about three or four pounds of Beer-yeast, and stir all together with a staff; cover your Barrel immediately very exactly, which must be above half full, and set it in a temperate place, but rather hot than cold; for great cold hinders the action of the internal Spirits of things: you shall see that three or four dayes after, the whole gross substance of the Herb will be risen on the top of the Liquor in the form of a curd or crust, take good heed at this time, that as soon as you see this material substance or crust begins to break, and fall or sink, you be in readiness to Still off the whole before the Spirit vapour away: put the whole into a great Strong-water-still of Copper, and distill at first with a gradual and gentle fire, all the Spirit, which will be mingled with much Phlegm, for this reason you must rectify this Spirit with the Instrument described in the first Figure for rectifying Spirit of Wine, and by this means you shall clear it quite from its phlegm, and you shall have a
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Spirit very pure and combustible like that of Wine.

The Spirit of Water-creffes, and all other Antiscorbuticks, generally do resolve and volatilize all fix'd and tartarous matters; they may be given not only in the Scurvy, but in all Diseases which proceed from the corruption of the Blood, which they purifie and subtilize by their penetrative power more than any other Remedy. Their Dose is from twenty grains to a dram, in some convenient Vehicle.

C H A P. XVII.

Of the Distillation of Wormwood.

ALL odoriferous Plants, such as are Wormwood, Time, Marjoram, Sage, Rosemary; and infinite more, may be fermented in the same manner as Creffes; but their principal virtue consists in a sulphureous and subtle Substance which swims upon the Water; we will teach to draw and separate it. Take a good quantity of the tops of Wormwood, betwixt Flower and Seed-time, which is the season of the perfection of Aromatick Plants; cut them small, and beat them in a Mortar of Marble, put them into a Vessel of tinned Copper, and pour upon them a good quantity of Water, that the Wormwood

may be well mixed therewith; fill not your Vessel above half, cover it with its Refrigerant, or Mores-head, then give fire gradually, but after the drops begin to fall, raise the fire roundly, so that one drop may almost overtake another, and continue the fire at that rate till the Water that comes over be as it were insipid: you shall find in your Receiver store of a spirituous Water, whereon will swim a little Oyl, which you must separate from the Water in the manner following: Fill your Receiver up to the mouth, and bind a small Viol with a pack-thread to its neck, then put a little wick of Cotton into the small Viol, and at the same time dip the other end of it in the Oyl which swims on the Water in the Receiver; the Wick will at the same time draw into it the Oyl, which following the Wick will drop into the little Viol; a little Water must from time to time be put into the Receiver, so that the Oyl may continually rise and touch the brim of the Receiver, and continue this till all the Oyl be separated, which keep in a Viol well-stopped.

These Oyls contain in a manner all the virtues of the Plants whence they were drawn. The distilled Waters also after the separation of the Oyls, retain still some good Virtue, and they may be preserved to serve upon occasion.

C H A P. XVIII.

*The Preparation of the fixed Salt, or
Alkali of Wormwood.*

I N treating of Leaves we will shew the Preparation of their fixed Salt; and we will take Wormwood for a general Example. Gather a great quantity of Wormwood, cut close to the Root, when it is in its greatest strength, clean it well, dry it in the shade, then burn, and reduce it into ashes: make lye of it with hot Water, and put new hot Water on the ashes, till the Water hath extracted all the Salt into it self; cast away the remaining unprofitable ashes, (only you may if you please make tests with them,) filtre the lye and evaporate it to dryness; you will find in the bottom of the Vessel a grayish Salt, which will be very fiery, but it contains yet in it much impurity, wherefore it must be yet farther calcined in a Crucible with a violent fire, and stirred continually in the *interim* with an iron *Spatula*, that it may not melt, and keep it quite red for the space of a good hour, then let it cool, and dissolve it in rain Water, or its own distilled Water: filtre the Solution, and evaporate it till it be dry, you will have a Snow, white as Snow,

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which

which must be kept in a Viol well stoppt, else it resolves into Liquor by the moisture of the Air.

The principal virtues of Salt of Wormwood, and generally of all others, is to open Obstructions, to attenuate gross, and cut tough, and evacuate corrupted matters: they are Diuretick and Diaphoretick, and the Dose is from ten to thirty grains in some broth or proper Liquor.

C H A P. XIX.

Of Flowers.

ALL Flowers are either without scent, as Water-lilly, or have a superficial, as Jessamine; Violet, &c. or a strong aromattick smell, as Rose, and Rosemary-flowers, &c. those that have no smell may be distilled and purified into an Extract, as we have taught in the thirteenth Chapter: those that have a sleight and superficial scent, cannot bear the least heat without losing their scent and colour; for this cause the Chymists have found a means to preserve the scent of these sorts of Flowers, by stratifying them with Cotton imbibed with Oyl of *Ben*; which Oyl being sufficiently impregnated with the odour of the Flowers; is separated from the Cotton by expression; but for that this manner of operation is well known to all Perfumers, we shall not insist thereon.

on. Flowers which have an aromattick scent, may furnish Physick with sundry Remedies: for Example, Roses may be distilled in the same manner as Leaves and Herbs, by *B.M.* or sand, in the Instrument which we have described in the thirteenth Chapter; they may also be fermented like Cresses, and reduced into a very odoriferous burning Spirit; an Oyl may also be drawn from it, which swims on the Water in the same manner as that of Wormwood; we refer the Reader to the Preparations we have described above, according to which they may work not only on the Rose, but on all sorts of odoriferous Flowers. Odoriferous Flowers are also distilled sometimes with addition of some *Menstruum* which may heighten and augment their virtue; so we proceed in the preparation of the Queen of *Hungaries* Water, in the manner following.

The Queen of Hungaries Water.

PUT two pounds of Rosemary-Flowers, gathered in the morning in a dry season, into a Glass-body, and pour thereon three pounds of good Spirit of Wine; cover the Body with a blind head, lute the joynts well, and set it to digest in a vaporous Bath by a very gentle heat for 24 hours, or in the Sun for three dayes, then take away the blind head, and put another with

a spout in its place, and lute well the joynts, and distill in *B. M.* all that will rise, and you shall have a very excellent Water: And though its Virtues are sufficiently known, we will here relate the principal, which are to fortifie the Brain, either taken by the Mouth or Nose, and rubbing it in by the Temples, and sutures of the Head; to strengthen the Stomach, help digestion, dissipate the Cholick-pains, and to preserve from them, by taking half a spoonful in warm broth, continuing the use thereof for some dayes, or twice a Week at least: it helps against Deafness or noise in the Ears, either taken by the Mouth, or drawn up into the Nostrils, or put into the Ears with Cotton; as also for the pains in the Head, for all Contusions external, or deep penetrating internal, taken as above, or chafed in from without; it is also very proper for Palsies, Apoplexies, Gouts and cold Pains, and for all Heart-burnings, Palpitations and Faintings, either taken inwardly, or applied outwardly to the Stomach, with a Toast soaked therein; and it is generally proper (on all occasions wherein it is needful) to stir, strengthen, quicken, and preserve natural Heat.

