

The Tenth Book Of Natural Magick

The Proeme

Now I am come to the arts, and I shall begin from Distillation, an invention of later times, a wonderful thing, to be praised beyond the power of man, not that which the vulgar and unskillful man may use. For they do but corrupt and destroy what is good. But that which is done by skillful artists. This admirable art, teaches how to make spirits, and sublime gross bodies, and how to condense, and make spirits become gross bodies. And to draw forth of plants, minerals, stones and jewels, the strength of them, that are involved and overwhelmed with great bulk, lying hid, as it were, in their chests. Ant to make them more pure, and thin, and more noble, as not being content with their common condition, and so lift them up as high as heaven. We can by chemical instruments, search out the virtues of plants, and better then the ancients could do by tasting them. What therefore could be thought on that is greater? It is Nature's part to produce things, and give them faculties, but art may ennoble them when they are produced, and give them many several qualities. Let one that loves learning, and to search out Nature's secrets, enter upon this. For a dull fellow will never attain to this art of Distilling. First we will Extract waters and oils. Then, the essences of Tinctures, Elixirs, Salts, and such-like. Then we shall show how to resolve mixed bodies into the elements, and make them all more pure, to separate their diverse and contrary qualities, and draw them forth, that we may use them at pleasure. And other things, that will never repent us to know and do.

Chapter I

"What Distillation is, and of how many sorts."

Hether the art of Distillation were known to the learned Ancients, or no, I will not undertake to dispute, yet there is another kind of art to be read in Dioscorides, then what we use. He says thus, There is an Oil extracted out of Pitch, by separating the watery part, which swims on the top, like Whey in Milk. And hanging clean flocks of Wool, in the vapor arising from it while the Pitch boils, and when they are moist, squeezing them in some vessel. This must be done as long as it boils. Geber defines it thus, Distillation is the elevation of moist vapors in a proper vessel. But we will declare the true definition of it elsewhere. He makes three sorts of it, by Ascent, by Descent, and by Filtration. But I say, by Ascent, by Descent, and by Inclination, which is a middle between the both, and is very necessary. For when a thing is unwilling to ascend, we teach it by this to rise by degrees, by inclining the vessel, and raise it by little and little, until it becomes thinner, and knows how to ascend. The instructions for Distillation shall be these,

"Instructions for Distillation."

First, provide a glass or brazen vessel, with a belly swelling out like a cupping glass, and sharpened upward like a top or a Pear. Fit it to the under-vessel like a cap, so that the neck of that lower vessel may com into the belly of the upper. A pipe must run about the bottom of the cap, which must send forth a beak, under which, there must stand another vessel, called the Receiver, from receiving the Distilling water. Stop all the vents close with Straw Mortar, or rags of Linen, that the spirituous airy matter may not leak out. The fire being put under this Stillatory, the enclosed matter will be dissolved by the heat of the fire into a dewey vapor, and ascend to the top. Where, meeting with the cold sides of the head, it sticks there, being condensed by the cold, swelling into little bubbles, dewing the roof and sides. Then, gathered into moist pearls, runs down in drops, turning into liquid, and by the pipe and nose is conveyed into the Receiver. But both the vessels and the Receiver must be considered, according to the Nature of the things to be Distilled. For if they be of a flatulent vaporous nature, they will require large and low vessels, and a more capacious Receiver. For when the heat shall have raised up the flatulent matter, and that finds itself strained in the narrow cavities, it will seek some other vent, and so tear the vessels in pieces, (which will fly about with a great bounce and crack, not without injuring the bystanders) and being at liberty, will save itself from further harm. But if the things be hot and thin, you must have vessels with a long and small neck. Things of middle temper, require vessels of

a middle size. All which the industrious artificer may easily learn by the imitation of Nature, who has given angry and furious creatures, as the Lion and Bear, thick bodies, but short necks. To show, that flatulent Humors would pass out of vessels of a larger bulk, and the thicker part settle to the bottom. But then, the Stag, the Ostrich, the Camel Panther, gentle creatures, and of thin spirits, have slender bodies and long necks, to show that thin, subtle spirits, have slender bodies and long narrower passage, and be elevated higher to purify them. There is one thing which I must especially inform you of, which is, that there may be a threefold moisture extracted out of plants. The nutritive, whereby they live, and all dried herbs want. It differs little from fountain or ditch water. The substantial, whereby the parts are joined together, and this is of a more solid nature. And the third is the radical Humor, fat and oily, wherein the strength and virtue lies. There is another thing, which I cannot pass over in silence, it being one of the principles of the art, which I have observed in diverse experiments, which is, that some mixed together bodies, do exhale thin and hot vapors first, and afterwards moist and thick. On the contrary, others exhale earthy and Phlegmatick parts first, and then the hot and fiery, which being fixed in the inmost parts, are expelled at last by the force of the fire. But because there can be no constant and certain rule given for them, some I will mark unto you, others, your own more quick ingenuity must take the pains to observe.

Chapter II

"Of the Extraction of Waters."

The extraction of waters, because it is common, I will dispatch in a few words. If you would Extract sweet waters out of hot plants, and such as are earthy, and retain a sweet favor in their very substance, these being cast into a Stillatory, without any art, and a fire made under them, yield their odors. As you may draw sweet waters out of,

"Roses, Orange flowers, Myrtle and Lavender, and such like,"

Either with Cinders, or in Balneo Mariae, but only, observe to kindle the fire by degrees, lest they burn. There are also in some plants, sweet leaves, as in Myrtle, Lavender, Citron, and such like, which if you mix with the flowers, will no way hinder the favor of them, but add a pleasantness to the waters. And in places where flowers cannot be gotten, I have seen very sweet waters extracted out of the tendrils of them. Especially, when they have been set abroad a sunning in a vessel for some days before. There is a water, of no contemptible scent, drawn out of the leaves of Basil Gentle, (especially being aromatized with Citron or Cloves) by the heat of a gentle bath, heightened by degrees, and then exposing it to the Sun for some time. There is an odoriferous water extracted out of the flowers of Azadaret, or Bastard Sycamore, very thin and full of favor. The way to find out whether the odor be settled in the substance of the plant, or else in the surfaces or outward parts is this, rub the leaves of flowers with your fingers, if they retain the same scent, or cast a more fragrant breath, then the odor lies in the whole substance. But on the contrary, if after your rubbing, they do not only lose their natural scent, but begin to stink, it shows that their odor resides only in their surfaces, which being mixed with other ill favored parts, are not only abated, but become imperceptible. In Distilling of these, we must use another art. As for example,

"To Extract Sweet Water out of Gilliflowers, Musk, Roses, Violets, and Jasmine, and Lilies."

First draw the juice out of some wild Musk Roses, with a gentle heat in Balneo Mariae, then remove them, and add others. For if you let them stand too long, the scent which resides in the surfaces is not only consumed, but the dull stinking vapor which lies in the inward parts is drawn forth. In this water, let other Roses be infused for some hours, and then taken out and fresh put in, which the oftener you do, the sweeter it will smell. But stop the vessel close, lest the thin scent fly out and be dispersed in the air. And so you will have a most odoriferous water of Musk Roses. The same I advise to be done with Jasmine, Gilliflowers, Lilies, and Violets, and Crows-toes, and the like. But if you are not willing to Macerate them in their own waters, the same may be done in Rosewater. By this art, I have made waters out of flowers of a most fragrant smell, to the

admiration of artists of no small account. But because it happens sometimes by the negligence of the operator, that it is infected with a stink of burning, I will teach you,

"How to correct the stink of burning."

Because that part which lies at the bottom feels more heat then the top, when it comes to pass, that before the one be warm, the other is burnt, and often stinks of the fire, and offends the nose. Therefore Distil your waters in Balneo Mariae with a gentle fire, that the pure clear water may ascend, and the dregs settle in the bottom with the Oil, a great cause of the ill favor.

"How to draw a great quantity of water by Distillation."

Fasten some plates of Iron or Tin round the top of the Stillatory. Set them upright, and let them be of the same height with it, and in the bottom fasten a spigot. When the Stillatory becomes hot, and the elevated vapors are gathered into the cap, if that be hot, they fall down again into the bottom, and are hardly condensed into drops. But if it be cold, it presently turns into water. Therefore pour cold water between those places, which by condensing the vapors, may drive down larger currents into the Receiver. When the cap, and the water upon it begin to be hot, pull out the spigot, that the hot water may run out, and fresh cold water be put in. Thus the water being often changed, that it may always be cold, and the warm drawn out by the spigot, you will much augment the quantity of your water.

Chapter III

"Of Extracting Aqua Vitae."

It is thus done. Take strong rich Wine growing in dry places, as on Vesuvius, commonly called Greek Wine, or the tears or first running of the Grape. Distil this in a glass Retort with Cinders, or in Balneo Mariae, or else in a long necked Still. Draw out the third part of it, and reserve the rest, for it is turned into a perfect sharp Vinegar, there remaining only the carcass of the Wine. For the life and tenuous part is taken out. Then Distil the same again, and the third time, always drawing off a third part. Then prepare a vessel with a longer and straighter neck, of three cubits, and Distil it again in this. At last, put it into the mouth of the fire. The thin spirits of the Wine, will pass through all, and fall down into the Receiver, and the Phlegm, which cannot get passage, will settle to the bottom. The note of perfect depuration from Phlegm, will be, if a rag being dipped in it, and set on fire, does burn quite away. Or, if some of it, being dropped on a plain board, be kindled into flame, leaves no moisture or mark of it. But all the work depends on this, that the mouth of the vessel be exactly stopped and closed. So the least spirit may not find vent and fly into the air. The fittest thing to stop them with, is an Ox's bladder, or some other beast, for being cut into broad fillets, and while they are wet, rolled and tied about where the mouths of the vessels meet, it will alone keep in the he expiring vapors. You may observe this in the Distillation of it. The coals being hot, the vessel boils, and a most burning spirit of the Wine, ascends through the neck of the vessel. It is hot below, and cold on the top, till it gets into the cap, then, encountering cold, it turns into water, and runs down by the nose into the Receiver. And what was a long time ascending, then, in a small interval of time, flows down again to the under placed glass. Then, the cap, being cold, sends down that quality through the neck into the very belly of the Stillatory, until the spirit, being separated from the Phlegm, works the same effect again. I used to suffer the Wine to ascend, so long as the spirit runs invisible into the Receiver. For when the Phlegm ascends, there will appear bubbles into the cap, and streams, which will run into the water through the nose. Then I take away that dead carcass of Wine, and pour in fresh Wine, and extract the spirit out of that the same way.

