

The Twentieth Book Of Natural Magick

The Proeme

I determined at the beginning of my book to write experiments, that are contained in all Natural Sciences, but by my business that called me off, my mind was hindered, so that I could not accomplish what I had intended. Since therefore I could not do what I would, I must be willing to do what I can. Therefore I shut up in this book, those experiments that could be included in no classes, which were so diverse and various, that they could not make up a Science or a book. And thereupon I have here heaped them altogether confusedly as what I had over passed. And if God please, I will another time give you a more perfect book. Now you must rest content with these.

Chapter I

"How Sea-water may be made potable."

T is no small commodity to mankind, if Sea-water may be made potable. In long voyages, as to the Indies it is of great concernment. For while at sea men, by reason of tempests are forced to stay longer at sea then they would, for want of water they fall into great danger of their lives. Gallies are forced all most every ten days to put in for fresh water, and therefore they cannot long wander in enemy countries, nor go far, for enemies stop their passages. Moreover, in sea towns, and islands, when they want water, as in our days, in the island Malta, and in the Syrses, soldiers and inhabitants endured much hardness, and history relates many such things. Hence I thought it necessary to search curiously, whether sea-water may be made potable. But it is impossible to find out anything for this, how it may be done, unless we first find out the cause of saltiness, and what our ancestors have said concerning that matter, especially since Aristotle says, that the salt may easily be taken from the sea, because the sea is not salt of its own nature, but by the sun that heats the water, which draws out of it, cold and dry earthly exhalations to the top of it, and these being there burnt cause it to be Salt, when the moist subtle parts are resolved into thin vapors. We therefore imitating nature, by raising the thin parts by chemical instruments, we easily make it sweet. For so the nature of the sea, makes sweet waters for the rivers. There are also veins of the sea, in the deep parts of the earth, that are heated by the sun, and the vapors are elevated to the tops of the highest mountains, where by the cold superficies they meet with, they congeal into drops; and dropping down by the vaulted roots of caves, they run forth in open streams. We first fill a hollow vessel like a great ball, with Sea-water, it must have a long neck, and a cap upon it, that live coals being put under the water may resolve into thin vapors. And fill all vacuities, being carried aloft. This ill scented grossness, when it comes to touch the coldness of the head or cap, and meets with the glass, gathers like dew about the skirts of it. And so running down the arches of the cap, it turns to water, and a pipe being opened that pertains to it, it runs forth largely, and the receiver stands to receive it as it drops. So will sweet water come from Salt, and the Salt tarries at the bottom of the vessel. Three pounds of Salt-water, will give two pounds of fresh water. But if the cap of the Limbeck be of Lead, it will afford more water, yet not so good. For Galen says, that water that runs through pipes of Lead, if it be drank, will cause an excoriation of the intestines. But I found a way,

"How to get a greater quantity of fresh water, when we distill salt-water."

Make a cap of earth, like to a Pyramis, all full of holes, that through the holes, Urinals of earth or Glass may be brought in. Let their mouths stick forth, well luted that the vapor may not exhale. The cap after the fashion of the Limbeck, must have its pipe at the bottom running round, and let it drop forth at the nose of it. Set this upon a Brass Cauldron, that will hold much water. Fill it with salt water, after that the Urinals. And putting on their caps, when fire is put under, both the Urinals will drop, and the cap that contains others, by its pipe will drop our water also. For the vapors rising from the Cauldron of hot water, will make

the Urinals drop, and the cap will drop withal. But if at sea the commodity of such a vessel cannot be had. We may,

"Distill Salt-water otherwise,"

Though but little. Discorides shows the old way of Distillation. We may that way distil Sea-water in ships, which Pliny shows also. Fleeces of Wool extended about the ship, are made wet by the vapors rising from the sea, and sweet water is pressed out of them. But let us see, if,

"Salt-water may be made fresh another way,"

Aristotle says it, and Solomon before him, that all rivers came from the sea, and return to the sea. For by the secret passages underground, the waters that are sent forth, leave their earthly and dry parts mixed with the earth, and they come forth pure and sweet. He says, the cause why the Salt-water comes not forth is, because it is ponderous, and settles, and therefore only hot waters of saltwater, can run forth, for they have a lightness that overstates the weight of the salt. For what is hot is lightest. Add, that waters running through the earth are much strained, and therefore the heavier and thicker they are, the more do they continually sink down and are left behind. And the lighter they are, the more pure do they come forth and are severed. For as Salt is heavy, so sweet water is light. And so it comes, that they are sweet waters that run forth. This is the very cause why Salt-water, when it moves and is changed, is made the sweeter, or motion makes it lighter and purer. Let us see now if we can imitate nature. Fill then great vessels with earth, and set them so one above another, that one may drain into another. and thus Salt-water drains through many vessels, may leave the salt behind. I tried it through ten vessels, and it remained still Salt. My friend said, that he made it sweet through twenty vessels. Yet thus I thought to warn you of, that all earth is not fit for this use. Solinus says, that Sea-water strained through clay will grow sweet. And it is proved that the Salt is taken away, if you strain it often through the thin sand of a river. Earth that lies in covered places, and under roots, is naught, for that is commonly Salt. As also where cattle are stalled, which Columella says is naught for trees. For that it makes saltwater, what is strained from it. Black earth is naught, for it makes waters sharp, but clay grounds make sweet waters. Paxamus, Anaxagoras said, that the saltiness of the sea came from the rivers, running through salt places, communicating the quality to the sea. Some approve river gravel for this use. And the reason is this, because always sweet waters are found by the shores, and they say this happens, because they are strained through the sand, and so grow fresh coming from the salt sea. For the sweet water that is found near the sea, is not the sea, but such water as comes from the tops of hills, through the secret channels of the earth. For waters that drain forth sweet, are sweet though they lie even with the sea, and in plain places. As Apuila, where the waters drain not from the hills, they are Salt. So on the shores of Africa. But Aristotle brings an experiment from a vessel of Wax. For if one make a ball of Wax that is hollow, and shall dip it into the sea, it being of a sufficient thickness to contain, he shall find it full of fresh water, because the corpulent saltiness cannot get in through the pores of the Wax. And Pliny, by letting down little nets into the sea, and hollow balls of wax, or empty vessels stopped, says, they will draw in fresh water. For Sea-water strained through clay will grow fresh. But I have found this to be false. For I have made pots of clay, as fine and well as I could, and let them down into Salt-water, and after some days I found Salt-water in them. Also, if it were true, it is of no use, when as to sweeten one pound of water, a thousand balls of wax a day were not sufficient. But for this many vessels might be invented of porous wood and stones. A vessel of Ivy, that parts, as I said, wine from water, will not part salt from water if it drains through it. But stones are brought from Portingal, made into vessels, into which sea water put will drain forth sweet, if not he first, yet the second time, they use it to break the stone. Also, for that many Pumex and porous stones may be tried. Leo Baptista Albertus says, that an earthen pot will stopped, and put into the sea, will fill with potable water. But I have tried all earthen vessels, and I always found salt water. Aristotle in his Problems, says, it may be done,