CHAP. XX.

Of Fruits.

THe principal virtue of Fruits is in their juyce; we will teach the Preparation thereof, and chuse for example the Juyce of the Vine, and whatever comes from it, Wine, Vinegar, Tartar. And to begin with Wine, we say that it is the juyce of Grapes, called Must at first, and after fermentation containing in it store of Spirit, which by its own proper virtue reduces it self from power into act, and in its fermentation is changed from Must into Wine, and preserves it self a long time in that estate, till such time as its Spirit, become very volatile by its fermentation, is partly evaporated: and when this Spirit, which contains in it the mercurial, sulphureous, and more subtle part, hath left the Wine, that which remaineth soures, and is called Vinegar: which notwithstanding that it is deprived of its principal Spirit, is yet preserved a long time, by that great quantity of fixed Salt which remains in it. We might here inlarge upon all the changes that happen unto Must, till it become Vinegar; but since many Authors have treated largely of Fermentation, we will remit thither the
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Reader, and speak here onely of the Preparations of Wine, Vinegar, and Tartar.

Of the Distillation of Wine.

PUT sixty quarts of Wine into a Copper-body, and cover it with a Refrigerant, or Moresh-head, and distill off therefrom about a sixth part, or continue your Distillation, till no more Spirit rise, which comes alwayes first over in all Fermented and Vinous Liquors; put this Spirit into a Bottle, and stop it well. This first Spirit thus prepared, is called *Aqua Vitæ*, that which remains in the Body may be evaporated to the consistence of Hony, and put in a Retort, and thence may be drawn, first, a phlegmatick Water, secondly, a Spirit, and thirdly, a stinking Oyl: and that remains in the Retort may be calcined, and reduced into ashes, from which the fixed Alcalizate Salt may be drawn and separated from the dead Earth, in the same manner as from other Vegetables. I was willing to put down this operation rather for the satisfaction of the curious, than for any profit that may be made of it.

*Rectification of the Aqua Vitæ into Spirit
or Alcohol.*

THE *Aqua Vita* being mingled with store of Phlegm, which it raises with it in the first distillation, we must rectifie it two or three times, till it be reduced to a pure Spirit; it must be put into a Body of glass, and distilled thence to half, in *B. M.* which half must be rectified again once, twice, or so often till it be wholly freed from its Phlegm, which is thus known; if some of this Spirit being fired in a Spoon, burn all away without leaving any moisture behind, or if it burn and reduce unto ashes, a little cotton put therein: but the better tryal is, if when it is consumed it fire a grain of Cannon-powder put in the spoon whereon the Spirit was poured, which is a sign no humidity is left in the Spirit, for it would have hindred the firing of the Powder: But because this rectification of the Spirit is troublesome, and besides, great quantities thereof are needful to be had for Chymical Preparations, Artists have invented an Instrument, by which they might rectifie the Spirit of Wine by one single Distillation, and for that we remit the Reader to the Figure which we have given in the first part of this Book. We need not much trouble our selves to make known the excellency of this

this Spirit, the use whereof is so frequent, both inwardly and outwardly, that none are ignorant thereof: besides this, it is used in infinite Chymical operations, to draw Extracts, or subtle sulphureous Substances, as well from Vegetables as Animals and Minerals.

Spirit of Wine Tartarized.

THE Spirit of Wine tartarized is no other thing than the Spirit of Wine purified to an higher degree, and wholly freed from its Phlegm, by means of Salt of Tartar, which retains with it all that phlegm which the Spirit of Wine may yet contain in it; Take one pound of Salt of Tartar well dried, put it into a Body, and pour thereon four pounds of good Spirit of Wine, set to an Head and Receiver, lute well the joynts, distill the Spirit in *B.M.* which will leave all its phlegm behind in the Salt of Tartar; and therefore it is very proper for all uses internal and external, working with much greater force than the common Spirit of Wine, because of its greater purity; this Spirit is much employed for many brave *Arcana's* prepared with it, and especially in the Extraction of Tinctures. This hath also excited many Artifts to proceed farther, and to seek out how to reduce this Spirit into a volatile Salt, by a farther separation of its superfluous aquosity,

accor-

according to what *Van Helmont* hath delivered in his Treatise intituled *Aura Vitalis*, where he saith that one pound of Spirit of Wine imbibed in the fixed Salt of Tartar, affords but one half ounce of Salt, and that all the rest is nothing but an insipid Water; but whereas many curious Persons have busied themselves to stay this Salt contained in the Spirit of Wine, with the Salt of Tartar; according to the words of this excellent Philosopher (who in this and many other things hath spoken obscurely) finding no success therein, have thought it impossible; experience hath made me see the possibility thereof, and having by means of a corrosive Spirit my self many times reduced the Spirit of Wine into a volatile Salt, I shall here very willingly impart the manner thereof as follows. Put a pound of Spirit of Nitre well dephlegmed, into a long-necked large Globe or Ballown-glass, and pour thereon some drops of the Spirit of Wine tartarized, and at the same time set on a Bolts-head fitted to the neck of the Globe or Ballown thereon, closing well the joynts; there will arise at the same time an action of those Spirits whereby they will destroy one another; which when it ceases, pour on some more fresh drops of the Spirit of Wine, and continue this same Work for a whole day, still closing well the mouth of your Glass whensoever you drop on your Spirit of Wine, until such time as the action cease: you will have a Liquor of a middle nature, betwixt a Spirit of Wine and Spirit of Nitre; for it is not corrosive, and its force exceeds not that of distilled Vinegar, and it burns
not

not as the Spirit of Wine: Put this Liquor into a Body with an Head fitted thereto, and distill with a very slow heat of a vaporous Bath whatever will come over: there will remain in the bottom a white and volatile Salt in a small quantity, of an acid and sour taste, which may be sublimed, and deprived of its corrosive and acid part, by the help of some Salt Alkaly, in the same manner as we have taught in the Sublimation and Purification of the volatile Salt of Amber. I thought it worth my pains to add this operation to the rectification of the Spirit of Wine, hoping that many curious Persons will be well pleased to understand it.

C H A P. XXI.

Of Vinegar.