"To do the same a more compendious way."

Those who desire to do this in a shorter time, must make a Brass vessel, of the bigness of an ordinary barrel, in the form of a

Gourd, but the nose of the cap must be made of Glass, or Brass of fifteen or twenty foot, winding about with circling revolutions, or mutual crossings, or as it were with the circling of Snakes, which they must set in wooden vessels, full of cold water, that passing through, it may be received into the Receiver. For when it has Distilled the third part of the Wine in three hours, thy must cast out the residue, and put that which is Distilled into the Stillatory again. And the second time Distil out a third part. So also a third time in the same day. At length, they put it into a Stillatory with a longer neck and separate the Phlegm from it. Some make the cap with three or four heads, setting one upon another, all being previous but the uppermost. And every one having his nose, and particular Receiver. They fit them to the vessel with a long neck set them on, bind them and Lute them, that they have no vent. The water which Distilled out of the uppermost head, is clearest and most perfect. That out of the lowest, more imperfect, and must be reserved asunder, for they will be of different estimation. The highest will be clear from all Phlegm, the lower full of it, the middle in a mean between them both.

"How to make Aqua Vitae of new Wine ."

It may be done without the charge of charge of coals and wood, neither does it require the attendance of a learned artist, but of an ignorant clown, or a woman. For this spirit is drawn out merely by the vehement working of Nature, to free herself without any other help whatever. When the Wine is run out of the press into the Hogshead, and other vessels, and begins to purge, place an earthen neck, or one of wood, being two cubits in length, upon the Bung hole of the vessel. Set the cap upon the neck, and Lute the joints very close, that there be no vent. Set the Receiver under the nose to take the water which flows down. Thus thine exaltations being elevated by the working spirits of the Wine, are converted into water, merely for the work of Nature, without the help of fire, which therefore has his particular virtues, which we will pass over now, and mention them in another place.

Chapter IV

"How to Distil with the heat of the Sun."

We may Distil not only with fire, but with the Sun and Dung. But the last taints the Distilled waters with a scurvy scent. The Sun extracts the best water, and is very useful for many medicines. The heat of the fire changes the nature of things, and causes hot and fiery qualities in them. Wherefore in all medicines for the eyes, we must use waters extracted from the Sun. For others do fret and corrode the eye, these are more gentle and soft. The Sun extracts more water then the fire, because the vapors do presently condense and drop down, which they do not over the fire, because they are driven up with a force, and stick to the sides of the Stillatory, and fall down again into the bottom. There are other advantages which shall be explicated in their proper places. Besides, it is good husbandry. For the work is done without wood, coals, or labor. It is but filling the vessels with the ingredients, and setting them in the Sun, and all the pains is past. Therefore to explain the manner in a few words. Prepare a form of three foot in height, two in breadth, and of a length proportional to the number of vessels you intend to set to work. If many, make it longer, if a few, let it be shorter. Board up that side next to the Sun, lest the heat does warm the Receivers, and make the water ascend again. In the middle of the upper plank of the form, make several holes for the necks of the glasses to pass down through. When the Sun has passed Gemini, (for this must be performed in the heat of summer only) set your form abroad in the Sun. Gather your herbs before the sunrise, pick them and cleanse them from dust and dirt of men's feet, from the urine and ordure of worms and other creatures, and such kind of filth and pollutions. Then, lest they should soil the water, shake them, and wipe them with cloths, and lastly, wash your hands, and then dry them in the shade. When they are dried, put them into the glasses, take some wire Cithern strings, and wind them into round clues, so that being let go, they may untwine themselves again. Put one of these into the mouth of each glass, to hinder the herbs from falling out, when the glasses are turned downwards. Then thrust the necks through the holes of the form into the Receivers, which are placed underneath, and

admit them into their bellies. Fasten them together with linen bands, that there may be no vent. And place the Receivers in dishes of water, that the vapor may the sooner be condensed. All things being thus provided, expose them to most violent heat of sunbeams. They will presently dissolve them into vapors, and slide down into the Receivers. In the evening, after sunset, remove them, and fill them with fresh herbs. The herb Polygonum, or Sparrows-tongue, bruised, and thus Distilled, is excellent for the inflammation of the eyes and other diseases. Out of St. Johnswort, is drawn a water good against cramps, if you wash the part affected with it. And others also there are, too long to rehearse. The manner of Distilling, this figure expresses.

Chapter V

"How to draw Oil by Expression."

We have treated of waters, now we will speak of Oils, and next of essences. These require the industry of a most ingenious artificer. For many the most excellent essences of things, do remain in the Oil, as in the radical moisture, so close, that without the greatest art, wit, cunning, and pains, they cannot be brought to light. So that the whole art of Distillation depends on this. The chiefest means is by Expression, which, though it be different from the art of Distillation, yet because it is necessary to do it, it will not be unnecessary to mention here. The general way of it, is this. Take the seeds out of which you would draw Oil, blanch them, and strip them of their upper coats, either by rubbing them with your hands, or picking them off with your nails. When they are cleansed, cast them into a Marble Mortar, and beat them with a wooden Pestle. Then sprinkle them with Wine, and change them into a leaden Mortar. Set them on the fire, and stir them with a wooden spoon. When they begin to yield forth a little oiliness, take them from the fire, and prepare in readiness two plates of iron of a fingers thickness and a foot square. Let them be smooth and plain on one side, and heated so that you can scarce lay your finger on them, or, if you had rather, that they may hiss a little when water is cast upon them. Wrap the almonds in a Linen cloth being wetted, squeeze them between these plates in a press. Save the Expression, and then sprinkle more Wine on the pressed Almonds or seeds. Allow them some time to imbibe it. Then set them on the fire, stir them, and squeeze them again, as before, until all the Oil is squeezed out. Others put the seeds when they are bruised and warmed, into a bag that will not let the Oil strain through, and by twining two sticks about, press them very hard and close. Then they draw the Oil out of them, when they are a little settled.

"To draw oil out of Nutmegs."

Beat the Nutmegs very carefully in a mortar, put them into a skillet, and warm them, and then press out the Oil which will presently congeal. Wherefore, to make it fluid and more likely to penetrate, Distil it five or six times in a Retort, and it will be as you desire. Or else, cast some burning sand into it, and mix it, and make it into rolls, which being put into the neck of a Retort, and a fire kindled, will the first time remain liquid.

"To Extract Oil out of Citron seed."

We must use the same means. Blanch and cleanse them. An Oil of gold color will flow out. They yield a fourth part, and it is a powerful Antidote against Poison and Witchcraft, and it is the best Menstruum to extract the scent out of Musk, Civet and Amber, and to make sweet ointments of, because it does not quickly grow rank.

"Oil of Poppy seed."

Is extracted the same way, and yields a third part of a golden color, and useful in dormitive medicines. Also, this is made,

"Oil of Coloquintida seeds."

The fairest yield a sixth part of a golden color. It kills worms, and expels them from the children, being rubbed on the mouth of their stomach. Also,

"Oil of Nettle Seed."

An ounce and a half may be extracted out of a pound and a half of seeds, being picked and blanched. It is very good to dye women's hair of a gold color.

"Oil of Eggs."

Is made by another art. Take fifty or sixty Eggs, boil them till they are hard. Then peel them, and take out the yolk. Set them over warm coals in a tinned Posnet, till all their moisture be consumed, still stirring them with a wooden Spattle. Then increase the fire, but stir them continually lest they burn. You will see Oil sweat out. When it is all come out, take away the fire, and skim off the Oil. Or, when the Oil begins to sweat out, as I said, put the Eggs into a press, and squeeze them very hard. They will yield more Oil, but not so good.

Chapter VI

"How to Extract Oil with water."

Now I will declare how to Extract Oil without Expression. And first, out of spices, seeds, leaves, sticks, or anything else. Oil being to be drawn out only by the violence of fire, and very unapt to ascend, because it is dense. Considering also, that aromatic seeds are very subtle and delicate. So that if they be used too roughly in the fire, they will stink of smoke and burning. Therefore, that they may endure a stronger fire, and be secure from burning, we must make the assistance of water. Those kinds of seeds, as I said, are endued with an airy, thin, volatile essence. And by the propriety of their nature, elevated on high, so, that in Distillation, they are easily carried upward, accompanied with water, and being condensed in the cap of the Stillatory, the oily and watery vapors, run down together into the Receiver. Choose your seeds of a full ripeness, neither too new, nor too old, but of a mature age. Beat them and Macerate them in four times their weight of water, or so, that the water may arise the breadth of four fingers above them. Then put them into a Brass pot, that they may endure the greater fire. And kindle your coals into a vehement heat, that the water and Oil may ascend and slow down. Separate the Oil from the water, as you may easily do. As for example,

"How to draw Oil out of Cinnamon."

If you first Distil Fountain water twice or thrice, you may extract a greater quantity of Oil with it. For being made more subtle, and apt to penetrate, it pierces the Cinnamon, and draws the Oil more forcibly out of its retirements. Therefore, take CXXXV pounds of Fountain water, Distil it in a glass Alembick. When forty pounds are drawn, Distil that until fifteen flow out. Then cast away the rest, and draw five out of those fifteen. This being done, Macerate one pound of Cinnamon in five of water, and Distil them in a Retort or Alembick. First, a milky water will flow out with the Oil, next clear water. Cast the water in over the Oil, and separate them as we shall teach you. Of a pound of Cinnamon, you will scarce receive a Drachm of Oil.