"Another way,"

If Salt-water cannot be drank cold, yet hot, and cool again, it is better to drink. It is because a thing uses to change contrary to contrary. And Salt-water is contrary to fresh, and when it is boiled, the salt part is boiled off, and when it is cold stays at the bottom. This I tried and found false, and more Salt, for by heat the thin vapors of the water that are sweet exhale, and the Salt stays behind. And in lesser water, the same quantity of Salt makes it saltier, as I said in my distillations. I wonder such a wise man would relate such falsities. Florentinus borrowing it from him, says, if water be not good nor potable, but ill, let it be

boiled, till a tenth part of it be consumed. Then purge it, and it will be good. For Sea-water so boiled, will grow sweeter. Let me see whether it can be made so,

"Another way,"

and that in great quantity. There is a thing that being cast into large vessels filled with Sea-water, by fastening the Salt will make it fall to the bottom, or by curdling it, and so it frees the water from it. Wherefore we must think on things that have a styptic quality. The ancients tried this. the moderns have effected it. Pliny. Nitrous of bitter waters. If you put Barley flower dried to them, they are tempered.

"How sweet waters may be mended.."

Leo Baptista says, if you place a glazed vessel full of Salt, and well stopped with lime, putting oil under that no water may penetrate into it, that it may hang in the middle of the waters of a Cistern. These waters will in no time corrupt. Others add also Quicksilver. If water begins to corrupt, cast in Salt to purge it. And if Salt is wanting, put in some Sea-water. For so at Venice they draw water from St. Nicolas well for mariners that go on long voyages, because it stands so near the sea, and Salt lies hidden in it, by communicating with those water. We read in Scripture, that Elizeus did this, who at Jericho in Palestine, cast in salt into a fountain, and made it potable water, which was before bitter and corrupt. If water breeds Worms cast in Quicklime, and they will die. When we would make wine clear, beat the white of an Egg, and the troubled wine will descend if you put it in. Others cast in the dust that is on the Catlings of small Nuts, and the Spaniards cast in Gyp, to make it clear and all these we may use in waters.

Chapter II

"How to make water of Air."

If all other means fail, we may make water of air only by changing it into air, as nature does. for she makes water of air or vapors. Therefore when we want, water we may make it of air, and do as nature does. We know when the sun heats the earth, it draws forth the thinnest vapors, and carries them on high, to that region of the air where the cold is, those vapors are condensed into drops, and fall down in the rain. Also we see in summer, that in glass vessels well rinsed, and that are full of cold water, the air by coming to the outermost surfaces, will presently cloud the Glass and make it lose its cleanness. A little after it will be all in a dew and swell into bubbles, and by degrees these will turn to drops, and fall down, which have no other reason for them. But because the cold air sticking to the glass, grows thick, and is changed into water. We also see in Chambers at Venice, where there are windows made of Glass, when a gross and thick vapor sticks to the glass within, and a cold vapor prevails without, that within will turn to dew, and drop down. Again, in winter, in Brass guns, which are always very cold, and are kept in cellars, and vaulted places, where men also use to be, that the air will grow thick, and lighting upon the cold surfaces of them, the will be all of a dew, and drop with water. But to say no more: Make a large round vessel of Brass, and put into it Saltpeter, unrefined, and will fill it. Men call it Solzaao mingled with Ice. For these two mixed, as I said in the book, make a mighty cold, and by shaking them, with the wonderful force of the cold, they gather air about the vessel, and it will presently drop into a vessel underneath. A diligent artist will add more, that he may get a greater quantity of water. It suffices that I shown the way.

Chapter III

"How one may so alter his face that not so much as his friends shall know him."

Such as are taken prisoner, or shut up close and desire to escape, and such as do business for great men, as spies, and others that would not be known, it is of great moment for them to know how to change their countenances. I will teach them to do it so exactly, that their friends and wives shall not know them. Great men do not a little enquire about such secrets, because those that can dissemble their own persons, have done great matters, and lovers have served their mistresses, and parents have not suspected it. Ulysses attempting to know what the Trojans did, clothed in counterfeit garments, and his face changed, did all he would, and was not discovered. Homer,

With many scars he did transform his face,

In servants clothes, as from a beggars race.