WE call all Liquors Vinegars which have passed Fermentation to a degree of corruption; for so long as fermented juyces are in their perfection, as good Wine, Cider, Beer, Meath, &c. they contain in them a volatile inflammable Spirit, but when this Spirit in process of time is vanished, the tartarous vitrioline Salt comes to be predominant, and turns them into

an acid Liquor which we call Vinegar. We treat here onely of Wine-vinegar, as most employed in Medicine.

Distillation of Vinegar.

PUT five pounds of good Vinegar in a Body of Glafs, and fit thereto an Head and Receiver, set it in a Sand-furnace, and distill with a slow fire about two pounds of Liquor, which will have scarce any force, whence we call it phlegm of Vinegar: then change your Receiver, and increase your fire by little and little, and distill all over till there remain onely in the bottom of the Body a matter of the consistence of hony; then slack your fire, that the Distillation taste not of burning, and keep what is distilled; the use thereof is to dissolve calcined Minerals, and to reduce them into the form of Salts. The hony-like consistence which remains in the bottom may be put in a Retort, and forced over by gradual fire, it will yield an acid Spirit, and after a stinking Oyl, and a fixed Salt which remains behind in the Retort, which purified by many Solutions and Coagulations resembles the fixed Salt of Tartar.

CHAP. XXII.

Of Tartar.

WE pretend not to treat of the Microcosmick Tartar, which is a Viscous matter formed in our Bodies, but of the Tartar of Wine, which is no other thing than an earthly substance separated from the purer parts of the Wine, by the action of a fermenting Spirit, and coagulated to the hardness of a Stone, and is in it self incorruptible, but may be reduced by the Fire into divers Matters. Now being to give a description of the principal operations made on Tartar, I begin with that of purification; The first is thus done: Pour hot Water upon Tartar grossly powdered, the Water will take up its filth, which Water must be poured off and other put on, and this same operation continued till the hot water take up no more impurity; then dry the Tartar, and keep it for use: the second purification is more perfect, and yields that which they call Cream or Chrystals of Tartar, which is thus prepared: Put ten pounds of good Tartar of *Montpelier* grossly powdered in a great kettle, and pour thereon about three good pails of common Water, and make a good fire under the
kettle,

Kettle, that it may boyl for about a quarter of an hour, stir it sometimes vvith a staff, and vvhen you have scummed the dissolved Tartar, and let it run yet hot through large pointed strainers of Cloth, and let that vvhich passes cool and chry- stallize, and vvhen it is quite cold, take off the Cream vvhich svvims aloft and keep it; decant the Water, and vvash off the Chrystals vvhich stay on the bottom and sides of your Kettle, vvhich are very small in this first Coagulation: But to make them more fair and large dissolve them again in a small quantity of clean vvater in a flat Basin, and give them a vvalm or tvvo, and vvhen they are vvell dissolved take them lei- surely from the fire, and cool them, vvhen they are cold, gather up the Cream and Chrystal, and dry them, and you vvill have a very vvell purified Tartar, vvhich vvill be fairer and more transparent if the solution be made in a Pev- ter Kettle.

The Principle Vertues of the Cream and Chrystal of Tartar, are to attenuate the gross Humours vvhich cause Obstructions in the first Region of the Belly, and those of the spleen, for vvhich reason it is serviceable in Melancho- lick Diseases, and it is commonly used before Purgative Medicines, for it digests and prepares matters for a more easy Evacuation, its Dose is from half a Dragm to tvvo Dragms in some Broth or other convenient Liquor.

Distillation of the Spirit and Oyl of Tartar.

PUT six pounds of grossly beaten Tartar in a Retort of gray or well-luted Earth, which you must place in a close Reverberating-furnace, and fit thereto a large Balloon-Receiver, luting the joynts exactly, and then make your Distillation with a gradual fire : a phlegmatick water will first come over, and after that a Spirit and Oyl mingled confusedly ; and when nothing more will come over, and the Receiver begins to be clear, cease the fire, and let the Vessels cool, then unlute the Receiver, and separate the Oyl and Spirit by a Tunnel furnished with brown Paper, the Spirit will pass through it, and the Oyl will abide in the Paper, which you may put into a Viol, and keep apart ; the Spirit may be rectified upon Coral, in the same manner as we have said in the Chapter of Gum-Ammoniac, teaching the intire rectification of that Spirit. The Spirit of Tartar rectified is an excellent Remedy for Diseases caused from Obstructions : for it resolves and attenuates by its subtilty gross matters ; for this cause it doth marvels in the Scurvy, and arthritick Diseases, in the Palsy and small Pox, provoking Sweat and Urine ; its Dose is from one scruple unto four, in broth or some other Liquor. The Oyl strongly resolves

Solves Nodes and other hardnesses, it likewise mortifies all sharp humours, which cause Tetters, it heals the Scald Head, helps the Falling Evil, chafing the Nose of those who are troubled therewith.

*Fixed Salt, and Oyl or Liquor of Tartar
by Deliquation.*

TAKE the black mass which remains in the Retort after the Distillation of the Oyl and Spirit of Tartar, and calcine it in a Reverberatory-furnace, in a flat open pot, till it become white, then let it cool, then pour upon it hot Water, in an earthen Vessel, to the height of six fingers, and stir it from time to time for some hours: the Water will fill it self with the saline substance, which must be decanted, and other hot Water poured on the Remainder, and this repeated so often, till all the salt be thence extracted; then filtre all your Solutions, and evaporate the Moisture, till the Salt become dry and white as Snow, in the bottom of the Vessel, which you must keep carefully in a Vessel well-closed, for otherwise it will be resolved into a Liquor by attracting to it the Moisture of the Air; but if you would make thereof the Liquor by Deliquation, (which they call improperly the Oyl of Tartar) put some part of it upon a marble, or slate of

Glass, and place it in a Cellar or some other moist place, and it vwill in a fevv days be dissolved into a Liquor; the Salt of Tartar is very diuretick, as all other fixed Salts, or Alkalies of Vegetables; vwherefore they are given vvith success in Dropsies and Obstructions of the Reins: its Dose is from Ten to Thirty Grains in some convenient Liquor. The Liquor may be used instead of the Salt, for it is no other than the Salt dissolved; but its Dose must be encreased. They vvho seek only for the Salt of Tartar, need not distill it, they may calcine it alone in a reverberating Fire till it be vvwhite, and after dravy from it its Salt as vve have taught.

Magistry of Tartar, or Tartar Vitriolate.