"How to draw a greater quantity of Oil out of Cinnamon."

I used to do it in this manner, to the wonder of the best and subtlest artists. Provide a Descendatory out of the bath, (the making of which, I will show hereafter) and put your Cinnamon, being grossly beaten into a glass Retort. Set it in its proper place, and put water into the bath; the heat of the fire by degrees, will draw a little water in many days. Receive it carefully,

and pour it again into the Cinnamon that it may reimbibe its own water, so let it remain a while. Afterwards, kindle the fire, and you shall receive a little water and Oil. Do this a third and fourth time, and you will gain an incredible quantity. You may try the same in other things.

"Oil of Cloves."

May be extracted in the same manner. To every pound of Cloves, you must add ten of water, Distil them as before. So shall you have both water and Oil. It will yield a twelfth part. The Oil is good for medicines, and the water for sauces. So also is made,

"Liquid oil of Nutmegs."

If you bruise them, and put them with the water into a vessel, and Distil them as before, they will yield a sixth part.

"Oil of Mace and Pepper."

Is drawn in the manner, much stronger, but in less quantity.

"Oil of Anis Seed."

May be thus extracted, an ounce out of a pound. It congeals in winter like Camphire or snow. In the summer it dissolves. Let the seeds be Macerated in water for ten days at least. For the longer they lie there, the more Oil they will yield.

"Oil of Fennel."

Is extracted in the same quantity. When the seeds are ripe and fresh, they have most Oil, for they yield as much more.

"Oil of Coriander."

This yields but a small quantity, and is of very hard extraction. There is scarce one Drachm drawn out of a pound. New seeds yield most. And to be short, in the same manner are extracted the Oils out of the seeds of Carrot, Angelica, Marjoram, Rue, Rosemary, Parsley, Smallage and Dill, and suchlike.

"Oil of Rosemary and Lavender flowers,"

And such others, which being dried, afford no Oil, may be thus extracted. Put the flowers into a Receiver, and set it close stopped in the hot Sun for a month. There will they dissolve into liquor, and fly up to the sides of the glass. Then being condensed again, fall down and Macerate in themselves. At a fit time, add water to them and Distil them, as the former. So shall you draw forth with the water a most excellent sweet Oil.

"Oil of Juniper and Cypress wood."

May be drawn out by the same art, if you Macerate the dust of them in their own or in Fountain water for a month, and Distil them in the same manner. The Oil will come out by drops with the water, of a strong scent, and excellent virtue. These I have tried, the rest I leave to you.

Chapter VII

"How to Separate Oil from Water."

When we Extract Oils, they run down into the Receiver together with the water. They must then be separated, lest the Phlegm, being mixed with the Oil does weaken the virtue of it. That it may obtain its full vigor, it must be purified by Distillation and separation. For being put into a Retort or broad Stillatory, over a gentle fire, the water will run out, and the remaining liquor will be clear Oil. This work of separation is very laborious. Yet there are very artificial vessels invented, by the help of which, all the water may be drawn off, and the Phlegm, only pure Oil will remain. Prepare a glass vessel. Let it be broad and grow narrower by degrees downwards, until it comes to a point, like unto a tunnel. Put the Distilled water, which contains of the phlegmatic water and Oil into this vessel, let it stand a while. But stop the mouth of it with your finger, so that removing it away, the water may first run out, and the Oil sink down by degrees. When it is descended into the narrow part, so that the Oil becomes next to your finger, stop the hole, and let the orifice be but half open for the water to pass out. When it has all run out, empty the Oil into another vessel. There is another very ingenious instrument found out for to separate Oil, with a great belly and a narrow neck, which a little nose in the middle. Pour the Oil mixed with water into the vessel, the water will possess the bottom, the Oil the neck. Drop water gently into it, until the Oil ascends up to the nose. Then incline the vessel downward, and the Oil will run out clear and unmixed. When you have emptied out some, drop in more water, until the Oil be raised again up in the nose. Then stop it down, and pour out the rest of the Oil. But if the Oil settles to the bottom, and the water swims on the top, as very often happens, filtrate it into a broad dish, or any other vessel with a cotton cloth. The water will run out, and the Oil will remain in the bottom very pure.

Chapter VIII

"How to make an instrument to Extract Oil in a greater quantity and without danger of burning."

We may with several sorts of instruments, use several kinds of extractions. Among the rest, I found out one, whereby you may draw Oil with any the most vehement fire without danger of burning, and a greater quantity, then by any other. And it is fit for many other uses also. Prepare a vessel in the form of an Egg, of the capacity of half an ordinary barrel. Let the mouth of it, be of a convenient bigness to receive in your arm, when there shall be occasion to wash it, or to fill it with several sorts and degrees of things to be Distilled. Let it be tinned within, then set a Brass head on it of a foot high, with a hole in the bottom fit to receive the neck of the lower vessel, and stop the mouth of it exactly. Out of the top of the head, there must arise a pipe of Brass, fifteen or twenty foot long, bent into several angles that it may take up less room, and be more convenient to be carried. The other end of this pipe, must be fastened into the belly of another vessel, which must be of lesser capacity then the former, but of the same figure. Fix a head upon this also, with a pipe of the same length, and bent like the former, whose lower end shall be received into another straight pipe, which passing through the middle of a barrel, at last falls into the Receiver. The manner of using it is this; Put your leaves, stalks, or seeds, being beaten small, into the Brass pot, and pour as much Fountain water on as will cover them a handful or five large fingers over, then set on the head, and stop the joints very close. Put the other end of the pipe into the other pot, and joint them exactly. Then set on the other head, and fasten the lower end of its crooked pipe into that straight one, which passing through the barrel, runs into the Receiver. If the joints are anywhere faulty, stop them with flax, and paste them with wheat flour, and the white of an Egg, then roll them about and tie them close with fillets, cut out of a bladder. For when the vapors are forced by the heat of the fire, they are so attenuated, that they will break forth through the least rim or chink, in spite of all your endeavors. Fill the barrel with cold water, and when it begins to grow hot, draw it out through a cock at the bottom, and supply fresh water, that the pipe may always be kept cool. At length, make the pot boil, at first with a gentle fire, then increase them by degrees, until the vehemence of the heat, does make the vapors hiss as it were ready to break the pipes, as they run through them, so they will be elevated through the retorted pipes, and leave

the Phlegmatick water in the lower vessel, till passing through the cold pipe. They will be condensed into liquor, and all down into the Receiver. If the water does consumes away in the boiling, pour in more being first warmed, through a little pipe which the pot must have on one side with a spigot to it for this purpose. But be sure to stop the spigot very close, that there may be no vent. Afterwards, separate the Oil from the water, Sublime and purify it in another vessel. Of all the instruments that I ever saw, not any one of them extracted a greater quantity of Oil, and with less labor and industry then this. Thus you may without any fear of burning, draw Oil out of flowers, leaves, spices, Gums, and wood with the most vehement fires, as also out of Juniper and Laurel berries.

Chapter IX

"The description of a Descendatory, whereby Oil is extracted by descent."

I cannot refrain from describing here an instrument found out by my own private experience, which I hope will be of no small profit to the ingenious. By which they may draw Oil out of any the least of things without any fear of burning. For there are many tenuous, oily flowers, as of Rosemary and Juniper, and other things, as Musk, Amber, Civet, Gum and suchlike out of which may be drawn oils very sweet and medicinable. But they are of so thin a substance, that there is a very great hazard of burning them, when they are forced by the heat of the fire without which, neither fat things will be elevated, nor extracted. Therefore to remedy these inconveniences, I have invented an instrument, by which oil shall descend without any labor or danger of burning. Let a vessel be made of Brass, in the form of an Egg, two foot high, and of the same breadth. Let it be divided towards the top, of which the upper part most serve for a cover, and be so fitted to be received into the lower part, that the joints may closely fall in one another, and be exactly stopped. In the lower part, towards the middle, about half a foot from the mouth, let there be a Copper plate fitted, as it were the midriff, so that it may easily be put and taken out. In which there must be made three hollow places to receive the bottom of three retorted vessels, the rest of the plate must be previous, that the boiling water and hot spirits may have passage to rise upwards. Out of the sides of the vessel there must be three holes, through the which the necks of the Retorts may pass, being glued and fastened to their pipes and Flax, and tied with fillets of bladders. So that not the least air, much less any water may leak out. When you prepare to work, fill the glass Retorts with the things you intend to still, thrust the necks through the holes outward, and lay their bodies in the prepared hollowness of the cross plate, somewhat elevated. If there remain any void space between the necks, and the sides of the holes they pass through, stop it with flax, and tie it about with fillets of bladder, and fill the vessel with water, within three fingers up to the cross plate. The vessel, being covered, and the joints well stopped and glued, and bound about, so that the force of the vapors arising, may not burst it open, and scald the faces of the bystanders, kindle the fire by degrees, until it becomes very vehement. Then will the vapors make a great noise, almost sufficient to terrify one. First water, then water and Oil will Distil out. I cannot contain myself from relating also another instrument invented for the same purpose. Make an oval Brass vessel, as I advised before, with a hole bored through the bottom. To which fasten a pipe that may arise up to the mouth of the vessel under, may by degrees receive the swelling parts of the neck. Adapt a cover to this vessel that it may be close stopped and Luted as we said before. You must make a furnace on purpose for this use. For the fire must not be made in the bottom, but about the vessel. The use is this; fill the glass with flowers or other things, put in some wire Lute-strings after them, that they may not fall out again when the glass is inverted. Thrust the neck through the Brass pipe. Put on the cover, and plaster it about. Set the Receiver under the furnace that it may catch the falling water and Oil. Then kindle the fire about the sides of the pot, the violence of which, will elevate vapors of burning water, which, beating against the concave part of the cover, will be reverberate upon the bottom of the gourd glass, whose fervent heat, will turn the water and Oil into vapor, and drive it down into the Receiver. I will set down some examples of those things which I made myself a trial of. As,

"How to Extract Oil out of Rosemary flowers."