He went to Troy,.....

And when he desired to know what Penelope and her suitors did, he transformed himself again. I shall show how this may be done in many ways, by changing the garments, hair, countenance, scars, swellings. We may so change our faces, the in some places it may rise in bunches, in other places it may sink down. And first,

"How to dye the flesh."

But to begin with the coloring of the flesh. The flesh may be dyed to last so long, or to be soon washed out. If you will have it soon washed off, steep the shells of Walnuts, and of Pomegranates in Vinegar, four or five days. Then press them forth by a Press, and dye the face. For it will make you as black as an Ethiopian, and this will last some four days. Oil of Honey makes a yellow color, and red, and it will last fourteen days or more. The fume of Brimstone will discolor the face, that it will show sickly, as if one had long kept his bed, but it will be soon gone. But if you will have it last many days firm, and very hardly to come off. Use Water of Depart, that separates Gold from Silver, made of Saltpeter and Vitriol, and especially if it have first corroded any Silver. This will last twenty days, until the skin be changed. But if you will,

"Change the hair."

I taught elsewhere how to do this. Yet I will take the pains to do it again. Oil of Honey dyes the hair of the head and beard, of a yellow or red color. And this will hold a month. But if they be hoary, white, or yellow, we may dye them black with a strong Lixivium, wherein Litharge is boiled. Also, it will notably alter the countenance,

"To add or take of hair."

An Unguent used in stoves and hot-houses, is good for that purpose, made of Orpiment and Quicklime. For this will presently make the part bald, so the eyelids and eyebrows being made smooth, will strangely metamorphose a man. We can also make the hair grow suddenly, with Water of Honey, and the fat of an Eel and Horse, as I said. One may thus,

"Make his face swelled, pressed eon, or full of scars."

Nothing does more deform the visage then the stinging of Bees. We can make scars with caustic herbs, by applying them, and letting them lie on for a little time. Tumors and cavities are made by using to the part milk of Tithymal, as to the mouth, nose, eyes, especially where the skin is off, that by this remedy alone the face is deformed. So you may do the Cods and testicles. Water of Cantharides smeared on, does presently cause bladders and humors. Turbith beaten, and boiled, and anointed on,

makes all swell where it touches, chiefly the testicles. The powder of the Yew, does so ulcerate the skin, and people will think the man is most miserable, and in a sad condition. The remedy is the juice of the Poplar, or Oil of Poplar. The fume of Brimstone and burnt straw will discolor the face, as hypocrites do, who by such means alter their countenance. Mingle together the feces of Aquafortis one ounce, Pickle and Curcuma, of each one Drachm, with oil to the form of an Unguent, and anoint your face, it will make it black. When you will wash it with cold water, it will come to its former complexion. Comedians and tragedians, when they act on the stage, they smear their faces with Lees of Oil to change them, that such as their acquaintance may not know them. Because the stinging of Bees, Wasps, Hornets, do so change the face, making the nose, mouth and other parts to stand awry, and to be full of swellings and depressions. If any man wash his skin with the decoction of Hornets or Wasps, the place will so swell that it will make men suspect some disease, yet it is without pain. The remedy is Theriot drank, or smeared on the part. And this is the fraud that false women use to counterfeit themselves to be with child. Beat together Oil Lees, coals of a Vine and Pomegranate pills. And mingle them, and if you touch your face with this liniment, you shall make it exceeding black. But the juice of sour Grapes or Milk will wash it off.

Chapter IV

"That Stones may move alone."

The ancients say, that the stones called Prochites and Astroites, laid upon some other plain stone, will move of themselves, if you put Vinegar to them. The way shall be this. Let a plain well polished, on the outward surfaces, Porphyry Marble stone, lie beneath. Lay upon this the stone Trochites or Astroites, whose outward surfaces, is made smooth also. Then put to them a little Vinegar or juice of Lemons. Presently of themselves will the Trochites, as well as the Astroites, without anything moving them, go to the declining surface. And it is very pleasant to see this. Cardan says, that such stones have a thin moisture in them which by the force of the Vinegar, is turned into a vapor. and when it cannot get forth, it tumbles the stone up and down. There is the beginning of a thin vapor, but it comes not forth. Because it is credible that the passages are very narrow. I should think that air is shut up in the veins of it. For it is probable, where you shall see substances of diverse colors. Wherefore Vinegar, because it is subtle of parts, goes in, and drives out the air, which passing out by the Vinegar, moves the stone. Yet I have found open passages in their veins. For the Vinegar entering in the joints, forces the stone to move itself. The Alabaster stone, called vulgarly Lodognium, moves excellently. For it is distinguished by diverse veins, and varieties of stones. And I have seen a piece, not only of one pound, but of four pounds to move itself, and it was like a Tortois. And when the stone began to move, it seemed like a Tortois crawling. That kind of Marble moves by itself with Vinegar, which is called Brocadello, which is compounded of diverse and mingled parts. Also with Vinegar does that spotted Marble walk. Which is spotted with red, yellow, and brown spots. They call it the Lowsie stone, and it make the beholders to wonder at it. If the Marble be spotted underneath, and be above all of one color and hard, or beneath all of one color and hard, and the above is diverse colors, when Vinegar is poured on, or any sharp Liquor, it runs presently to the declining part. Sometimes in circles, sometimes by jumps, and sometimes hastily moving itself.

