

The Sixteenth Book Of Natural Magick

The Proeme

I make two sorts of secret marks, which they vulgarly call Syfers. One of visible marks, and is worthy of a treatise by itself. Another of secret marks, whereof I have attempted to say something in this present volume, and what are the consequences thereof, for the use of great men, and princes, that take care for things absent, and write to some man that knows this invention. I shall set down plainly some examples. But these things and the consequences of them must be faithfully concealed, lest by growing common among ordinary people, they be disrespected. This is that I shall publish.

Chapter I

"How a writing dipped in diverse Liquors may be read."

here are many, and almost infinite ways to write things of necessity, that the characters shall not be seen, unless you dip them into waters, or put them near the fire, or rub them with dust, or smear them over. I shall begin with them that are read by dipping them into waters. Therefore,

"If you desire that letters not seen may be read, and such as are seen may be hid."

Let Vitriol soak in boiling water. When it is dissolved, strain it so long till the water grows clear. With that Liquor write upon paper. When they are dry, they are not seen. Moreover, grind burnt Straw with Vinegar, and what you will write in the spaces between the former lines, describe at large. Then boil sour Galls in white Wine, wet a sponge in the Liquor. And when you have need, wipe it upon the paper gently, and wet the letters so long until the native black color disappears. But the former color, that was not seen, may be made apparent. Now I will show in what Liquors paper must be soaked to make letters to be seen. As I said, dissolve Vitriol in water. Then powder Galls finely, and soak them in water, let them stay there twenty-four hours. Filter them through a Linen cloth, or something else, that may make the water clear, and make letters upon the paper that you desire to have concealed. Send it to your friend absent. When you would have them appear, dip them in the first Liquor, and the letters will presently be seen.

"That dipping a Linen rag in water, the letters may appear."

Dissolve Alom in water, and with it make letters upon white Linen, sheets, napkins, and the like. For when they are dry, they will presently vanish. When you will have the visible, soak them in water, and the Linen will seem to be darkened. But only where the Alom has written, it will not. For the letters will grow so clear, the you may read them. For where Alom, Vitriol, and the astringents are dissolved, those parts will admit water last. So,

"White letters are made with waters."

Litharge is first powdered and cast into an earthen pot that has water and Vinegar mixed. Boil it and strain it and keep it. Then write letters with Citron Lemon juice. These are added to them when they begin to dry. If you dip them in the Liquor kept, they will appear clearly and very white. If women's breasts or hands be wet in it, and you sprinkle the said water on them, they will grow white as Milk. Use it. If at any time you want these, if you please,

"A stone dipped in Vinegar will show the letters."

Make letters with goat fat upon a stone. When they are dry, they will not be seen. If the stone be dipped into Vinegar they presently come forth, and seem above the stone. But if you would have letters written with water only, appear black, that the better you may be provided, and more speedily for a voyage, Galls and Vitriol finely, and strew this powder on your paper. Rub it with a cloth, and polish it well, that so it may stick to the paper and be like it. Powder Juniper Gum, which Scriveners call Vernish, and add it to the rest. When you would use it, write with water or Spittle, and they will be black letters. There are many such arts, too tedious to relate.

Chapter II

"How letters are made visible in the fire."

I shall show the ways how letters are not made visible by the fire, or not, unless light interpose, or may be read when they are burned. But,

"To make letters visible by fire."

So we may bring forth letters written between the verses, and in the close setting together, or larger distances of syllables. Let the epistle contain some void space, that the letters may not be seen, and if this be intercepted, it will hardly be read. If you write with the juice of Citrons, Oranges, Onions, or almost any sharp things, and you make it hot at the fire, their acrimony is presently discovered. For they are undigested juices, whereas they are detected by the heat of the fire, and then they show forth those colors, that they would show if they were ripe. If you write with a sour Grape that would be black, or with Cervises, when you hold them to the fire, they are concocted, and will give the same color they would in due time give upon the tree, when they were ripe. Juice of Cherry, added to Calamus, will make a green, so also Sow-bread, a red. So diverse juices of fruit will show diverse colors by the fire. By these means, maids sending, and receiving love letters, escape from those that have the charge of them. There is also a kind of Salt called Ammoniac, this, powdered and mingled with water, will write white letters, and can hardly be distinguished from the paper. But hold them to the fire, and they will show black. Also,

"Letters that cannot be read unless the paper be burnt."