Fill the Retorts with the leaves and flowers of Rosemary, and set them in the Brass furnace. The fire being kindled will force

out first a water, and afterwards a yellow Oil, of a very strong and fervent odor, a few drops of which, I have made use of in great sicknesses, and driving away cruel pains. You may extract it easier, if you Macerate the flowers or leaves in their own, or Fountain water, for a week. In the same manner,

"Oil of Citron Pill,"

Is extracted when Citrons have come to perfect ripeness. Shave off the peel with a gross Steel file. Put the filings into a pot, and set them to Macerate ten days in Dung, being close stopped up. Then accommodate them to the furnace, and kindle fire. An Oil mixed with water Distils out with a most pleasant scent. The same may be done with Orange and Lemon peel. In places where flowers and fruits are not to be had, they cut off the tops of branches and tendrils, and slice them into four inch pieces, and so Distil them.

"Oil of Roses, and Citron flowers."

Is drawn after the same sort, a most excellent Oil, and of an admirable favor. But because the Oil is very hardly distinguished from the water, pour the water into a long glass with a narrow neck, and expose it to the Sun being close stopped. The Oil will by little and little, ascend to the top, which you must gather off with a Feather or pour out by inclining the glass.

"Sweet Oil of Benjamin."

Is to be made by putting Benjamin into a glass Retort, and fitting it to the furnace. Then increase the fire without any fear of combustion, and you will obtain a fragrant Oil, to be used in precious ointments. So Oil of Storax, Calamite, and Labdanum, and other Gums. So also,

"Oil of Musk, Amber, and Civit."

Cannot be Extracted more commodiously by any instrument, art or labor, then by the aforesaid, for they are of so thin a substance, that they can hardly endure any but the least heat, without contracting a scurvy base stink of burning. Yet by this artifice, it may be drawn out very safely. I see nothing to the contrary, but that we may Extract Oil out of spices also, very securely by the same artifice.

Chapter X

"How to Extract Oil out of Gums."

There is a peculiar extraction of Oil of gums, which, although they require the same means almost as the former, that is, the mixing them with waters, and macerating them for many days, then putting them in a Brass pot, and by a vehement fire, forcing out the Oil with the water. Yet it does come out but in a small quantity of an excellent odor, and free from the stink of the fire, as thus they deal with Opoponax, Galbanum, Storax and others. But they are distilled also another way, by ashes, which does require the diligent attendance of the workman, and a singular judgment and provident dexterity in him. For it is rather an ingenious then painful operation. I will set down an example,

"How to Extract Oil out of Benjamin."

Macerate the Benjamin in Rosewater, or omitting that, put it into a Retort. Set the Retort into a pot full of sand, so that it may fill up the space between the sides of the pot, and bottom of the Retort. Put the neck of it into a Receiver with a wide belly. Kindle the fire by little and little, and without any haste or violence of heat, let the water Distil. By and by increase the fire that the Oil may flow out, yet not too intensely, for fear of burning, but moderately between both. The oily vapors will straight fill all the Receiver, then will they be condensed and turn into flakes like wool, and sticking to the sides and middle of the glass,

present you with a pleasant spectacle. By and by they are turned into little bubbles, so into Oil, and fall down to the bottom. Keep the fire in temper, until all the feces are dried, then remove it, for fear of ustion.

"Oil of Storax,"

Is drawn in the same manner, but if the Storax be liquefied, it will run with a gentle fire. It is of a strong and quick odor. Calamites requires a more lively fire, such as was used in Benjamin, and a diligent attendance. For too much fire will cause adustion on it.

"Oil of Laudanum."

Beat the Laudanum, and Macerate it fifteen days in Aqua Vita,, or Greek wine, at least ten. For the longer it infuses, the sooner it will run into Oil. Draw it with a gentle fire, it will distill out by drops after the water.

"Oil of Turpentine."

Is extracted easily, for it flows with a gentle fire. But beware in the operation, that no smoke evaporates out of it, for it will presently take fire, and with a magnetic virtue attract the flame, and carry it into the Retort, where it will hardly be extinguished again. Which will happen in the extraction of,

"Oil of Olives, and Linseed Oil."

If you Distil common Oil, it will hardly run. Yet increasing the fire, it will come out in six hours. You must be very careful, that the ashes and pot do not wax too hot. For if the Oil with take fire, it will break the vessels, and fly up, that it can hardly be quenched, and reach the very ceiling, so that it is best to operate upon Oils in arched rooms. From hence artificers of fireworks, learned to put Oil in their compositions, because it quickly takes fire, and is hardly extinguished.

Chapter XI

"Several arts how to draw Oils out of other things."

The nature of things being diverse, does require divers ways of distilling Oil out of them. For some being urged by fire, are Sublimed, and will not dissolve into Liquor. Others cannot endure the fire, but are presently burned. From which variety of tempers, there must arise also a variety in the manner of Extraction. I will set down some examples of these, that ingenious artists may not despair to draw Oils out of anything whatever.

"Oil out of Honey"

Is hard enough to be Extracted. For it swells up with the least heat, and rises in bubbles. So that it will climb up through the neck of the Retort, though it be never so long, into the head, and fall into the Receiver before it can be dissolved into Liquor or Oil. There are diverse remedies found out to help this. Take a glass with a short wide neck, put your Honey into it, and stop it in with Flax quite overlaid two fingers thick. This will repress the Honey when it swells and froths, and make it sink down again. Clear water will drop out at first. But when it begins to be colored, take away the Receiver, and set another in the place, so to keep the waters severally. Or put Honey into any vessel, so that it may fill it up four large fingers above the bottom, and cover it close, as the manner is. Then dig a hole in the ground, and set the vessel in, as far as the Honey rises. Then Lute and plaster it about four fingers above the ground, and dry it well. Kindle your coal round about it. Then the Honey will grow hot, and by degrees stick to the pot. But because the heat is above it, it cannot swell up, but very easily distills water and Oil. First, yellow, next reddish, until the Honey is turned into a very coal. There is another way, which may be performed by any woman. Pour the Honey into a new Pipkin, and cover it. Dig a hole, and bury it abroad about a cubit under ground.

There let it putrefy for ten days. Then take it up, and there will swim on the top of the Honey a crystal Liquor, which you must strain out, and stop the Pipkin again, and bury it as before. About a week after, view it again, and strain out the over-flowing water. So the third and fourth time, until all the Honey is converted into water, which you may see by uncovering the Pipkin. Distil the water according to art, and it will yield water and Oil easily enough.

"Oil of Camphire."

Beat Camphire very small, and put it into common Aqua Fortis, made of Saltpeter, and Coppres Distilled and clarified. Set the pot in a bath or stove for half a day, and you will see a clear bright Oil swim on the top of the water. Incline the pot gently, and pour it off, and clarify it in a Retort. so shall you have a beautiful, thin and sweet Oil.

"Oil of Paper and Rags."

Roll up your paper like a pyramid, as grocers do, when they lap up anything to lay by, or send abroad. Clip the edges even. And taking a hold of the top of it with a pair of Pincers. Set it on fire with a candle. And while it flames, hold it downward over a broad dish half a finger distant from the bottom, so that the smoke may hardly fly out. And still as the fire consumes the paper, let your hand sink, that may always keep the same distance from the dish. When it is quite burned, you will find a yellow Oil, stinking of burning, upon the bottom of the dish. Gather it up, and reserve it. It is excellent to drive away Freckles and Pimples in women's faces, being applied. Almost in the same manner,

"Oil of Wheat ."

Lay your Wheat plain upon a Marble Mortar, being turned with the bottom upwards, and cover it with a plate of Iron, almost red hot, and press it hard. Out of the sides there will be expressed an Oil of a yellow color, and stinking of burning, which is good for the same purposes. That which is good to refresh decayed Spirits, is prepared another way.

Chapter XII

"How to Extract Oil by Descent."

The way is common and vulgar to all. For it is done by Ustulation. But the Oils are of a most offensive favor, and can be used only in outward medicines. For they are not to be taken inwardly. Prepare a Pipkin of tough Clay, and able to endure fire, well Vernished within, that there may be no suspicion of running out. Let the bottom be full of holes, set upon another earthen Pipkin whose mouth is large enough to receive the bottom of the upper Pipkin. Lute them close together. Fill the Pipkin with slices of your Wood. Cover it and Lute it. Then dig a hole, and set the Pipkins into it, and fling in the earth about it, and tread it down close and throw sand over it two inches thick. Make a gentle fire just over the Pipkin, which you must increase by degrees, until the Pipkins have stood there a whole day. After this, remove the fire. And when the heat is spent, dig up the Pipkins, and you will find the Oil strained down into the lower. Which you must Distil again in a Retort, to purify from filth. To add something to the former invention, I always do thus. I make a Trestle with legs of two foot in length. There must a hole be bored in the plank of it, to receive the neck of the Limbeck. Upon the Trestle fasten an Iron plate to keep the wood from burning. Underneath, about the middle of the feet, fasten a board, upon which the Receiver may stand, and meet with the neck of the inverted vessel. Which being filled with the materials to be stilled. Kindle a fire about it. Therefore you would extract,

"Oil out of Lingnum Guaiacum,"

Fill it with the dust of Lingnum Guaiacum, and Lute it close with Straw Mortar, twice or thrice double. When it is dried in the Sun, put into the neck, wire strings, and thrust it through the hose of the Trestle into the mouth of the Receiver, and Mortar them together. The kindle the fire on the plate about the body of the Limbeck, at some distance at first, and by degrees closer and hotter. But let it not be red hot, until you think it is all burned. Then remove from the fire, and let it rest a while, until it is cold, and you shall find in the lower vessel a black stinking burnt Oil. In this manner is Oil drawn out of Juniper, Cypress, and Lingnum Aloes. But in this last, you must use art and diligence, and a gentle fire, because it is mixed in Ointments.