TAKE eight Ounces of the Liquor of Salt of Tartar made by Deliquation, vvwhich must be clear as Fountain-vvater, put it into a great Bolt's head vvith a long Neck; let Oyl of Vitriol fall thereon Drop by Drop, till there be no more E-bullition, vvwhich is the Proportion observable, for you must do this till the Oyl of of Vitriol find there nothing that can act against its Acidity, then empty this Mixture into an Earthen Platter, vvwhich will be half congealed; if any thing remain in the Bolt's Head, wash it out vvith distilled rain

rain Water, and mix it vvith the rest in the Platter, place this on a Sand-Furnace, and vapour avvay all the Humidity, there vvill remain a Salt vvwhite as Snovv, vvwhich you must keep in a Glasse vvell stopped; this Salt is a very good Digester for disposing Humours and preparing them for Purgation, it opens the Obstructions in the Body, and especially in the *Hypocondria*, and it helps also in Dropsies and Quartan Agues, the Dose is from six to thirty six Grains in some Broth or opening Liquor.

Tincture of Salt of Tartar.

PUT half a pound of salt of Tartar perfectly purified, into a Crucible with hot Coals, and keep it tvvo hours in a violent Fire, stirring it continually vvith an Iron spatula, that it may neither stick to the Crucible nor melt, and vvhen you perceive it to be of a blevv, approaching to a green colour, povvder it in an hot Mortar, and put it yet hot into a Pelican, or in some double digesting Vessel, and pour thereon good spirit of Wine by little and little, till it rise four fingers above it; then close the Vessel vvell, and set it on hot Ashes, until you see the spirit of Wine to boyl, and hold it in that state

for twenty four hours, in which time the Spirit of Wine will draw to it self a very red Tincture, and of a sweet scent like that of the Vine in flower; then pour off this Tincture into some Bottle, and put on another Spirit of Wine upon the Salt, and digest it anew on a Sand-furnace for twenty four hours as before; and repeat the same operation, till the Spirit of Wine be coloured no more; filtre and mingle all your Tinctures, and draw over thereof two thirds or little more, and the tincture of Tartar will remain in the bottom of the Body, which you must keep in a Viol well-closed.

This Tincture is very excellent in all Diseases which come from abundance of melancholick Humours, in the Scurvy and Dropfie, and it is of great force to purifie all the mass of Blood, the Dose is from ten to thirty drops, continuing the use thereof for some season.

CHAP. XXIII.

Of Juniper-Berries.

THE principal Preparations which are made of Juniper-berries, are the Distillation of their burning Spirit, and drawing thence their Ethereal Oyl, and their Extract, or Rob, which they commonly call the *German Treacle*. The burning Spirit is made in a Fermentation and Distillation like that of Water-creffes, with addition of warm Water and yeast of Beer; but this rule of Juniper-berries will not serve for all Berries, for those of Elder and Dwarf-elder are fermented without any addition, as well as the juyces of Grapes, Apples, Pears, &c. and need only to be broken, and put into some large Vessel for eight or ten dayes, till the fermentation be raised; and then a burning Spirit may be distilled from them, which hath very great Virtues according to the materials whence it is drawn. The Distillation of the Ethereal Oyl is thus made; Break six pounds of Juniper-berries with a Pestle, and pour thereon in a Copper Body, fifteen pounds of common Water, stirr
all

all well, and fit to it its Mores-head, and distill with a gradual fire the spirituous Water and Oyl, which come over confusedly, and continue till the Water come over without any taste; afterwards you must separate the Oyl from the spirituous Water by means of a wick of Cotton, as we have taught above in the Chapter of Wormwood, and keep the Water and Oyl apart in Vials well-stopped. Take that which remains after the Distillation out of the Body, and put it into some earthen Platter, or other Vessel till it be cool, lest it should contract any bad quality from the Copper, pass all the Liquor through a Linnen-cloth, and press the pouce very hard, let all the Liquor stand and settle for a whole day, and then pass that which is clear through a woollen strainer, and evaporate the Liquor so strained into the consistence of an Extract.

The Spirit and combustible Oyl are powerful Medicines to provoke the Courses, and open Obstructions of the Liver and Spleen, to evacuate the Stone and Gravel of the Reins and Bladder, they are also good against the Plague, and to provoke Sweat and Urine. The Oyl outwardly applied fortifies the Nerves, and dissolves hardnesses. The Dose of the Spirit is from half a dram to half a spoonful in warm broth, of the Oyl from three to fifteen drops, in its own distilled Water, or other Liquor; of the Extract from one dram to three in its own proper Water, or some other Vehicle.

CHAP. XXIV.

Of Seeds.

SEEDS are prepared diversly, according to the Substances they contain. For some are full of a mucilaginous juyce, in which lies their principal Virtue, as Quince-kernels, Linseed, Fleawort, &c. Others contain store of Oyl, which may be drawn by Expression, and the same may be reduced into an Emulsion, such are the Seeds of Peony, Poppy, the cold Seeds, Hemp, and infinite others. There are some from whom comes a burning Spirit, by means of Fermentation, as Mustard-seed; and all those which have a stinging and piercing taste: many others have an Aromatick odour, and contain in them a Sulphur, or Ethereal Oyl, such are Carraway, Fennel, Aniseeds, &c. and they may be distilled as Wormwood, and Juniper-berries, and have afforded a Spiritual-water, and Oyl swimming thereon, which must be separated by a wick of Cotton, as we have said several times. But note that all Vegetable-seeds distilled by Retort, besides the ordinary substances which are drawn from other parts of Vegetables, afford a quantity of
volatile

volatile Salt adhering to the sides of the Receiver, and represent an infinity of figures very pleasant to behold: and it is worthy consideration, that it is only this part of the Plants that can afford a volatile Salt wholly congealed. Also amongst the Seeds which have an Aromatick scent, there are many which produce not an Oyl only by Distillation, but by Expression also, whereof we will give an instance in Annis, as follows.

Oyl of Anniseed by Expression.

PUT a pound of Anniseed finely powdered upon a hair Sieve turned up-side down, and cover it with a Pewter-dish, in such manner that all the Anniseed may be contained in the hollow of the Dish, set the Sieve in a flat Basson with two or three pints of water over the fire, and make the water boyl: the vapour thereof will pierce into, and warm the Powder of the Anniseed; have a good Press with two boards, and a little sack of strong Canvas, all hot, and in readiness, and when the plate that covers the Anniseed-powder is so hot that your hand cannot endure the heat of it, put and tye your powder

powder up nimble in the Sack, and readily into the Press, and you will force thence a green and clear Oyl, having the pleasing taste and scent of Anniseed. The fore-alledged Examples will sufficiently direct the curious to the knowledge of Vegetables, whole or in parts; we will here finish this Section, and come to that of Animals.

SECTION

SECTION III.