For the mixture will be white, and nothing will be seen, but when it is burnt, the paper will be black, and the characters will be white. Take the sharpest Vinegar and the white of an Egg. In these, steep Quicksilver, and stir it well, and with that mixture make letters on the paper. Burn the paper in the fire, and the letters will remain unburnt. Or make the letters on the paper with Gum, or any kind of Salt or Lime. These being they cannot be seen at the fire, when the paper is burnt and made black, they will appear white. If you will, you may,

"Write letters that cannot be seen but by interposition of fire."

Do it thus. Mingle Ceruse, or some other white color, with Gum Traganth, soaked, and of this mixture is made a matter of the same color with the paper, that it cannot be discerned from it, nor cause suspicion. Then this is put between the eye and the light of a candle, the eye cannot pass through where the letters are written, and you shall see them darkly. This is the reason of the optics. For that part of thick matter opposed against outward light, hinders it, that the rays cannot come to our sight. And so the prints of the letters are seen as a shadow.

Chapter III

"How Letters rubbed with dust may be seen."

Now I will use another artifice, that letters rubbed with dust may be read, that were before invisible, which I read was used by the ancients. Wherefore do thus,

"That Letters rubbed with mill dust may be read."

That as in paper, so on some unseen parts of the body, letters written may lie hid, and be opened when need is. Write secretly on your back or arms, or other limbs, with Vinegar or Urine, and dry it that nothing may appear. Now, to have it read, rub it over with soot or burnt paper, for so the letters will shine forth. Or,

"Otherwise,"

If you make letters with fat, Tallow or any other fatty substance, or with Gum, or milk of a Fig tree, and strew them with dust of coal or burnt paper, they will appear. It may be by this craft, as Polyanus the Greek says, Attalus used the imprinted inscription of a beast for sacrifice. He, to raise the valor of his Soldiers, to make them fight valiantly with their enemies, the French, that were far more in number, supposing it would be no little advantage to put them in hopes before hand of the assurance of victory, invented a trivial business, but otherwise profitable, with the priest that was to offer sacrifice. Before the day they were to fight, he prepared for the victory. For Sudinus the Soothsayer, being to offer sacrifice, prayed unto the gods, and cuts the sacrifice in two. But the king used powdered Gum, and from the right to the left side, he drew these words, "Regis Victoria," "...the Victory is the King's...." And when the entrails were drawn forth, he thrust his hand into the hottest and most spongy place, and wiped clean the inscription. But the Auger, changing the other parts, and doing his office, turns the part where this inscription was contained, "Regis Victoria." The matter was no sooner published, but the Soldier generally rejoiced, and shouted exceedingly, to show how ready they were to fight, so going on with a certain assurance of the victory. And depending on this promise from the gods, they fought courageously, and subdued the French. But to the matter. Milk of the Fig tree will do the same, if it be written on white paper, and afterwards sent to a friend, be rubbed with coal dust strewn upon it, and made clean again, so will the letters presently appear black. Pliny says, the milk of Tithymals will to the like, to make the letters, and dust strewn on them to scower them. And thus women as he says, had rather speak with adulterers, then by letters. Ovid confirms this, admonishing maids in his *Arte Amandi*, how they may safely write to their sweethearts.

"Write with new Milk, it's safe, unseen, but read

The writing with coaldust laid on full-right.

Moist flax will write as if that none had been,

And letters on your paper pass the sight."

Also there is an art that one would not imagine, to write upon Crystal. For, being all transparent, no man will dream of it, and the letters lie hid within. Do it thus,

"That letters may appear upon Crystal by strewing on of fine dust."