Chapter XIII

"Of the Extraction of Essences."

We have delivered the several kinds of extractions of Oils, now we are come to Quintessence's, the extraction of which, we will here declare. The Paracelsians define a Quintessence to be the form, or spirit, or virtue, or life, separated from the gross and elementary impurities of the body. I call it the life, because it cannot be extracted out of the bones, flesh, marrow, blood, and other members. For wanting life, they want also the Quintessence. I say, separated from elementary impurities, because when the Quintessence is extracted, there remains only a mass of elements void of all power. For the power, virtue, and medicinable qualities, are not the elements, but in their Essences, which yet are elements, and contain the virtues of the elements in them, in the highest degree. For being separated from the grossness of their bodies, they become spiritual, and put forth their power more effectually and strongly when they are freed from them, then they could while they were clogged with the elements. They are small in bulk, but great in operation. The strength of Quintessence's, is not to be judged by the degrees of their qualities, but of their operation. For those which soonest and clearest root out a disease, are reckoned in the first degree. So the Essence of Juniper, is reckoned the first degree of operation, because it cures the Leprosy by purging the blood only. The Essence of Amber in the second, because it expels Poison, by purging the heart, lungs, and members. Antimony in the third, because (beside the former virtues) it also purges the body. But Gold of itself alone, has all those virtues, and renews the body. Wherefore the fourth degree and greatest power, is attributed to it. But how to extract these Essences is a very difficult work. For they may be either Oil, or Salt, or water, or of Extraction. Some, by Sublimation, others, by Calcination. Others, by Vinegar, Wine, corrosive waters, and such-like. So that several kinds of Menstruums are to be provided according to the Nature and temper of things. I will set down some things which are most agreeable to the things to be Extracted, and as simple as may but. For Essences ought not to be compounded, mixed, or polluted with anything, be pure, simple and immaculate. But if there is a necessity of adding something let them be separated after Extraction. If the Essence of any metal is to be Extracted by Corrosives, separate the Salt from the waters, after the work is done, and use those Salts only, which will easily be taken out again. Vitriol and Allom are very difficult to be separated, by reason of their earthy substance. Moreover, use not a watery Menstruum, for a watery Essence. Nor a oily Menstruum, for an oily Essence being of like natures, they are not easily separated. But watery Menstruums for oily Essences. And so on the contrary. I will set before you some examples in Herbs, fat of flesh, and other things by which you may learn of yourself how to perform it in the rest. There are an infinite number of Essences, and almost as many ways of Extraction. Of them, some I shall show unto you, whereof the first shall be,

"How to Extract the Essence out of Civet, Musk, Amber, and other spices."

Take Oil of Ben, or of Almonds, mix Musk, Amber, Cinnamon, and Zedoary, well beaten in it. Put it in a glass bottle, and set it in the Sun, or in Balneo, ten days. Then strain from it the Dregs, and the Essence will be imbibed into the Oil. From which you may separate it in this manner. Take Aqua Vita, and if it be an odoriferous body, Fountain water, three or four times Distilled. Mix with the aforesaid Oil, and stir it about, and so let it digest for six days. Then Distil it over Cinders. The hot water and the Essence will ascend, and the Oil remain in the bottom without any scent. Afterwards, Distil the Aqua Vita, and the Essence in Balneo, until the water be evaporated, and the Essence settles to the bottom in the form of Oil. If you will do it with Aqua Vita alone, slice the roots of Zedoary, and beat them and Infuse them in so much Aqua Vita as will cover them three

fingers over in a glass bottle. Let them Ferment for ten days according to Art. Then Distil them over it. Take the Distilled Liquor, set it in Balneo. And with a gentle fire, let the Aqua Vita evaporate, and the Quintessence of Zedoary will settle in the bottom, in a liquid form. Next,

"To Extract Essence out of flesh."

Out of three Capons, I have often Extracted an Essence in a small quantity, but of great strength and nutriment, wherewith I have recovered the life and strength to sick persons, whose stomachs were quite decayed. And they almost were dead for want of nourishment, having not been able to eat any things in three days. Take Chickens, or Hens, or Capons. Pluck them, and draw their guts out. Beat them well, and let them boil a whole day in a glass vessel, close stopped over warm embers until the bones, and flesh, and all substance be dissolved into Liquor. then strain it into another vessel through a Linen cloth and fling away the Dregs. For the remaining bones are so bereft of flesh, scent, or any other quality, that a Dog will not so much as smell to them. Which is an assured argument that their goodness is boiled out. Pour the strained Liquor into a glass bottle, and dissolve it into a vapor in a gentle bath. The Essence will remain in the bottom, either hard, or soft, like an Ointment, as you please, of a most admirable virtue, and never sufficiently to be commended.

"To Extract Essences out of Salts."

Take Salt and Calcine it according to Art. If it is volatile, burn it, and grind it very small. Lay the powder upon a Marble in a moist cellar, and set a pan under it to receive it as it dissolves. Let it Ferment in that pan for a month. Then set it in Balneo, and with a gentle fire let it Distil. Cast away the sweet water, that comes from it, and set that which remains in the bottom, to Ferment another month, the Distil out the sweet water, as before. And do this, while any sweet water will run from it. Keep it over the fire until the moisture is all consumed. And then what remains settled in the bottom, is the Quintessence of Salt. Which will scarcely arise to two ounces out of a pound.

"To Extract Essences out of Herbs."

Beat the Herbs, and set them to Ferment in Dung for a month in a convenient glass bottle. Then distil them in Balneo. Again, set them in Dung for a week, and distil them in Balneo again. And thus macerate them so long as they will yield any Liquor. Then pour the Distilled water upon the herbs again, and Distil them in this Circulation for six days, which will make it of a more lively color. Draw of the water by Balneum, and the Essence must then be Expressed out in a press. Ferment it in Dung for five days, and it will yield you the scent, color and virtues of the Herbs in perfection. A way to extract,

"The Essence of Aqua Vita."

It is a thing bragged of by thousands, but not effected by any. I will not omit the description of it, which I have found out, together with a friend of mine very knowing in experiments, by the assistance of Lulius. Provide some rich, generous, old Wine. Bury it in Dung for two months in large bottles close stopped and Luted, that they may not have the least vent. The whole business depends on this. For if this is not carefully looked into, you will lose both your cost, and your labor. The month being past, Distil it in a an ordinary Stillatory. Reserve the Spirits by themselves. The Dregs and Faeces of the Wine must be buried again, and the Spirits be Distilled out as before, and reserved by themselves. Distil the Faeces until they settle like Honey or Pitch. Then pour on the Phlegm upon them. Wash them and lay them to dry. Then put them in a potter's, or glass maker's furnace, and with a vehement fire burn them into white ashes. Wet them with a little water, and set them in the mouth of the furnace, that they may be converted into Salt. There is not better mark to know the perfection of your work, then by casting some of it on a red hot plate of Iron. If it melt and evaporate it is well done. Otherwise, you must rectify it. Mix the Salt with water, and put it into a glass bottle with a long neck. Stop it with a Cork and parchment. Then set on the head and kindle the fire. The force of which will carry it up through all the stoppage into the head, and there it sticks to the sides like dirt. The water will remain quiet in the bottom, in which you must again mingle the Salt. And so by a continual circulation, draw it out of itself, until it is divested of all it grossness, and obtain a more thin and subtle Essence.

Chapter XIV

"What Magisteries are, and the Extraction of them."

I said, that Quintessence's do participate of the nature of mixed bodies. On the contrary, a Magistry takes the temper of the elements. So, that it neither extracts the Spirits nor the Tinctures, but a certain mean between both. A Magistry therefore, is what can be extracted out of things without separation of the elements. Essences do often keep the color of the bodies out of which they are extracted. Tinctures always do it, Magisteries never. the means of extracting Magisteries, are various, according to the diversity of natures in things. I will set down for an example and pattern.

"How to Extract a Magistry of Gems, Coral and Pearl."

Beat the gems, and set them in Igne revererationis, until they be Calcined. Mix them with an equal quantity of Saltpeter, and dissolve them in Aqua Vita. Pour out that which is liquefied, and let the remainder of the powder be Calcined better. Then lay it in Aqua Vita again, and do this until all is dissolved. Set this water in a hot furnace, until the moisture is all evaporated. And what shall remain in the bottom, is the Magistry of gems. Pearls must be dissolved in Vinegar. And if possible, in juice of Lemons. You may augment the strength of the Vinegar by those things, which, as I showed you in Aqua Vita. Which does quicken the virtue of it, that is, its own Salt, being dissolved and Macerated in Balneo, or in Fimo, for a month. Then Distil the Menstruum, and in the bottom will remain the Magistry of Pearls.

"Of Charabes."

I will deliver to you the way that I use. For the Paracelsians do either conceal it, or not know it. Beat your Gum very small, and dissolve it in Aqua Vita. When it is liquefied, pour that out, and put in fresh. Let them Macerate for a month. And when all is dissolved, mix the waters all together, and let it evaporate over a fire. So in the bottom will remain the Magistry of Charabe. It will take away scars in the face and cure the Vertigo.

"The Magistry of Guaiacum."

Is a excellent remedy against the Pox, and is thus Extracted. Take the shavings of Lingnum Guaiacum, or the dust of it, which the Turners work off. For the file by continual friction, heats it, and exhausts the best Spirits. Lay it in clarified Aqua Vita a whole day. When the water has contracted a red color, which will be when it has sucked out the oiliness and substance of it, strain it out, and pour in fresh. Then stir it about, until the water becomes colored again. Strain that out also, and put in as much more, until the water do not alter its color any more. Then strain it in a press, and distil the juice through Linen cloth. And then boil it till the moisture is consumed. The Oil, or Gum, or Magistry will remain of a bright color, and most sweet scent, which you would think impossible to reside in such wood. You may Extract the same in a shorter time, but it will not be of the same value. For if you lay the dust of Guaiacum in Distilled Fountain Water, boil it for half a day, strain it, and Distill it through a cloth, and let the moisture evaporate over a fire, the same Gum will settle in the bottom. You must choose the most gummy wood, which being held near a candle, will sweat out a kind of Oil.