Chapter V

"How an Instrument may be made, that we may hear by it a great way."

In my Optics, I showed you Spectacles, wherewith one might see very far. Now I will try to make an instrument, wherewith we may hear man miles. And I will search out a wood, wherewith that may be performed better and with more ease. Therefore to find out the form of this instrument, we must consider the ears of all living creatures, that hear best. for this is confirmed in the principles of natural philosophy, that when any new things are to be invented, nature must be searched, and followed. Therefore to consider of animals, that have the quickest hearing, we must think of those that are the most fearful. Nor nature takes care for their safety, that as they have no great strength. Yet they might exceed others in hearing, and save themselves by flight. As the Hare, Coney, Hart, the Ass, Ox, and the like. These creatures have great ears, and always open toward their foreheads. And the open passages are to carry the sound from the place whence it comes. Hares therefore have long ears standing up high. Pollux. But Festus calls the Hare, Auritum, because of its great ears, and quickness of hearing. The Greeks call the Hare Lagos from the great ears. For La in composition augments, and Os signifies an ear, and it was fit that a fearful creature should hear well, that it might perceive dangers farther off, and take care for itself in time. The Egyptians thought the Hare so quick of hearing, that it was their Hieroglyphic for hearing. The Coney is of the same nature, and has the same kind of ears. Cows have great hairy ears. She can hear a Bull roar when he seeks to Bull a Cow, thirty Furlongs off, as giving this token of his love. Aelian. A Hart has greater and longer ears, as it is a fearful creature. If he holds his ears up, he perceives sharply, and no snares can take him. But if he holds his ears down, he is easily slain. Aristotle and Pliny from him. When they raise their ears, they hear quickly. When they let them fall, they are afraid. And not to go over all creatures that have large right up open ears, I say those that have such ears, are of most perfect hearing. I shall show now by the contrary, that such creatures which have short small ears, and not so visible, are of dull hearing. Great part of fishes want ears, and such as have only holes and no ears, must needs hear more deafly. For the outward ears are made by nature, that the sounds might be conveyed to the ears by them. Adrianus Consul of Rome, is a most clear witness of this, who having this sense hurt, made hollow catches to hear better by. And these he fastened to his ears, looking forward. And Aristotle says, that Horses, Asses, Dogs, and other creatures that have great ears, do always stir them about, and turn them to hear noise. Nature teaching them the use of those parts. And we find that they hear less that have heir ears cut off. Wherefore it is fit, that the form of the instrument for hearing, be large, hollow, and open, and with screws inwardly. For the first, if the sound should come in directly, it would hurt the fence. For the second, the voice coming in by windings, is beaten by the turning in the ears, and is thereby multiplied, as we see in an echo. The Sea-Periwinkle is an argument to prove it, which being held to the ear makes a light noise. Now it remains to speak of what matter it must be made. I think of porous wood, for the holes and pores are passable every way, and being filled with air, they found with every small stroke. And among the porous wood, is the Ivy, and especially the tree called Smilax or Woodbind. For a dish made with Ivy, will let out the water as I said. Wherefore Pliny, speaking of the Woodbind, says, it is proper to this matter, that being set to the ears, it will make a small noise. And in another place, I said that the Woodbind-Ivy would sound, if set to the ear. Therefore fit your instrument to put into your ear, as Spectacles are fitted to the eyes.

Chapter VI

"How by some impostures we may augment weight."

I have set down some impostures here, that such as handle with wicked men, may take heed that they be not deceived. As,

"To augment the weight of Oil."

Water is mingled with the oil, that the fraud may not be known. Let it be done with troubled waters, as with the decoction of Wood, Rapes, Asphodils, that it may the harder be discerned from it. Or else they put the choicest Gum Traganth into water for two days. Then they Bray it in a Mortar, always putting water to it, to melt the gum. Add these to the oil dropping forth,

and they will be turned to oil. By the like fraud almost,

"Silk is made to weigh more,"

They put it upon the vapor that rises from boiling water, and this makes it swell with moisture, and grow heavier. Others Bray one ounce of Gum Arabick, and being well passed through a sieve, they mingle it with the decoction of Honey. They dissolve this mixture into water, and wet the Silk with it, and then let it dry. Others keep it in the green leaves of a Walnut tree. I you will,

"Increase the quantity of Honey."

Add to it the meal of Chestnuts of Millet, and that augments it, and it cannot be known. So you may,

"Increase the weight of Wax."

Add to the Wax, Bean-meal, excellent well beaten. And this will burn candles without any excrement. For it increases the weight and bigness, and the fraud is scarce discerned. So you may,

"Augment Soap."

If you mingle the ashes of Oxen's shank-bones, well burnt in Potter's ovens, or White Brimstone. For you shall augment the weight and quantity, without and distinction of it. If you would,

"Counterfeit Pepper,"

You may gather green Juniper berries, and let them dry till they shrivel. Then mix them with grains of Pepper. Others gather great black Vetches, and first they boil them with wild Pepper. For swelling in the water, when they come to be dried, they become wrinkled. I did sophisticate them so, that I deceived in sport the best Apothecaries. And afterwards, I did in mirth discover the fraud. Take the berries of the ripe red Sanguinaria. These when they are dried, will be so shriveled, and like to Pepper, that any man almost may be deceived by it, unless he tastes of it. So we may,

"Increase the Weight of Wheat."

By setting a vessel of Wood within it, full of water or Vinegar. For as Pliny says, it will drink it in.

Chapter VII

"Of the Harp and many wonderful properties thereof."