Dissolve Gum Arabick in water, or Gum Traganth, that it may be clear, and when it is well dissolved, it will not foul the Crystal,

if you write upon it, or upon a cup or glass, for when the letters are dry, they are invisible. No man will imagine the fraud, if a cup be sent to prison, or a glass full of wine. When he would see the letters, rub burnt straw or paper on it, and the letters will presently be seen. Here is another secret,

"The letters on the paper may be read, not by fire, nor water, or any other thing, but in the dust only."

This is a secret worth knowing. Dissolve Goat Suet with a little Turpentine. Rub the paper with this Liquor, and keep it. When you would send some news to your friend, lay on the paper smeared with the fat upon a letter you would send to your friend, write upon that with an Iron point, and the suit will make the characters on the letter. Send this away, and if it be intercepted, no water will make the words visible, or any other art, but only strewing dust upon it. Also you may make,

"That upon black paper, white letters may appear."

The reason is this. Mingle the white and yolk of an Egg together, that it may be liquid as ink. With this Liquor, write on the paper what words you please, and dry them. When the paper is dry, make a black color over it, and dry it again, and send it. But that the letters may be visible, scrape the superficies of the paper with a broad Iron. For so it will be, that the ink being scraped off, where the letters were, they will appear white.

Chapter IV

"How you may write in an Egg."

Because when prisons are shut, Eggs are not stopped by the Papal Inquisition, and no fraud is suspected to be in them, I will show you how letters may be writ on the upper shell and white of an Egg also. For example,

"That letters may be writ on the Eggshell."

Wrap the Egg in Wax, and with an Iron point make letters on it, as far as to the shell, but break it not. For if you break the shell with your Iron, or point, or knife, it may be detected. Soak your Egg one night in strong water of depart, which separates Gold from Silver. In the morning take away the Wax, and take off the Eggshell's cover, and hold the shell between your eye and the light, and the letters will be seen very clear quite through the transparent shell. The same is done with the juice of Lemon. For it softens the shell, but fouls it not, and you shall have your desire. Will you,

"That letters may be seen upon the white."

Yellow, and better when the Egg is boiled. Boil an Egg hard and roll it in Wax, and engrave the letters on the Wax with an Iron point, that the marks may lie open. Put this Egg into Liquor with Alom and Galls powdered. Then put it into sharp Vinegar, and they will penetrate, and taking off the shells, you shall see them in the white of the Egg. Africanus teaches it thus. Grind Galls and Alom with Vinegar, till they be as thick as ink. With this write what you will on an Egg, and when the writing is dried in the Sun, put it into sharp Pickle. Dry it, boil it, and take off the shell, and you shall read the writing. I put it into Vinegar, and could do nothing of it. Perhaps, he means by Pickle, Capital Lees. The cause is this. The Eggshell' is porous, and has large holes, which is plain. For being set to the fire, it will sweat, and water will come forth. And looking at it against the light, it will show clear. So then, Vinegar being subtle, penetrates by the pores, and makes the shell tender. And when it is mingled with the Alom and Galls, it carries their substance with it, and makes them appear on the white. And when it is put into cold water, it is condensed, and comes to be hard as it was. But observe, it must not stay long in Vinegar. For that will eat off

all the shell, and will leave the Egg bare, having nothing but a thin skin to cover it. And if you put that into cold water, the shell will not come again. If you will know,

"How letters writ with water, may be seen in an Egg."

Dissolve Vitriol in the water, and write upon the shell, and dry it, and nothing will be seen. If you will read it, dissolve Galls in Wine, and steep the Egg therein. Or, write with Lime water upon an Egg, and steep it in Lye where Brasil is Infused, and so the letters will seem to be of a violet color. Or, write with Suet upon the shell, and steep it in water of Vitriol. When it is dry, scrape off the Suet, and nothing will be seen. When you afterwards steep it in the foresaid Wine, white letters will appear in a black shell. I shall show,

"How letters may become visible upon an Egg by the fire."

Write on the Egg with the juice of Lemon, or Onion, or Fig milk. When you put this to the fire, the letters will appear yellow. And that must be done on a raw Egg. For if you boil it, the letters will be seen.

"That letters may be seen on the Eggshell by dust."