"The Magistry of Lingnum Aloes."

Take the shavings of the wood worked off, as the former, with a Turners wheel. Lay in in Aqua Vita until it colors it. Then strain it out, and let the moisture evaporate over a fire. and in the bottom of the glass, you will find a most odoriferous Oil,

excellent to be used in sweet Ointments.

"The Magistry of Wine, commonly called the Spirit of Wine."

I will first set down the Paracelsian way of extracting it. And afterwards my own, because we cannot use that in our countries. Pour some strong generous Wine into a glass bottle. so that it may fill two parts of it. Stop the mouth of it very exactly, either with Hermitis Sigillum, or a strong glue, which I will hereafter describe to you. And so set it in Fimo three or four months, with an unintermitted fire. In the winter set it out in the frost for a month, and let it freeze. The Spirit or Magistry will retire into the center, because its fiery essence makes it incapable of Conglaciation. Break the vessel, cast away the congealed part, and reserve the liquid, which being circulated in a Pelican for a month, will yield you what you seek. My way is, to put the aforesaid Wine into a round glass vessel. Let it ferment in Fimo, Conglaciare it, as I shall show you. And then breaking the vessel to reserve the unfrozen Liquor, in which you will find a great deal of virtue. But if you desire to have it better, you may perfect it by Circulation.

Chapter XV

"How to Extract Tinctures."

A Tincture is the purest and most active part of a colored body extracted. The noblest Essence of a compound. It is Extracted out of gems, flowers, roots, seeds, and such-like. It differs from Quintessence thus, that it especially draws the color of the body from whence it is Extracted. And requires art and cunning, and diligent attendance, more then labor. It is separated by Distillation, clear from any oiliness or matter. Free from the commixtion of other elements, or any impure substance. It imitates the clearness and perspicuity of the air. And in that brightness represents the color of the gem or flower, from whence it is drawn. Of so pure a substance, that in many years it will not have any Dregs in it, but will continue in a perpetual clearness, subtlety, and strength. After the extraction, the matter remains discolored, and useless for anything. I will present some examples to you how to extract the Tincture out of metals and flowers, etc.

"How to draw out the Tincture of Gold."

If the Virtues of this never sufficiently praised metal, were known, as well for the health of the body, as the convenience of men's living, it would be adored with a greater devotion then it is already. The apes of wise Nature, cunning inquirers in experiments, perceiving a certain glory and brightness in Gold. And an attractive or magnetic Virtue, (if I may so say) which at first sight draws every man's eye to look upon its majesty and beauty. And tempts our hands to touch and handle it. And even our mind's to desire it. So that even infants do rejoice, and laugh at the sight of it. And reach their arms out after it, and catch it, and will no means part from it. Presently conjectured, that there was some extraordinary Virtue in it for the health of man. Astrologers, seeing it contend with the Sun in beams, brightness and glory. And to have a prerogative of majesty among metals, like the Sun among the stars. Do therefore set it down for a Cordial, and a destroyer of Melancholy, and all the ill companions of it. Refiners say, that the elements are so proportionally mixed in the composition of it, so put and compacted, that they account it a most exactly tempered body, and free from corruption. In which there is nothing deficient or so superfluous. So compact and close, that it will not only endure the fire without consumption, but will become more bright and refined by it. It will also lie under ground thousands of years without contracting any Rust. Neither will it foul the hands like other metals, or has any ill scent or taste in it. Wherefore, say they, being taken into our bodies, it must needs reduce the elements and Humors into a right temper. Allay the excessive, and supply the defective, take away all putrefaction. Refresh the natural heat. Purge the blood and increase it. And not only cure all sicknesses, but make us healthy, long lived, and almost immortal. Rainoldus, Raimundus, and other Physicians of the best esteem, do attribute to Gold, a power to corroborate and strengthen the heart, to dry up superfluities and ill Humors. To exhilarate and liven the spirits with its splendor and beauty. To

strengthen them with its solidity. Temper them with its equality and preserve them from all diseases. And expel excrements by its weight. By which it confirms youth, restores strength, retards old age, corroborates the principal parts, opens the urinary vessels, and all other passages, being stopped. Cures the falling sickness, madness, and Leprosy, (for which cause, Osiander the Divine wore a chain of Gold about his neck). And also Melancholy. And is most excellent against Poison and infections of the Plague. We will now examine whether the old or new Physicians knew the way to prepare it correctly, to perform these admirable effects. Nicander does mightily cry up for an Antidote against Poison, Fountain water in which Gold had been quenched. Supposing, that it imparts some of its Virtue to the water in the extinction. Dioscorides, Paulus Aegineta, and Aetius, affirm the same. Avicenna says, that the filings of it helps Melancholy, and is used also in Medicines for the shedding of the hair. In liquid Medicines, or reduced into very fine powder, it is used in Collyriums, or Medicines for the eyes, for the pain and trembling of the heart, and other passions of the mind. Pliny uses it burnt in an earthen Pipkin, with a treble quantity of Salt. Whereby it will communicate its Virtue, but remains entire and untouched itself. He also makes a Decoction of it with Honey. Marsilius Ficinus says, it is of a solid substance, and therefore must be Attenuated, that it may penetrate the body. But he is ignorant of the way of it. Only, he advises to give it in Cordial waters, being beaten out of thin leaves. For so the water will suck out the Virtue of it. Or else by extinguishing it in Wine. There are some of Pliny's scholars, who would have the parts of a Hen laid in melted Gold, until it consumes itself. For the parts of a Hen are Poison to Gold. Wherefore Ficinus mixes leaf Gold in Capon broth. Thus far the Grecians, Latines, and Arabians, have discoursed concerning the Extraction of the Tincture of Gold. But they have eroded far from the truth. For what a vanity is it to imagine, that quenching it in water, can Extract the Virtue of it? Or, that the heat of man's body, though it be liquefied and made potable, can draw anything from it, when the force of the most vehement fire is ineffectual and cannot work upon it? I have made trial of it in a most violent fire for the space of three months, and at last I found it nothing abated in weight, but much meliorated in color and goodness. So that the fire, which consumes other things, does make this more perfect. How then can it be concocted by the heat of man's body, which is scarce able to concoct Bread? And how can it impart its Virtue by Extraction, when neither Aqua Vita, nor any strong waters can alter the color or taste of it? I will set down what I have seen. The later learned men, and curious inquirers into Nature, affirm, that the Magistery, secret and Quintessence of Gold, consists in the Tincture. No small labor and pains. For those who pretend to speak of it, do it so intricately and obscurely, that they rather seem to obscure it, or not to understand it, that to discover or teach it. Know therefore, that the Tincture cannot be Extracted, but by perfectly dissolving it in strong waters. And that it cannot be dissolved, as the work requires, in common Aqua Fortis, or Royal Waters. Because the corrosive Salts in them, are not perfectly and absolutely dissolved into water. Wherefore you must learn by continual solution and Immistion, so to Distil them, that the whole substance of the Salt may be melted. Which must be done by reiterating the operation. I have informed you, what Salts are easy to be separated, the which must only be used in this work. After perfect solution, cast in that Menstruum or water, which I have often mentioned for the Extraction of Essences or colors. I have with great joy beheld it attract to itself the golden, yellow, or red color, and a white dust settles down to the bottom. We must then separate the Salt from the Menstruum. Dissolve it, and the Liquor evaporate away. And there will remain true potable Gold, the right Tincture, and that great Arcanum of Philosophers, disguised with so many riddles. So thin, that it will easily penetrate the body, and perform those wonders, which antiquity could only promise.

"Tincture of Roses."

Cut red Rose leaves with a pair of shears into small pieces. Lay them in Aqua Fortis, and they will presently dye it with a sanguine color. After three hours, change those leaves, and put in fresh ones. Until the water becomes very much colored. Then strain it out, and let the Liquor evaporate quite away, and in the bottom will remain the Tincture of Roses.

"Tinctures of Marigolds, Violets, Bugloss, and Succory flowers."

If you Extract them the former way. The Tincture of Marigolds will be yellow. Of Bugloss, Violets, and Succory flowers red. Because the colors of those flowers, is but thin and superficial. So that it expires with little heat, and is red underneath.

"Tincture of Orange flowers of an excellent scent."

Cut the Orange flowers into small pieces, Macerate them in Aqua Vita. And when the water is turned yellow, and flowers

have lost their scent, change them, and put in fresh, until the water becomes very sweet and well colored, and somewhat thick. Then strain it, and let it evaporate. It will leave behind it a Tincture, enriched with the scent and virtues of the flowers.

"Tincture of Coral."

Beat the Coral to a powder, and with a vehement fire turn it into Salt. Add an equal quantity of Saltpeter to it. Then Extract the Salt with Aqua Vita, and it will bring out with it, the Tincture of a wonderful Virtue.

Chapter XVI

"How to Extract Salts."

Salts do retain the greatest part of the Virtue of those things, from whence they are Extracted. And therefore are used so season the sick persons meat. And other ways, because they have a penetrative quality. It was a great question among the ancients, whether Salts retained the virtue of the things, or, whether they lost some in the fire, and acquired others. But it is now manifested by a thousand experiments, that the virtues do not only remain in them, but are made quicker and more efficacious.

"Salt of Lemons."

Distil the Lemons with their peels and juice. Reserve the water, and dry the rest in the Sun, if the season permits. Or do it in an oven. Put them in a pot close Luted, and Calcine it in Igne reverberationis. Then dissolve the powder in the water, and boil them in a perfect Lye. Cleanse it with a Feather, that the Dregs may settle to the bottom. Purify it, and let the Liquor evaporate. So the Salt will remain in the bottom, which is most excellent to break the Stone in the bladder.