Of Animals:

ANimals in general, as well the perfect Terrestrial, as Birds, Fishes and Insects, are composed of a more volatile substance than Minerals and Vegetables; wherefore they yield neither so much Earth, nor volatile Salt after their Calcination. Now albeit this Family is no less numerous than that of Vegetables, yet alwayes studying brevity, we will give Examples which shall be sufficient for the Preparations of all sorts of Animals, and their parts, and begin with the more Solid, as are bones, Horns, Hoofs; after we will come to the fleshy parts, and lastly to Blood and Urine. And whosoever comprehends well these Preparations, may afterwards easily work every thing that depends on Animals. But it is necessary that the Artist choose for his work the parts of those Animals which were of a middle age, and died by violence.

CHAP. I.

*Of the Oyl and volatile Salt of a
mans Skull.*

TAKE the skull of a man dead of a violent Death, cut it into such little pieces as may enter into a glass-Retort, of which leave the third part empty; place the Retort in an earthen dish in a Sand-furnace, and fit thereto a great Receiver, well luted, that the Spirits may not be lost, and when the lute is dry give fire gradually, there comes over a little Phlegm at first, and after a Spirit which will fill the Receiver with a white mist; at that time you must govern your fire discreetly, otherwise the Spirits pressed too hard will force the joynts, or break the Receiver: after this Spirit comes over the Oyl, with store of volatile Salt, which will cleave to the sides of the Receiver; continue your Distillation, and augment your fire by little and little, till no more come over, which will come to pass in ten or twelve hours; after, let your Vessels cool, and unlute your Receiver, vvhich vwill contain a spirituuous Liquor, a stinking Oyl, and volatile Salt. The Spirit and volatile Salt are of the same nature: vvhwherefore they must be separated from the Oyl and aftervwards rectified. That vvhich
remain

remains in the Retort is black as a cole, but if it be calcined in an open pot, it vwill become vvhite, and very spongeous and light, and being deprived of all its Salt, vvhich is very volatile, as is that of all other animal parts; and it may be called vwith good reason *caput mortuum*, or dead-head, which remains after the Distillation.

To separate the Spirit and volatile Salt from the Oyl, you must put about a pound of warm Water into the Receiver, and shake it well that the volatile Salt may be dissolved, and taken up in the Liquor, afterwards filtre this Liquor through Cap paper, and the Oyl will remain in the paper, which you may by piercing the paper cause to run into another Viol, and keep it. The use of it is to cleanse Wounds and Ulcers, for it eats and consumes putrified flesh, and other superfluties.

Take the Liquor which contains the Spirit and volatile Salt, and put it into a large Bolts-head with a long neck, and cover it with a Tunnel, which you must lute exactly all about, after pour in by the Tunnel a few drops of good Spirit of Salt, and presently stop the hole of the Tunnel, that no Spirits may come out, continue to do this till the Ebullition which will be made at first by the contest of these two Spirits cease; then filtre the Liquor, and distill by an Alembic of glass in a gentle heat of sand, all the Water, vvhich vwill be insipid, because the Spirit of Salt is incorporated vwith the volatile Salt of the skull, and hath fixed it in a manner; and vwhen all the humidity is come over, push on the fire by little

tle and little, to cause all the Salt to sublime, which remained in the bottom of the Body, one part whereof will rise and cleave to the Alembick, and the other parcel to the upper part of the Body: Let the Vessels cool, and gather the sublimed Salt, which in taste nearly resembles that of Sal Armoniac. Its Dose is from a Scruple to a Dram; but it may be made also more subtle and piercing, by separating the sulphureous Animal Salt from the acid spirits of Salt, with which it was mingled to correct in part its bad scent. Take then four ounces of this Salt, and mix it with two ounces of fixt Salt of Tartar, or such other Salt Alkali as you please, and put them in a little Body well fitted with its Head and Receiver, and lute their joints exactly, then give fire very gently, and you shall see that the sulphureous Salt will separate it self, and rise into the Head with the least heat, white as Snow, and will leave the acid spirit (wherewith it was incorporated) in the bottom of the Body detained by the Salt Alkali; so you shall have a Salt of the most extream subtilty, which you must keep in a Viol well stopped, for otherwise it vanishes by little and little.

This Salt and all others drawn from Animals, have very great Vertues, and may pass for the Columns of *Pharmacy*; for they penetrate to the places farthest removed from the first Digestion, and dissolve all Viscous and Tartarous Matters, open all Obstructions, heal all Fevers, and principally the Quartans, preserve from the Plague, and strongly resist all

T

Putrification

Putrifaction. The Dose is from six to fifteen Grains, in some cold Liquor or Broth; otherwise in the least heat they vanish in the Air.

The Salt of mens Skuls is peculiarly proper for Falling and Mother-Fits.

This Operation may serve for an Example of all Bones, Hornes, Hoofs, Nails, Claws and Haires, and generally for all solid and dry parts of Animals.

CHAP. II.

Of the Distillation of Vipers Flesh.

GET a good quantity of Vipers a little after they come from their Holes, cut off their Heads and Tails, strip them and take out their Bowels: which cast away, reserving their Fat, which you must melt and keep apart; the Heart and Liver which must be mingled with their Flesh; cut your Vipers thus, prepared into pieces, and their Hearts and Livers likewise, and set them in one or more Glass Bodies, which you must fit with Heads and Receivers, and setting them in a Furnace of Sand, draw off with a very gentle heat all the Moisture that will rise; but cease the Fire,
and

and let your Vessels cool as soon as it begins to taste of the least burning, and keep well the distilled Water in Viols well stopp'd; after cut into little pieces the dried Flesh found in the Still-body, and put them into a Glass Retort, leaving one third part thereof empty, which set in a Sand-furnace, and observe all the Circumstances which we have described for the Distillation and Rectification of the Spirit and Oyl of Man's Skul, and you shall have a Salt endued with innumerable Virtues, which heals not only all continual and intermitting Fevers; but the Palsie, Falling Evil, Leprosie, Diseases of the Mother, resists Putrifaction, expels Poyson, heals and preserves from the Plague, and hath an infinite of other choise Vertues. The Dose is from six to fifteen Grains, in its own distilled Water, or some other Liquor.

They that would make the Powder of Vipers, must dry the Heart Liver and Flesh in a Glass Body in *B. M.* till it may be reduced into Powder, and by this means nothing at all of their substance perishes; for their Water is drawn over in the Distillation, which is impregnate with their most subtle and volatile spirits, and serve for a Vehicle wherein to take their Powder.

This Operation may stand for a Rule for all the fleshy parts of Animals, for the after Burthen, and for some whole Animals, as Wood-Lice, from which may be drawn Remedies proper for healing Cancers.

C H A P. III.

Of the Distillation of Man's Blood.