The Harp has some properties in it, and things worthy to be observed, which I shall propound here. First, I shall mention some wonderful effects that the ancients speak of. Then how they may be done, or how the ancients did then. Since Music is now more adorned and noble, then it was among the ancients (for then it was more rude and imperfect) and yet in our days it does not perform those operations. It is certain that musical tunes can do much with men, and there is no heart so hard and cruel, but convenient and sweet harmony will make it yield. And on the other side, harsh Music will vex and harden a man's mind. Musaeus discovers, that verse and songs are a most delightful thing to a mortal man. And the Platonists say, that all things living

are charmed by Music. And there are many effects observed of it. Drums found in the wars to provoke those that are slow to fight. And we read that the ancients did such like things. One Timotheus, a musician, as often as he pleased would pay a Phrygian tune, and so enrage the mind of Alexander, that he ran presently to the wars. And when he would do otherwise, he changed his tune, and took off all his courage making him lazy, and would then draw him being grown effeminate, to banquets and feasts. And Plutarch says, that when he heard Antigenida playing melodies with a Pipe, that they called Harmatii, he was so inflamed, that he rose in his arms, and laid hold of him that sat next to him. Cicero reports, that Pythagoras made a young man more calm by a flower tune, who was a Tancomonite, and was Whittled with Wine, and mad for a Whore, and spurred forward by a Phrygian tune. For being a Corriual, he fought to set the house on fire where the Whore was. And the same author says, if young men are provoked by the sound of flutes to commit any wickedness, if the piper plays but a flower tune, they are called off again. For by the gravity of the Music their petulant fury is set aside. Empedocles, when one sets upon his host, that provoked him with reproaches and ill language turned the burden of his song, and so assuaged the fury of his anger. Theophrastus is reported to have used musical tunes to repress the passions of the mind. And Agamemnon departing from his country to go to Troy, doubting of the Chastity of Clytemnestra, left a Harper, who with Music did so incite her to Continency and Chastity, that Egystus could not enjoy her till he had killed the Harper. The Thracian Orpheus by the playing on his Harp, made barbarous nations civil who were as hard as stones to be softened. Music charms the tender ears of children, and Rattles will make them quiet, and hold their peace when they cry. Wherefore Chrysippus is reported to have written a peculiar song for Nurses. Also wild beasts are tamed with musical tunes. Arion the Harper made friends of the Dolphins that want reason, and they carried him safe to the shore, when he was cast into the sea. Strabo says, the Elephants are allured with Drums. Stags are held with sounds, and caught with sweet Music. The Swans under the north wind are conquered by the Harp and musical tunes. Little birds are enticed to the net with Pipes. And the shepherds Pipe commands to the sheep, when they wander too far to field, to stand still. In Mysia, when Horses back Mares, a man sings to them as it were a marriage song, and the mares are so taken with the Music, that they become great with foal, and they bring forth most gallant Colts. Pythocaris, a musician, when he sang earnestly swift notes to his pipe, is said to have made Wolves become more tame. And which is far more wonderful, antiquity cured wounds, diseases, and poisons by melody, as history relates. Terpander and Aaron of Methymna, cured the men of Lesbos and Jonia of great diseases. Asclepiades, a physician, cured deaf people by a Trumpet, and by singing he stilled the seditious people. In time past there was great store of Spiders in Aquilia, which they commonly call Tarantula. When the sun is extremely hot, they bite most pestilently, and venomously. For this danger this healthful remedy is only found out. That he that is bit must be charmed with much singing of musicians, and many musical instruments. The sick, though he want all sense, so soon as he hears the Flute play, as if he rose from a dead sleep, arises from the earth, and dances with the Music. And if the musicians cease to play, he presently faints and grows stupid and as the Music strikes up, so he does dance the more. So to several diseases the ancients appointed several Music. For the Dorick melody caused prudence, chastity, and learning. The Phrygians made men to fight, and grow furious, which the Flute will do also. Therefore Aristoxenus, in his plays, when he could not prevail with Dorick Music, he changed to Phrygian melody that agreed with them. The Lydian harmony sharpens wit to those that are dull, and brings in a desire of heavenly things, upon those that are oppressed with a love of earthly things. Aristotle in his Politicks, do we not read that the Lacedaemonians rejected that kind of Music called Chromaticum, because it made those that heard it too effeminate? Whence I think it is not against reason, that the same may be done by the Lute or Harp alone, but what is done by art or cunning, is more to be wondered at, which none can deny. But if we would seek out the cause of this, we shall not ascribe it to the Music, but to the instrument, and the Wood they are made of, and to the skins. Since the properties of dead beasts are preserved in their parts, and of trees cut up in their wood, as I said elsewhere in this book. And to take the most noted examples, if we will,

"Frighten Sheep,"

There is antipathy between Sheep and Wolves, as I said often, and it remains in all their parts. So that an instrument strung with Sheep strings, mingled with strings made of a Wolf's gut, will make no Music, but jar, and make discords. Pythagoras. If you will,

"Drive away Horses."