"Salt of Pellitory of Spain."

Dry the roots, and burn it in a close Luted pot for three days, until it has been reduced to white ashes. Pour on its own Menstruum. Distil it, and Calcine it again for the third time. Then cleanse it with a Feather. Boil it in an earthen vernished Pipkin, with the white of an Egg to clarify the Salt. At length, a white grained Salt will appear.

"Salt of Cumin."

Put the roots, leaves, and flowers in a close Luted vessel, and dry them. Put them in a Potter's furnace until they are burned to ashes. In the meanwhile, distil the roots, leaves and flowers. Or, if you please, make a Decoction of them. And of that Decoction a sharp Lye. Which, being strained very clean through a Linen cloth three or four times, must be boiled to a Salt in a glass vessel. If you desire it very fine and white, strew the Salt upon a Marble, and set it in a moist place with a pan underneath to receive it as it dissolves. Cleanse the filth still away. And so this three times, until it becomes a crystal color. So reserve. In this manner Sal Alchali is made.

"Of Saxifrage."

It is made like the former. If you season your meat with it, it protects from all danger of poisoned bread or meat. Conserves from the contagion of pestilential and infectious air. The same may be extracted out not other Alexipharmacal bodies, which Princes may use at meals, instead of ordinary Salt. For they scarce differ in taste. A Salt may be made of Thapsia. It is very

good to remove the Stone in the bladder or kidneys, and to dissolve the Tartar, or viscous Concreescency. To kill the Worms, and purge the blood. To provoke sweat by being often taken, and is admirable in Venereal diseases. The Salt of Pimpernel, being taken three days, and the third month, for a man's whole lifetime, secures him from the Dropsy, Pthisick, and Apoplexy. It also preserves from infection had pestilent air. And helps in the digestion in a weak stomach. But it is to be observed, that these Salts must not be eaten every day, lest they become too familiar to the stomach, and be taken for food. There may be a Salt also extracted out of the filings of Lingnum Guaiacum, which is excellent in the French Pox, being taken as the former. By these you may learn to make other Salts.

Chapter XVII

"Of Elixirs."

Elixirs are the conservators of bodies in the same condition wherein they find them. For their virtue is to preserve from corruption, not by meliorating their state, but by continuing it. And if by accident, they cure any diseases, it is by reason of their tenuity. They have a double virtue to preserve from sickness, and continue health, not only in men, but to preserve plants also. They imitate the qualities of Balsam, and resort chiefly to the heart, brain, and principal parts, where the spirits reside. There are three kinds of Elixirs; of metals, of gems, and of plants; as of roots, herbs, flowers, seeds, woods, gums and such-like. An Elixir differs from Essences, Tinctures, and rest, because it is compounded of many things void of fatness. Therefore it cannot be an Oil, because it wants perspicuity and clearness. Not an Essence, because it is a Compound. Not a Tincture, but a mean between all, and of a consistency most like to water. Whence it had its name *Ab eliquesco*, to be dissolved or liquefied.

"To make Elixir of Pimpernel."

Dig up the roots in a convenient time and Macerate them in their water, putting some weight on them to depress them under water. When the flowers are blown gather them, and Macerate them in the same manner, in a peculiar vessel. The same must be done with seeds. Then put them in an Alimbeck, and draw out the water and Oil, until the Foeses remain dry. Then separate the Oil from the water, and circulate it in a Pelican for two months. Then take it out, and reserve it for your use.

"An Elixir of many things."

Many compositions of Elixir, are carried about, which are erroneous and false to my knowledge. And of so hard a work to extract the Oil and water, that you will more probably lose your time and cost, then gain any good by them. For they are made for pomp and magnificence, rather then for the benefit of man. Besides, I have found them often fail in the performance of what was promised from them, and cannot be made according to those descriptions. But here I will deliver one to you which will perform far more then is promised. Take the flowers of Sage, Origanum, Mugwort, Savory, Elder, Sage leaves, White Mint, Rosemary, Basil, Marjoram, Pennyroyal, Rosebuds, the roots of Betony, Pellitory, Snake-weed, White Thistle, Aristolochy, Elder, Cretan Dittany, Currants, Pineapples, Dates, Citron Pill, of each an ounce and a half. Ginger, Cloves, Nutmegs, Zedoary, Galangal, white and long Pepper, Juniper berries, Spikenard, Mace, Cubebs, Parsley seed, Cardamoms, Cinnamon, Staechados, Germander, Granes, Rose of Jerusalem, Doronicum, Ammoniac, Opoponax, Spodium, Schaeinanthus, Bdellium, Mummy, Sagapenum, Camphire, Mastick, Frankincense, Aloes, powder of Ebony, Bole-Armenick, Treacle, Musk, Galls, Mithridate, Lingnum Aloes and Saffron, of each three Drachms. Of clarified Sugar, thirteen pounds. Of Honey two. I exclude Pearl, Rubies, Jacinths, Sapphires, Emeralds and leaf Gold from the composition, because, as I have proven before, they have no operation. Especially, thus exhibited. And therefore are used in medicines by none but ignorant Physicians. Reduce all these into powder, and put them into a Pelican or blind Alimbeck, with twelve pounds of Aqua Vita, very well clarified, as though the whole work depended on it. Let it circulate in Balneo for a whole month. Take off the yellow Oil or Quintessence of all, with a Silver spoon, and add to it a Drachm of Musk and Amber, and set it by for your use in a

glass bottle close stopped. Distil the remainder, and it will afford a yellow clear water. But you cannot extract the Oil without a stink of burning. I have very exactly extracted Oil of gums, roots and seeds of the aforementioned. And mixing them together, have effected strange things with them. Most of their operations are against Poisons, and pestilential contagions. Especially, those that are apt to seize on the Spirits. For a drop of it, being anointed on the lips or nostrils, revives the soul, and keeps it in perfect senses at least six hours.

Chapter XVIII

"Of a Clyssus, and how it is made."

That there may nothing be omitted, I will now show what a Clyssus is, and how it may be made. A Clyssus is the Extraction of the spirits of every part of a plant, united in one common entity. There are in a plant, the root, leaf, flower, fruit and seed, and in every one of these parts, there is a peculiar nature. The operation is thus. Dig the roots when they are full of juice, the leaves when they are fresh and green, the flowers, when they are full blown, the fruit and seeds in due time. Extract the Spirits or Essences out of all these by Distillation, Maceration or Calcination, or any other of the former ways. But when they are all Extracted severally, on in the form of Oil, another of Salt or Liquor. Then mix them all together, so that they may be joined and united in one body, which is called a Clyssus. Some mix them in Distillation in vessels made for the purpose in this manner. They put the water, Salt and Oil in three separate cubicles of equal height and size. And tying their three necks together, and put them into one common head, which may be fit to receive them all. Close them, Lute them, and kindle the fire under. The heat will elevate the thinnest substance in all of them which will meet and mix in the head and run down the nose or spout, into the Receiver. So set them by for use. This congregation of Essences, does penetrate and search all the remote passages of the body, and is very useful in Physick.

Chapter XIX

"How to get Oil out of Salts."

I have declared many ways of Extracting Oil. Now I will show how to draw it out of Salts, that they may be more penetrative, and work more powerfully, which can be done no other way. They seem to have some kind of fat in them, yet will not burn. So that it cannot be called a perfect Oil.

"Hot to Extract Oil of Tartar."

Burn the Tartar, and reduce it into a Salt, as I have shown before. Then lay it on a Marble in a moist place, and in a few days it will turn to Oil, and run down into a dish, which you must set underneath to receive it. Thus you may easily make it into Salt. Beat the Tartar into powder, and mix an equal quantity of Saltpeter with it. When they are mixed in an Iron Mortar, set them in the fire, until they are quite burned. Grind the remaining Foces, and dissolve them in a Lye. Strain it, and let the Lye evaporate away. The Salt will settle to the bottom. Then boil some Eggs hard. Take out the yolks, and fill up their place with Salt, and in a little time it will dissolve into Oil.

"Oil of Sal Soda."

Dissolve the Salt in water. Strain it through a cloth and dry it. Lay it on a Marble and set it in a moist place. It will run down in an Oil.

"The famous Oil of Talk."

Is extracted only by the vehement heat of fire. Yet I know not at first what it was useful for. But I perceive it is much accounted of by women in their Fucus. Beat it into fine powder in an Iron Mortar, and put it into a very strong thick pot. Fasten the cover on with wire. Plaster it with Potter's clay. And let it in the Sun for three days. Then thrust it into a Potter's furnace where the flames are most violent. After three or four days, take it out, break open the pot. And if you find it not sufficiently Calcined, make it up, and set it in again. When it is burned perfectly white, lay it on a Marble, and place it in a moist room, or in a hole dug in the earth. And there let it stand for a good while, until it dissolves into Oil. Then reserve it in a glass bottle. So also is made,

"Red Oil of Sulphur."

Grind live Sulphur into a small powder, and mix it with an equal quantity of the former Oil of Tartar. Boil it three hours in a glass bottle. And when it is dissolved, strain it through a Linen cloth another glass, and set it over a gentle fire, until it thickens like clotted blood, and do dry. Then powder it, and lay in on a Marble in a moist cellar. There it will dissolve, and run down into the dish placed below. Set this Liquor, being first strained through a cloth, in a glass bottle over warm ashes until the moisture is consumed. And there will remain a red Oil of Sulphur.

"Oil of Myrrh."

Boil some Eggs hard. Cut them in the middle, take out the yolks, and fill their places with Myrrh, powdered and Seirced. Lay them in an earthen pan upon long cross sticks, that the Eggs may not imbibe the Oil again. Shut them in a moist cellar so the Oil will drop down into the pan.

Chapter XX

"Of Aqua Fortis."