TAKE a quantity of Blood drawn from sound and well-Complexioned young Men, distil from it all the Humidity which will rise in an Alembick in *B. M.* and keep the Water; after put into a Retort the dried Mass which remains in the Still-body, and proceed therewith in the same manner as we have taught for Skuls in the first Chapter. You shall have a stinking Oyl, and by Rectification and Resublimation a very excellent salt for correcting the whole Mass of Blood, for healing Fevers, the Falling Evil, and Scurvie, and for opening all Obstructions. Its Dose is from six unto fifteen Grains, in its proper Water, or in some other convenient Liquor.

C H A P.

C H A P. IV.

Distillation of Urine.

TAke the fresh Urine of Children from eight till twelve years of age, or of young Men in good health, and fill many Bodies therewith to three fourth parts, to which fit Heads, and draw off in a gentle heat of *B. M.* Ila their Humidity which will be insipid, there will remain an Honey-like substance in the bottom of the Bodies, which must be put into one Body fitted with Head and Receiver well luted, and distill with a sand-Fire what will come over, governing the fire well, that the matter may not rise and run over; first there goes over a spirituous Water, and after the Volatile salt begins to rise, and stick to the Head, with a little stinking Oyl which trickles over into the Recipient with the Volatile salt, which it dissolveth: the Vessels being cooled and unluted, you will find in the bottom of the Body a black Matter, which may be calcined in a Pot with a violent fire, and reduced to ashes, and then a very small quantity of Salt will be drawn therefrom; which Coagulated or Chrystallized hath thee tast and form of Common Salt. The

Oyl and Volatile Salt must be separated from the stinking Oyl, by putting into the Receiver so much warm Water as is needful to dissolve the volatile salt which was congealed; then filtre the Solution through Paper, in which the Oyl remains, and must be made to descend into a Viol apart by piercing the Paper; put the Liquor filtred into a great Bolt's Head with a long Neck, and fit to it a large head round and flat, represented in the Table of Vessels by the Figure marked with *A* and *B*, fit to a Receiver and lute the joints exactly; place it in a Sand-furnace, and give a very gentle fire, you shall see that the Volatile Salt will be separated by the least heat, and will sublime on high into the head of the Stil in the form of Snow, leaving a stinking and insipid Oyl in the bottom of the Bolt's head not able to rise, because of the height of the Vessel and over weakness of the heat; let the Vessels cool, and gather and keep the volatile salt in Viols well stopped; for otherwise it would go away by little and little by reason of its subtilty.

This subtle and sulphureous salt hath great Vertues inwardly and outwardly; it opens all Obstructions and is admirable in all melancholick Diseases, to cut and dissolve Gravel and Sand, and drive them out by Urine from the Reins and the Bladder. Its Dose is from six to fifteen or twenty Grains, in some convenient Liquor.

Being dissolved in *Aqua Vite* in which there is left a little Phlegm (for rectified spirit

rit of Wine will not dissolve it) it may be employed outwardly for the pains of any part of the Body, and especially those of the joints, and to dissolve Nodes.

*Another Distillation of Urine, and Sublimation
of its Volatile Salt.*

PUt a quantity of well conditioned Urine into many Pitchers, or a Barrel well stopp'd, and let it stand forty days, in which time it will be fermented, and prepared to give forth its Spirits: Put it into many Glass Bodies, and distil off about half the Moisture, and you shall have a clear and spirituous Water; cast away what remains in the Bodies after every distillation as of little value, and rectifie the Water yet two or three times by distilling off the half, and casting away what remains, and continue this work till you have collected all the vertue, or all the spirits of Urin into a small quantity; which you shall put into a Bolt's head with a long neck, to which you must fit a large head, and cause the spirituous Volatile Salt to rise with a very gentle heat of Sand, which will easily separate it self from the superfluous phlegmatick Water, leaving it behind in the bottom of the Bolt's head. This Preparation is more Tedious and Laborious than the

former; but it produces a more pure subtle and penetrating, and consequently a more efficacious Salt. These preparations may suffice as I conceive, for examining and preparing all matters contained in the Animal Family: wherefore concluding this Section we will content our selves only to add some Preparations of Matters that are after a sort distinct from Animals, Vegetables and Minerals.

CHAP. V.

Of Dew.

THE *Chymists* having need of great store of Liquor to extract the virtue and best substance of many Vegetables; they have not yet found a more simple, naked, and consequently a properer one to take up their substance than *May-Dew*, which is made more pure by distilling it as follows. Take a quantity of *May-Dew* (which abounds with a subtle spirit,) and distill off about half in *B. M.* or moderate heat of Sand; and rectifie it once more, drawing off a half part only, which you must keep in Vials well stopped. This Water serves not only as a *Menstruum* for Extractions, but may also be employed as a vehicle
for

for many Medicines which have need to be dissolved in some Liquor. The same work serves for Rain-water, but it must be taken in the Month of *March*, about the *Æquinox*, at which time it is better replenished with the Universal Spirit, than at any other season.

CHAP. VI.

Of Manna.

M*anna* is an Aereal Liquor, fallen in the form of Dew, in the time of the *Æquinoxes*, upon Trees and Herbs, whereon it is by little and little condensed into grains; it is produced in many of the Eastern parts, but that which is most used in *Europe* comes from *Calabria*, in the Kingdom of *Naples*; it ought to be new, white, and of a pleasant sweetness, that which is become yellow and stale is to be rejected, because it hath lost part of its Spirits. A Spirit is drawn from it by Distillation, as follows. Put two or three pounds of good *Manna* into a large Retort, whereof the third part onely must be full, set it in a Sand-furnace, put to it an unluted Receiver, and by a very gentle heat distill over a phlegmatick Water; taste it from time to time, and when the drops begin to be pungent, change or empty your Receiver, set it to again, and lute the joynts exactly, and
augment

augment the fire by little and little, and continue till there come no more over: cool and unlute the Vessels, and put the Spirit and rectifie it in a small Body and Head on a Sand-furnace; and you shall have a clear Spirit, and of a pungent and acid taste, which is an excellent Sudorifick, and may be employed in Malignant Fevers themselves, and in all others likewise; its Dose is from a half to a whole dram, in some Liquor. Some have imagined that calcined Gold might by means of this Spirit be reduced into a Liquor, to which they attribute admirable Virtues; but I conclude that if any good success befall them who use this pretended potable Gold, it must be attributed to the virtue of this Spirit.

CHAP. VII.

Of Honey.