Horses are frightened in battle by Elephants, and a Camel naturally hates a Horse, as Aristotle and Pliny say. And some report

that Horses will burst if they tread upon the Wolf's footing, when the horseman rides them. So that if drums be made of an Elephant, Camel, or Wolves skin, and one beat them, the Horses will run away and dare not stand. By the same reason, if you will,

"Drive away Bears,"

A Horse, that is a creature made obedient to man, has a capital hatred with a Bear, that is a beast hurtful to man. He will know his enemy that he never saw before, and presently provide himself to fight with him, and he uses art rather than strength for it. And I have heard that Bears have been driven away in the wilderness by the sound of a drum, when it was made of a Horse skin. Again if we would,

"Make Horses gentle,"

Aelian writes that by the playing on a Flute, the Lybian Horses are so allured, that by this means they will become gentle for man's use. And will not be so furious. They will follow the groom that feeds them, wherever he pleases to lead them with his music. When he plays and stands, they stand still. And if he plays eagerly on the Flute, they are so ravished with it, that they cannot hold crying, and let tears fall. Those that keep Horses make a hollow pipe of the tree called Rose-Laurel, and they go among the herd with this, playing on it they charm them all. Theophrastus has told us that the herb Oenothera will tame wild beasts, and make them drunk. And as I said elsewhere, Theophrastus his Oenothera is our Rose-Laurel, against Dioscorides. It is reported that,

"Women will miscarry,"

If Fiddle strings be made of Serpents, especially of Vipers, for being put on a Harp and played on, if women with child be present, they suffer Abortion, and Vipers are wont to do as much by meeting them, as many write. Hermenias, a Theban, endeavored,

"To cure many of the Sciatica,"

in Beotia, by Music. And it may be his instrument was made of Poplar, for Dioscorides says, that the juice of the Poplar tree bark, will cure them, or of willow. Also Hellebore is good,

"For mad men,"

And Xenocrates cured mad men with musical tunes, which instruments might be easily made of Horses shank-bones, or the hollow stalks of Hellebore. Thales Milerius used a Harp,

"Against the Plague,"

which could be of not other Wood than the Vine-tree. Since Wine and Vinegar are wonderful good against the pestilence, or else of the Bay tree, whose leaves bruised and smelled to, will presently drive away pestilent contagion. Theophrastus writes that some are excellent,

"Against the bitings of vipers."

with Harps, Flutes, or other instruments, which instruments might be made of Juniper, Ash, Bays, the Stag's bones, Ferula, Elder, Vine-tree, and such like many more. Pythagoras,

"Against drunkenness,"

used Music also. For he withheld a young man that was drunk from burning the house of his Corival, may be with an instrument of Ivy, or Almond tree wood, especially that as it is of the wild tree. For these afford great remedy for drunkenness. Timotheus did so inflame the mind of Alexander the Great, that he was mad to fight, and when he would he changed his mind, and drew out all his courage. And he endeavored,

"To draw his sluggish and yielding thoughts from battle to banquets,"

And so carried him the way he pleased, which could not be done, but by Vine-wood, or Wood-Laurel. The instrument of the Harper, who when Agamemnon went from Greece to Troy, did keep Clytemnestra chaste by, his Music was made of Willow, called Agnus Castus. For the women in the feasts of Ceres, among the Athenians, put Willow park leaves under them, to keep them chaste when they lay in bed, for so they extinguished the desire of venery. The Pythagoreans used some tunes,

"For sleep and waking,"

For when they would sleep overcome diverse cares, they played certain tunes, that easy and quiet sleep might come upon them. And when they arose, so soon as they went out of their chambers, with some Music they would dispel all confusion and dullness of sleep, that they might set to their work. It is said that the Aeolian Music does still the tempests of the mind, and rocks men asleep. They provoked men to sleep with the Almond tree, or Vine-tree wood, and they drove sleep off with Hellebore. Take this experiment that is common,

"A Harp that is played on, will move another Harp strung to the same height."

Let the strings be stretched alike, that both may come to the same melody perfectly. If you shall strike one of the base strings, the other will answer it, and so it is in the trebles, yet they must be at a moderate distance. And if this be not very clear, lay Straw upon it, and you shall see it move. But Suetonius Tranquillas, in his book, De Ludicra Historia, says, that in winter some strings are struck, and others sound. Thus any ignorant man may tune a Harp, if one Harp be rightly tuned for Music, and lie still, he by stretching the strings of the other, and by slackening them, and striking as the string of the Harp that lies still guides him. So of the rest. But if you will,

"That a deaf person may hear the sound of the Harp."

Or else stop your ears with your hands, that you may no hear the sound. Then take fast hold of the instrument by the handle with your teeth, and let another strike on it, and it will make a musical note in the brain, and may be a sweeter noise. And not only taking hold of the handle with your teeth, but the long neck, near the Harp, and by that you shall hear the sound perfectly, that you may say that you did not hear the Music, but taste it. Now remains what I think is very pleasant.

"To make a Harp or other Instrument be played on by the wind,"

Do thus, when the wind is very tempestuous set your instruments just against it as Harps, Flutes, Dulcimers, Pipes. The wind will run violently into them, and play low upon them, and will run into the holes of the Reeds. Whence if you stand near and listen, you will hear most pleasant Music by consent of them all, and will rejoice.

Chapter VIII

"To discover Frauds whereby impostors working by natural means, pretend that they do them by conjuration."