Make letters on the shell with Vinegar, suet, fig tree milk, or of Tithymal, or with Gums. When you would have them seen, rub them with Coal dust, or burnt Straw, or paper, and they will seem black. There is a way,

"How to put a letter into an Egg."

Make your letter that you send, narrow and long, scarce broader than your middle finger. Write your mind in short characters, and with the edge of a knife, make a cut in the Egg, and break the inward skin, and put in your letter at one end by degrees. For it will easily take it in, were it ten hands breath. Then stop the cut, with Lime and Gum mingled, that it may not be seen, and with Ceruse and Gum Tragacanth, for then it is impossible to discern it. But if you will have this done more neatly, put the Egg in sharp Vinegar three or four hours. And when you find it soft, open the shell with the edge of your knife, put in your roll of paper. Then soak it in cold water, and the shell will grow as hard as it was.

Chapter V

"How you may write in diverse places, and deceive on that can read."

I have shown you diverse ways of writing invisible. Now I come to those ways that will teach you to write letters on diverse things, which though they be visible, and intercepted, yet the readers will be deceived by their secret device. First,

"How to write on a small thread."

Let us see how they did this in elder times. Gellus noct. Attic. relates, that when the Lacedaemonians wrote to their generals, that their letters being intercepted by the enemies might not be read, invented this kind of writing. yet it is referred to Archimedes to be the inventor of it. Two sticks must be made long and round, and polished with the Turners Instrument. They must be equal for length, breadth and thickness. One of these was given to the general when he went forth to war, and the other was kept home by the senate. As often therefore as the need was, a page was rolled about the stick, as large as could contain the matter, that it might make a round volume, and the sides of it were so well joined, that they were like a collar that

exactly fitted the wood, and no chinks between. Upon this collar, that thus was rolled about the stick, they wrote letter overthwart, from top to bottom. The collar thus written on, being long and narrow, was taken off from the stick, and sent to the general. For they thought, if it was intercepted by the enemy, when they saw bits of letters, and syllables, and of words, so far divided, they would never discern the thing. And they were not deceived in this conjecture.

"How to write on parchment, that the letters may not be seen."

When you have written on parchment, put it to the light of a candle, or to the fire, and it will all crumble and run together, and be nothing like it was. If a man look on it, he will hardly suspect any fraud. If he desires to read what is in it, let him lay it on moist places, or sprinkle it gently with water, and it will be dilated again, and all the wrinkles will be gone. And it will appear as it did at first, that you may read the letters upon it, without any hindrance. Now I will show the way,

"How in the sections of books the characters shall be hid."

When the book is well bound, and cut and colored black. If we open it, and turn back the leaves, that they may be turned in, we may write at the corners of the leaves what we will. But when the book is set back again, and the leaves put into their own places, nothing is seen or can be imagined to be writ in them. But he that would read those letters, must set the book that way as it was, and the letters will be read. So may we write on Fly-traps, that are made with wrinkles, and then draw them forth. If need be, we may do,

"The same with cards to play with."

You may excellent well write on cards, if you put them in some order, that one may follow the other. And some to be held upright, others turned downwards. When you have set them right together, you may write all things where they divide. Mingle the cards together again, and turn them. And nothing will be seen but some disorderly marks, if any man look curiously upon them. But he that would read them, must set them in order, and they will join and read exactly. Also, we may write in white Pigeons, and other white birds, feathers of their wings, turning them upwards. For when they return to their own places, they will show nothing. But if they be brought to their former posture, you will read the letters. And this is no small benefit for those that shall use them for messengers. There is a way,

"To hide letters upon wood."

Anyone may make letters upon wood, and not be suspected. For they shall not be seen, but when we please. Let the wood be fleshy and soft, of Poplar, or Tile tree, or suchlike. And with those Iron markers printers use, when they make stamps upon Brass, commonly called Ponzones, make letters in the wood, half a finger thick. Then hew the wood with a carpenter's hatchet, as deep as the letters go. When all is made plain, and equal, send the stick to your friend, or board, to him that knows the matter. He putting the wood into the water, the wood will swell out, that was beaten in with the marks, and the letters will come forth. That we may do in wooden vessels, polished by the Turner, if when they are turned, we mark the letters on them. And then turn them again. When this is done, send it to your friend, and let him soak it in water, etc.