Honey is too well known for us to busie our selves in its Description; we will content our selves to teach how it may be reduced into several substances. Take three pounds of Honey taken from Virgin-Bees, for that is best, and put it in a very large Body and Head, set it in a Sand-furnace, fit and lute well to it a Receiver, and give a very gentle fire to raise its phlegmatick
Water,

Water, which comes over first, and must be kept apart; continue your fire in this first degree, for the Honey will else be Rarified by too great heat, and rise into the Helme, which must be avoided, wherefore this Operation requires a very patient Artift; after the Phlegm rises a sharpe Spirit of a yellow colour, and in the conclusion a red Spirit with a little Oyl: the Distillation must be continued till nothing come over, then let your Vessels cool, and separate your Spirit from the Oyl, and rectifie it by an Alembick on a Sand-furnace. That which remains in the Body may also be calcined, and a very small quantity of Salt thence extracted. The phlegmatick Water may be sharpened by its own acid Spirit, for the Diseases of the Eyes, and to cleanse them, and to make hair grow; the Spirit is good against Obstructions in the Body, taken from twenty to thirty drops, in some aperitive Liquor, or in its own Water; it serves also to dissolve *Mars*, and other Metals, and reduces them into the form of Salt or Vitriol; the Oyl is good to mundifie gnawing Ulcers.

C H A P. VIII.

Of the Distillation of Wax.

CUT two pounds of Wax into little pieces, and put them into a good large Retort, so that it may be onely half full, set it in a Sand-furnace, fit and lute a Receiver to it very exactly: begin with a small fire, and augment it by little and little; there comes over first a little phlegm, and after a pungent Spirit, after that a clear, and then a thick Oyl like Butter, and at last a volatile Salt cleaving to the sides of the Receiver, but in a very small quantity: raise and continue your fire till nothing come over, then cool and unlute your vessels: put a pound of moderately hot Water in your Receiver, to dissolve the volatile Salt, and joyn it with its Phlegm and Spirit, after separate your Oyl by a Tunnel; but for that it is very thick, you must incorporate it with sifted ashes, and rectifie it in a Retort; keep that which comes first over for inward use, the latter, which will be thick like Butter, may serve outwardly: the Liquor, which contains the Spirit and volatile Salt, may be rectified and sublimed into Salt, in the same manner as the volatile Oyl of Amber. The sub-
tle

the Oyl and volatile Salt are very excellent Remedies for the retention of Urine; the Dose of the Oyl is from four to ten drops, of the volatile Salt from five to ten grains, in some proper Water. The buttery Oyl is very resolving; applied outwardly it restores Motion to Paralytick Members, and is also good against the Sciatica, and Chilblains.

Here we will finish this Treatise, being persuaded that we have given sufficient Examples for all Chymical Operations; and as we have concealed nothing, but taught all things in the most clear manner that possibly we could, I hope the curious Reader will therein find his satisfaction in some sort, and may (pursuing our rules) undertake, and happily perform all sorts of Preparations.

F I N I S.