Now will I open cheats and impostors, whereby Jugglers and impostors, who fain themselves to be Conjurers, and thereby delude fools, knaves, and simple women. I, to cast down their fraud, by admonishing simple people not to be deceived by them, shall open the causes thereof. And first,

"By what means they fain, that they can discover Treasures,"

The greater part of Cozners, when they are themselves very poor and most miserable of all men, they profess themselves able to find our treasures, and they promise to other men what they want themselves. and they use four rods that are double forked, the tops whereof sticking close together crossways, they hold the lower parts of them with their hands open, near their belly. They seem to mumble some verses, and the rods fall down, and where they fall, they bid those men to dig that would find treasure. The cause is, for that the rods seem to stand fast in their hands, and yet have no hold at all, and they seem always ready to fall. And if they remove never so little from their place, they presently fall down. Also, there are in men's arms and hands pulsations of arteries, which although they seem immovable, yet they do move the hands unseen, and make them to tremble. Yet some metal masters who report that these forked rods are a great help to them in finding out of mines. For with a knife they cut the Hazel tree, which they say is the fittest of all to find out veins, especially if the Hazel comes upon any mineral vein. Others use diverse trees, as the metals are diverse. For they use the wands of Hazel for veins of Silver, Ash for Brass, wild Pilch tree for Lead, chiefly White Lead, or Brass, or Gold. Then they take the rod by both ends, and clinch their fists, but they must hold their fingers clinched upwards toward heaven. And that the rod may be lifted up there where the ends meet. Thus they wander here and their through mountainous places, and when they set their foot upon a vein, the rod will presently turn about, and discover a vein in any place. When they come off from it, the rod will be quiet. And they say the veins have so great force, that they will bend the boughs of trees that grew near, towards them, as Agricola writes more largely.

"Another merry conceit remains, that three scrolls of paper not touched, shall change their places."

This cannot be done but an ignorant man will admire it. Make three long scrolls of paper, or of Linen, and let them be one longer then another, equally. For all of them being made equal at the lower end, and turned about equally, they take one the others place, and change their situation. Put the longest in the middle or in the first place, they change their situation. If the longest be put last, they hold as they were. No man but will think this to be done by the Devil, yet this proceeds from no other cause, but because in the end of the revolution, the longer remains, and the last from whence it rises stays behind. Aristotle in his Problems seems to mean this, why a section of paper, if any man cut it off straight from the plain basis in measuring, it will be straight when it is turned about. But if it be bent, it will be twisted? Whether this falls out, that when the rounds of another section are placed on the same plain, that section declining, is not equally opposite, but somewhat less. Wherefore when you part them, those rounds that are contained in the same plain, will make a line, that belongs to their own order, etc. Some were deceived, who thought this proceeded from the force of words, and they answered all questions by it as from an oracle. For if they changed their places, all should go well and proper, otherwise they should have ill success. And they would not change their superstitious belief, and with reason and experience, because they had so believed many years. If you will have,

"Money to turn about upon a point,"

I often have seen impostors that to cheat women used this fraud. That two scrolls of paper, or some other light matter upon a plain, should lift up themselves, and move alone. If you search in Barley, you shall find a small ear of wild Oats, that is black and wrested, like the foot of a Locust. And if you bind this with Wax to the top of a knife, or point of a Stile, and shall sprinkle softly some drops of water upon them, when it feels the wet, it will twist like a Harp string, and the paper will rise, and so will money turn on the point of the Stile. If we will,

"Discover theft,"

We may do it thus, and recover what is lost. There are many superstitions for theft that stand by natural reasons, and cheaters ascribe them to the virtue of words. There is the Eagle stone, so called, it is as one great with child. For shake the stone, and it rings in the belly. If then any one powder this, and put it into good bread baked upon the embers, and give it to a thief, the

thief cannot swallow it. When he has chewed it, but he must either be choked, or discovered for a thief. For he cannot swallow it being baked with that, as Dioscorides says. The natural cause for this is, because the powder that is mingled with bread is do dry, that it makes the bread extremely dry, and like a pumice, that it cannot be swallowed, when it comes into the throat. Add to this, that he who seeks to find a thief, must say to the standers by, whom he suspects that he will work wonders. Whereupon, he that is the thief, has his throat very dry, by reason of the fear and terror he is in. So that he cannot swallow this bread with the powder in it. There is another cunning invention. They write the names of those that are suspected upon scrolls of paper, and make them fast in clay bullets, and put them under water. The pellets being well wet, open, and the light scrolls of paper rise above the water. And this causes the spectators to admire, and to suppose it is some diabolical art. The clay pellets are made as many as the standers by are, and the names writ in the scrolls, are wrapped up in the pellets. For the scrolls that are not very fast wrapped in the pellets, are not very fast bound in. But if you will have them never to open, you shall work it well with the scroll, and so it will never come forth. If you will have,

"Flowers to fall from a tree."

When I saw this first I was amazed, but I asked the reason, and he showed me it. It is a property of Mullens, that when in the morning it opens the flowers, if the plant be shaken gently, the flowers drying by degrees will fall all to the ground. And one that sees it will think it comes from magical art, if he that shakes them off shall mumble some idle words. Also,

"Women are made to cast off their cloths and go naked."

To let nothing pass that Jugglers and impostors counterfeit. They set a lamp with characters engraved upon it, and filled with Hare's fat. Then they mumble forth some words, and light it. When it burns in the middle of women's company, it constrains them all to cast off their cloths, and voluntarily to show themselves naked unto men. The behold all their privities, that otherwise would be covered, and the women will never leave dancing so long as the lamp burns. And this was related to me by men of credit. I believe this effect can come from nothing but the Hare's fat, the force whereof perhaps is venomous, and penetrating the brain, moves them to this madness. Homer says, the Massagetæ did the like, and that there are trees whose fruit cast into the fire, will make all that are near to be drunk and foolish. For they will presently rise from their seats, and fall to leaping and dancing. There are thieves also,

"Who bore through the head of a Pullet with an Awl, and yet maintain that she is alive."