Chapter VI

"In what places Letters may be enclosed."

I shall speak in what places letters may be enclosed, and not be suspected. And I shall speak last of carriers. I shall bring such examples as I have read in ancient histories, and what good a man may learn by them. First,

"How to hide letters in wood."

Theophrastus's opinion was, that if we cut the green bark of a tree, and make it hollow within, as much as will contain the letters, and then bind it about. In a short time it will grow together again, with the letters hut up within it. Thus he says, that by including some religious precepts in wood, people may be allured. For they will admire at it. But I mention this out of Theophrastus, rather for a similitude, then for to do the thing I would have, for that would require a long time. But his may be done well in dry wood, as in Fir. Thus, the chinks fastening together with common white glue. Also the ancients used,

"To conceal letters in Junkets."

I will relate the cunning of the wife of Polycrates. For she, while in the Milesian camps they solemnized a solemn feast of their country. When they were all fast asleep, and drunk, took this opportunity to tell her brothers of it, and did thus. She desired Diogenus, general of the Erythrei, that she might send some Junkets to her brothers. and when she had leave, she put a leaden scroll into a cake, and she had the bearer tell her brothers from her, that no man should eat of it but themselves. When they heard this, they opened the cake, and found the letter, and performed the contents of it. They came upon the enemy by night, at was dead drunk a the feast and conquered him. Also the ancients were wont,

"To shut up letters in living creatures."

Herodotus says, that Harpagus sent letters to Cyrus, put into the belly of a Hart whose entrails were taken out, by one that counterfeited a shepherd hunting. So,

"Letters to be hid in garments."

The secret places of clothes are best, to avoid suspicion. As in your bosom, or under the soles of your feet. Ovid in his Arte Amandi, writes to this purpose,

Letters may be concealed in your breast,

Wrapt in a clowt, which way is held the best;

Or else you may under your feet provide

A place full closely Letters for to hide.

"To hide letters in your belt."

Those of Campania were wont, when they would discover anything to the Carthaginians, and the Romans besieged them round. They sent a man that seemed to run from them, with a letter concealed in his Girdle. And he taking occasion to escape brought it to the Carthaginians. Others carried letters in their Scabbards, and sent them away by messengers, and were not found out. But we use not adays,

"To hide letters in the bowels of living creatures."

For we wrapt them in some meat, and give them to a Dog, or some other creature to swallow. That when he is killed, the letters may be found in his belly. And there is nothing neglected to make this way certain. The like was done by Harpagus. He, as Herodotus says, being to discover to Cyrus some secrets, when the ways were stopped, that he could do it by no other means, he delivered the letters to a faithful servant, who went like a hunter, that had caught a Hare. And in her belly were the letters put. When the guts were taken forth, and so they were brought to Persis. We use also,

"To shut up letters in stones."

Flints are beaten very fine in brazen Mortars, and sifted. Then are they melted in a Brass Cauldron, by putting two ounces of Colophonia to one pound of the powder of the stone, and mingling them. Put your letters into leaden plates, and hide them in the middle of the composition, and put the lump into a Linen bag, and tie it fast, that it may be round. Then sink it into cold water, and it will grow hard and appear like a Flint.

Chapter VII

"What secret Messengers may be used."

The Ancients used the same craft for messengers. For they used men that should be disguised by their habits, and some living creatures besides. For,

"To counterfeit the shape of a Dog,"

It was the crafty counsel of Josippus, that the messengers should be clad with skins, and so they past the enemy's guards, and were not regarded. For if they were seen, they were in the likeness of Dogs. And this was done until the enemy found out the trick, and compassed the Rampart round about. And man's curiosity was not satisfied here, till they found means for ways to pass, where the sentinels and scouts might not discover them. Wherefore they left the land, and sent by water. But that the writing might not be spoiled in the water, as Frontinus says, the Soldiers that pass over the river Saltella, had leaden plates writ upon, fastened to their arms. But Lucullus, as the same Frontinus reports, that he might declare to the Cyziceni, that were besieged by Mithridates, that he was coming to relieve them, all narrow passages being stopped by the enemy guards, that were joined to the continent by a small bridge, he fought a way by sea. For a private Soldier reappointed for it, sitting on two bladders blown, wherein the letters were put in two covers, and so like some sea monster, he swam seven miles at sea, and told of the coming of the general. So they often used,

"Arrows for messengers."