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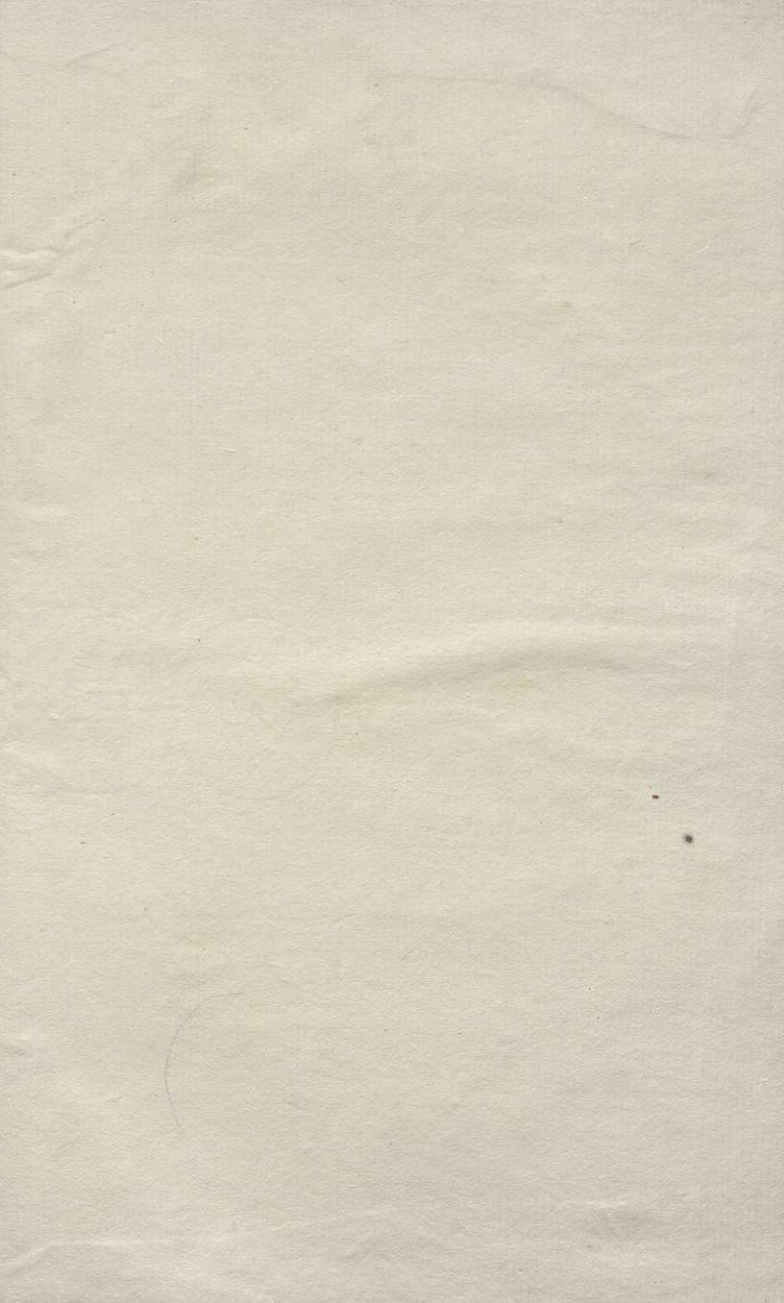
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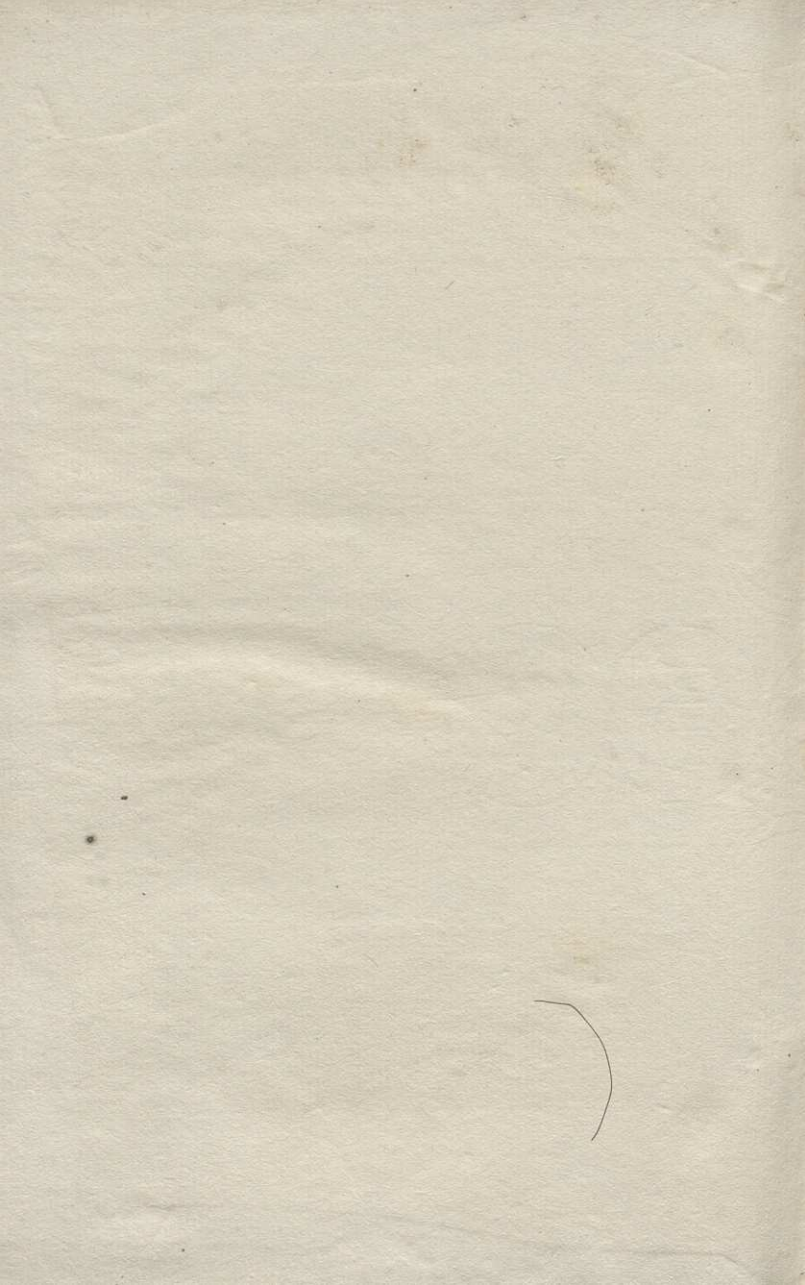
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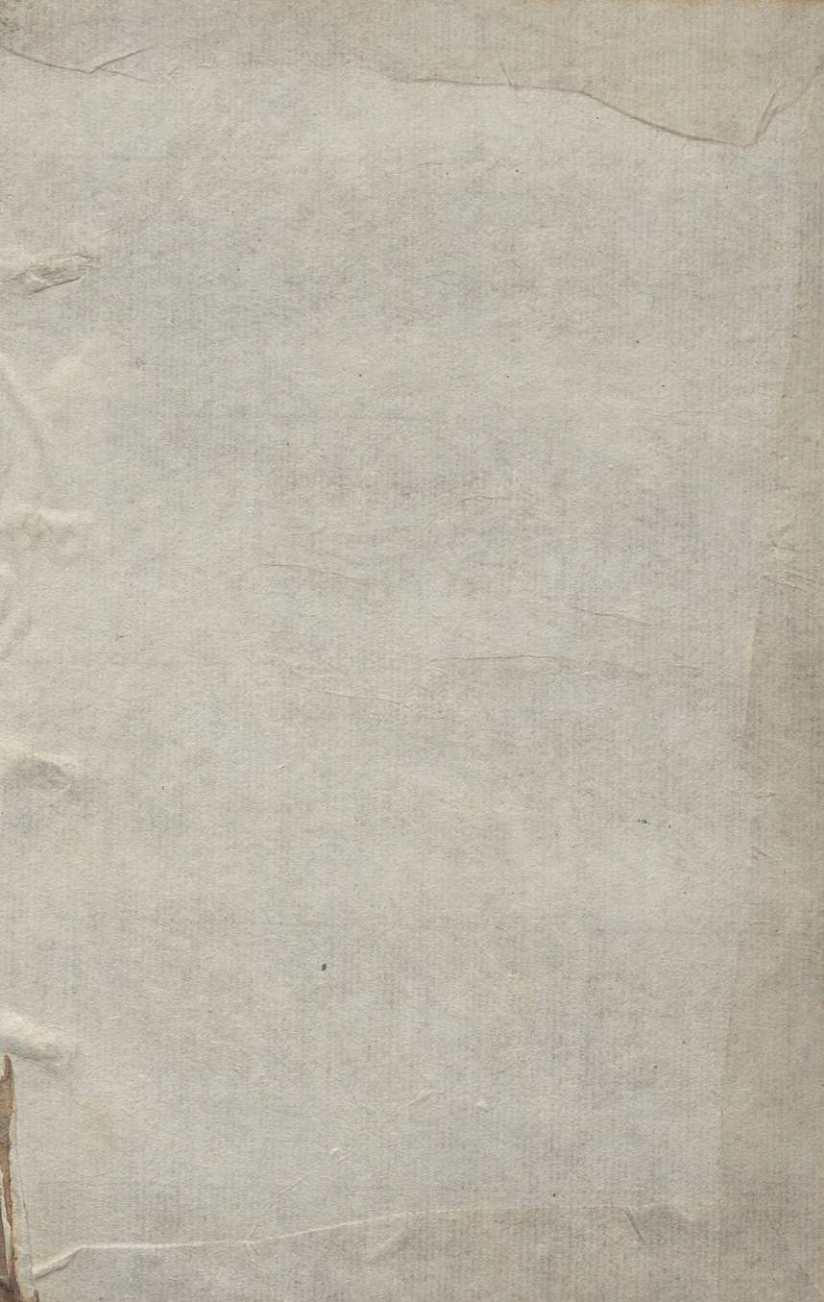
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 The meeting was held in the
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 at the residence of Mr. J. J. [Name]
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 of persons. The meeting was
 held in the evening of the 1st day
 of [Month] 18[Year] at the residence
 of Mr. J. J. [Name] and was
 attended by a large number of
 persons. The meeting was held
 in the evening of the 1st day of
 [Month] 18[Year] at the residence
 of Mr. J. J. [Name] and was
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 persons. The meeting was held
 in the evening of the 1st day of
 [Month] 18[Year] at the residence
 of Mr. J. J. [Name] and was
 attended by a large number of
 persons.









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