And they say it is don by conjuration, and they promise to make a man hard by this, that he cannot be wounded. For with some characters fraudulently invented and bound under the wings, they thrust through the head of a Cock with a Bodkin, and staying awhile, they pull it forth again, and the Pullet flies away without any wound or loss of blood. When I considered of this, and opened a Pullet's head, I found it to be parted in the middle, and the knife or Bodkin passing through that place, hurts not the brain. I have often tried it, and found it true. There is also a,

"A remedy for the Sciatica,"

Great Cato, the chief man for all commodity, and the master of all good arts, as Pliny says, in his books of husbandry, he used some charms against the pains of Sciatica, saying, that if anything be dislocated, you may charm it whole again by this means. Take a green Reed four or five foot long, cut it in the middle, and let two men hold them to the Huclebones. Begin to play with another, S.F. motas vata daries dardaries astataries dissunapiter, until such time as they join together, and shake about your sword, when they come together, and on touches the other. Take that in your right hand, and cut it asunder with your left. Bind it to the place dislocated or broken, and it will be whole. See how so worthy a learned man breaks forth into such madness. Nor did he know by his great learning, that without the force of words, green Reeds cut long ways, will turn round themselves and meet, if they be pendulous, as the wands of Willows, and Brambles will do. Theophrastus gives the reason why they turn round, in his books, De Causis Plantarum. Moreover we read in Dioscorides, that a reed with Vinegar, applied to the Huclebones will cure the Luxation of the loins, without words of superstition.

Chapter IX

"Of some Experiments of a Lamp."

I much rejoiced when I found among the ancients, that Anaxilaus the philosopher, was often found to make sport with the Snuff of a candle and the wick, and by such delusions would make men's heads show like monsters, if we may believe Pliny. By taking the venomous matter that comes from Mares newly having taken Horse, and burning in new lamps, for it will make men's heads seem like horse heads, and such like. But because I gave no credit to these things, I never cared to try them. But take these for truth.

"To make men seem like to Blackmores,"

Take Ink, but the best comes from Cutles. Mingle this with your lamps, and the flame will be black. Anaxilaus is reported to have done this, for often by mingling Cutles Ink, he made the bystanders as black as Ethiopians. Simeon Sethi says, that if any man shall dip a wick in Cutles Ink, and Verdigrease, those that stand by will seem partly brass color, partly black, by reason of the mixture. And we may imitate this in all colors. For setting aside all other lights that might hinder it, for else the other lights will spoil the sport, and if you do it by day, shut the windows lest the light come in there and destroy the delusion. If the lamp be green glass and transparent, that the rays coming through may be dyed by the color of the medium (which is of great consequence in this) and green Coppras be mingled with the oil, or what moisture it burns with, and they be well ground together, that the liquor may be green. Make your cotton of some Linen of the same color or Bombast. This being smeared with it, must burn in that lamp. The light that is opposite against you, will show all faces of the beholders and other things to be green.

"To make the face seem extreme pale and lean,"

This is easy. Pour into a large glass very old Wine or Greek Wine, and cast a handful of Salt into it. Set the glass upon burning coals without a flame, let the glass should break. It will presently boil. Put a candle to it, and light it. Then put out all other lights, and it will make the faces of the bystanders to be such, that they will be one afraid of another. The same falls out in shops, where bells and metals are melted, for they seem so strangely colored in the dark, that you would wonder at it. Their lips look pale, wan, and black and blue. Also let Brimstone, when it burns, be set in the middle of the company, and it will do the same more powerfully. Anaxilaus the philosopher was wont to work such delusions. For Brimstone put into a new cup, and set on fire, and carried about, by the repercussion of it when it burns, makes the company look pale and terrible. That often happened to me when at Naples I walked in the night in the Leucogean mountains. For the Brimstone burning of itself, made me look so.

Chapter X

"Of some mechanical Experiments."

"The Flying Dragon,"

Or the Comet. It is made thus; Make a quadrangle of the small pieces of Reeds, that the length may be to the breadth, on and half in proportion. Put in two diameters on the opposite parts or angles, where they cut on the other. Bind it with a small cord, and of the same bigness. Let it be joined with two others that proceed from the heads of the engine. Then, cover it with paper or thin linen, that there be no burden to weigh upon it. Then from the top of a tower, or some high place, send it out where the wind is equal and uniform, not in to great winds, lest they break the workmanship, nor yet to small, for if the wind be still, it will not carry it up, and the weak wind makes it less labor. Let it not fly right forth, but obliquely, which is effected by a cord that comes from one end to the other, and by the long tail which you shall make of cords of equal distance, and papers tied unto them. So being gently let forth, it is to be guided by the artificers hand, who must not move it idly or sluggishly, but forcibly. So this flying sail flies into the air. When it is raised a little (for here the wind is broken by the windings of the houses) you can hardly guide it, or hold it in your hands. Some place a lantern in it, that it may show like a comet. Others put a Cracker of paper, wherein Gunpowder is rolled, and when it is in the air, by the cord there is send a light match, by a ring or something that will abide. This presently flies to the sail, and gives fire to the mouth of it, and the engine with a thundering noise, flies into many parts, and falls to the ground. Others bind a Cat or Whelp, and so they hear cries in the air. Hence may an ingenious man take occasion, to consider how to make a man fly, by huge wings bound to his elbows and breast. But he must from his childhood, by degrees, use to move them, always in a higher place. If any man think this a wonder, let him consider what is reported, that Archytas the Pythagorean did. For many of the noble Greeks, and Favorinus the Philosopher, the greatest searcher out of Antiquities, have written affirmatively, that the frame of a Pigeon made of wood, was formed by Archytas, by some art, and made to fly. It was so balanced in the air by weights, and moved by an aerial Spirit within it.

Soli Deo Gloria

FINIS.