Now I will recite those Distillations, which draw out neither water nor Oil, but a middle between the both. For the Terrene parts are forced up, turned into water by the vehemency of the fire. From whence they do acquire so great a heat, that corrode and burn most violently. they are extracted only in Igne reverberationis, and with great care and labor.

"How to draw Aqua Fortis, or Oil, out of Salt."

It is a piece of art discovered by very few. Take Pit-Salt, put into a glass Retort, treble Luted over, and dried. Set it in Igne reverberationis, where the flames do struggle most violently. The first time you will get but little moisture. Break the Retort, and remove the Foeces into another, pour the extracted water into them, and Distil them again. The second time thou wilt get more. Do the same a third time, and so to the tenth, until the Salt is all turned into Liquor, which is a most precious jewel and worth any labor. Some quench hot bricks in the liquefied Salt, and then Distil them with a most intense fire, as in Oil of Bricks.

"A water for the separation of Silver."

Take Saltpeter and Alom in equal quantity, beat them in a Mortar, and put them into a glass Retort Luted over three double. When it is well dried, set it in the circulating fire, that is, which is Reverberated on the top and bottom also. Stop it close, and set a large Receiver under it. For if it is too narrow, the strong Spirits will break out with a great bounce, crack the vessel, and frustrate your labor. Distil it six hours. If you Calcine the Alome fire, the water will be stronger.

"A water for separation of Gold."

Mix with the equal parts of Saltpeter and Alom, as much Vitriol, and Distil it, as before. There will proceed a water so strong, that it will even corrode the Tincture of Gold. Wherefore, if this seems too violent, take nine pounds of the former Salts, being dissolved in water, and two ounces of Sal Ammoniacum. When they are melted, set them two days in Fimo, and with hot ashes you may distil a water that will corrode Gold. If you refund the water upon the Foeces, let them Macerate and Distil it again. The water will be much stronger.

"How to purge the Phlegm from these waters,"

Without which they are of no force. Cast a little Silver into a little of this water, which, being overcharged with Phlegm, will not corrode it. But set it to heat over the fire, and it will presently do it. Pour all this water into another pot, and leave the Foeces behind in the former. So the water will be clarified.

"Oil of Vitriol."

Dissolve Vitriol in an earthen pan with a wide mouth. Let the Phlegm evaporate, then increase the fire and burn it until it becomes all red and the fourth part consumed. Put it into a glass Retort, Luted all over thrice double, and well dried, and set in Igne reverberationis, continually augmenting the fire, and continuing it for three days, until the vessel melts, and an Oil drops out without any water. Every three pounds will yield once ounce of Oil. Put it into a glass bottle, and set it in hot embers that the water, if any be in the Oil may evaporate. For so it will be of great strength. The sign of a perfect extraction, is, if it makes a piece of wood, being cast into it, smoke, as it burned it.

"Oil of Sulphur."

This is the proper way to extract Oil of Sulphur. Take a glass with a large mouth in the form of a bell, and hang it up by a wire. Place a large Receiver under it, that it may catch the Oil as it drops out of the bell. In the middle between these, hang an earthen vessel full of Sulphur. Kindle the fire, and make the Sulphur burn. The smoke of which, ascends up into the bell, condenses itself, and falls down in an oily substance. When the Sulphur is consumed, put in more, until you have the quantity of Oil which you desire. There is also another way to extract it in a greater quantity. Prepare a great glass Receiver, such as I described in the Extraction of Oil of Tartar, and Aqua Fortis. Cut a hole through it with an Emerald, and indent the edges of it, that the smoke may pass out. Set this upon an earthen pan, in which you burn Sulphur. Above this, set another vessel of a larger size, so that it may be about a handful distant through the first, and circulating about the second, may Distil out of both. So you may add a third and fourth. Pour this Oil into another glass, and let the Phlegm evaporate over hot embers. It will become of that strength, that it will dissolve Silver. And I may say, Gold also, if it is rightly made. The fume of Sulphur is congealed in Sal Ammoniacum. For I have gathered it in the Mountains of Campania, and condensed it into Salt. Nothing at all differing from that which is brought out of the eastern countries. Thus, Sal Ammoniacum, which has so long lain unknown, is discovered in our own country, and is nothing but Salt of Sulphur. I would like to know how learned men do approve this my invention. I take the earth, through which the smoke of Sulphur has arisen, and dissolve it in warm water, and purge it through a hanging receptacle described before. Then I make water evaporate. And so find a Salt nothing different, as I hope, from Sal Ammoniacum.

"Of the Separation of the Elements."

In every Compound, there are four Elements. But for the most part, one is predominant, the rest are dull and unprofitable. Hence when we spoke of separating the Elements of a Compound, we mean the separating that predominant one. In the Water-Lilly, the Element of water is chief. Air, earth and fire are in it, but in a small proportion. Hence there is but a small quantity of heat and dryness in it, because water overwhelms them all. The same must be understood in other things also. But do not think, that we intend by the separation of the Elements, to divide them absolutely, the air from the water, and the water from the earth and fire. But only by a certain similitude, as what is hotter then the rest, we call fire. The moister, water. Stones participate more of earth. Woods, of fire. Herbs of water. We account those airy, which fill the vessels and Receivers, and easily burst them, and so fly out. When the Elements are thus separated, they may afterwards be purified and attenuated. The manner of extracting them, is various according to the diversity of natural things. For some must be Calcined. Some Sublimated, other Distilled. I will set down some examples.

"How to separate the Elements of metals."

Lay your metal in Aqua Fortis, as I have shown before, till it be dissolved. Then draw out the Aqua Fortis in a bath, and pour it on again, and so again, until it be turned into an Oil of a light red, or Ruby color. Pour two parts of Aqua Fortis into the Oil. Macerate them in a glass in Fimo for a month. Then Distil them on embers till the water is all drawn out, which you must take and Distil again in Balneo, until it ascend. So you will have two Elements. By the bath the air is elevated. The water and earth remains in the bottom. The fire continues in the bottom of the former vessel. For it is of a fiery substance. This, nature, and the assuision of water, and the Distillation in Balneo will reduce into Oil again. In which you must correct the fire, and it will be perfect. You may lay metal in embers, then by degrees increase the fire. The water will first gently ascend, next the earth. In Silver, the first Oil is bluish. And in perfect separation it settles to the bottom, and the water ascends. But in Balneo, the Elements of fire and earth remain. First the earth will come out, afterwards the fire. So of Tin, the first Oil is yellow. In Balneo, the air will remain in the bottom, the fire, earth and water will ascend. Which is proper only to Tin. For in no other metal will air remain last. But in Tin, the water is first elevated. Next the fire. Last of all earth. Of Iron is made a dark reddish Oil. Of Quicksilver, a white Oil. The fire settles to the bottom. The earth and water are elevated. And so of the rest.

"How to separate the Elements in Herbs."

In Herbs there is always one Element which reigns in chief. Take the leaves of Sage. Bruise them, Macerate them in Fimo, and then Distil them. The fire will first ascend, until the colors are changed. Next the water. Then a part of the earth. The other part will remain in the bottom, not being volatile, but fixed. Set the water in the Sun six days. Then put it in Balneo. The water will first ascend, then the color will alter. And the fire ascends next, till the taste is changed. At length, a part of the earth, the rest being mixed with air, tarries behind in the bottom. In water plants, the air rises first, next the water and fire.

"How to find out the Virtues of plants."

There are no surer searchers out of the Virtues of the plants, then our hands and eyes. The taste is more fallible. For, if in Distillation, the hottest parts evaporate first, we may conclude, that it consists of hot and thin parts. And so of the rest. You may easily know by the separation of the Elements, whether a plant has more of fire, or water, or earth, by weighing the plant first. Then afterward, when the water and oil are extracted, weighing the Foeces, and by their proportion you may judge of the degrees of each Element in the composition of it, and from thence of their qualities. But the narrow limits of this book will not give me leave to expatriate farther on this subject. Wherefore I will leave the discourse of it to a particular Treatise, which I intend to set out at large on this matter.

"How to Extract Gum out of plants."

There are some plants out of which we may extract Gum. Some plants, I say, because many have none in them, and nothing can give more then it has. Fennel, and all other kinds of it, Opoponax, and such like Herbs are full of it. Nature is the best director in extracting them. For when the Sun shines very hot, and the stalks of these plants are swelled with sap, by reason of the continual increase of their juice, they open themselves in little clefts, like a woman when her labor approaches. And then the plant brings forth, as it were in travel, that noble Liquor. Which partly by the heat of the Sun, partly by a natural inclination grows clammy, and is condensed into a hard body. Hence we may learn,

"How to Extract Gum out of Opoponax."

In the summer Solstice gather the roots in the nighttime, that the heat of the Sun may not exhaust the moisture. Slice it long ways, and put it into a well vernished earthen Pipkin. Then set it upside down in a descending furnace with a Receiver underneath, to catch the falling Liquor. Make a fire about the upper part of the vessel, which will drive down a noble Gum, which must be purged in other vessels, and may be meliorated by Distillation. The same may be effected on Sagapene, whose roots must be gathered at the same time, and sliced. And being put into a vessel with a gentle fire, will drop out a glutinous Liquor into the Receiver. Which, being clarified, will harden like Gum, and is kept for medicinal uses.

"How to Extract Gum out of Fennel."

Gather the stalks of Fennel, when it is in its vigor, and the flowers begin to blow, about the full of the Moon. For then they are more succulent. Slice them into pieces of a hand long, and put them into a glass tub of a hand in wideness, and a handful and a half in length. Fill it full, and set the bottom of it, being full of little holes, into a tunnel fit to receive it. And the lower part of the tunnel into a Receiver. Then make a gentle fire about the tub at a handful distance, which may beat upon the stalks on every side with its heat, like the sunbeams. The tub thus growing hot, will exclude some drops. Which, flying from the violence of the heat, slide down through the holes of the bottom into the tunnel, and from thence into the Receiver, where they will condense into Gum, participating of the nature of Fennel, of no contemptible Virtues.