But that seemed not sufficient, for they feared men's cunning, lest some chance or fraud might intercept the messenger, and the secret should be discovered, or they should be racked to make them confess. Sometimes therefore they sought a way in the air, and used arrows for messengers, that none might intercept them. Herodotus says, that Artabazus and Timoxenus did this, when one would declare anything to the other. For the paper was folded about the foot of the arrow, and the feathers were put upon it, and it was so shot into the place appointed. To this pertains the example of Cleonymus King of the Lacedaemonians. He besieging the city Troezene, commanded many of his best archers to shoot arrows into several places. And he wrote upon them. I come to relieve your city. And by this means he set ladders, and his army scaled the walls and went in, and plundered the place, and destroyed it. But when Caesar heard that Cicero besieged by the French, could hold out no longer, he sent a Soldier by night, who should shoot a letter, fastened to an arrow, over the wall. When he had done this, the watch found the arrow and the letter, and brought it to Cicero. In it were the words written: Caesar bids Cicero be confident, and to expect relief. So Caesar came suddenly, and slaying the enemies, relieved him. We can do it safer and better now adays with Guns. If the matter to be sent be contained in a few words, we may shoot them forth with Muskets. Namely, by folding up the paper, putting it into a case of Lead, were they cast bullets, pouring upon it melted lead, but not burning hot. The paper wrapt up in the Lead, we shoot away with the powder to the place. But because the letters are but small we may shoot many of them in a day. The way to melt the ball is, by putting it to a gentle fire, or into Quicksilver, and it

will soon melt, and the paper not be touched. I shall show how,

"How to make Pigeons your messengers."

We may use birds for messengers. As Pigeons, Swallows, Quail and others. For these birds carried to other places, when need is, if you bind letters to their necks or feet, they will return with them. And when anything was suddenly to be related, the Ancients sometimes used these messengers. Hircius being Consul, as Frontinus testifies, sent forth Pigeons from the nearest place he could from the walls, which had been long shut up in the dark, and half famished, to Decius Brutus, who was besieged at Matina by Anthony. They being glad of light, and desiring meat, flew and sat upon the highest parts of the houses. Brutus caught them, and so was confirmed of how things were. Wherefore, always laying meat in those places, he called them back again. Hence Pliny. Nor ramparts, nor scouts, nor nets pitched before rivers, did profit Anthony. For the messenger went through the air. By the same way, in the very same day, from Olympi to Aegina, was the victory of Taurosthenes declared to his father. Though others say it was foreseen. Others say, that Taurosthenes, when he went forth, took a Pigeon from her young ones, yet weak and not able to fly, and as soon as he had conquered, he sent her back again, purple colored. And the making great haste to her young ones, flew that very day from Pisa to Aegina, Aelian writes this. Some have sought to do this by Swallows, taken out of their nests from their young, and sent back again. Some also attest, that beyond sea eastward, there are Pigeons that when the way is stopped, will fly through the midst of the enemies, and carry letters under their wings, a very long way. It may be Juvenal meant this, when he said,

As if from divers parts a letter were

Brought with a duffel wing quite through the air.

Also in old monuments and histories it is declared, that there was a King of Egypt, whose name was Marrhes, who bred up a tame Rook, and this he made use of for a winged messenger, so often as he had need. For, as if she had reason, she would carry the letter where she was directed. For she was so crafty, as to be instructed whither to fly, and where to stay, or rest at any time. Man's wit has invented these shifts to avoid danger. But by the same craft is he wounded sometimes, as it were with his own weapons. When the Christians with an army besieged Ptolemais, when Saladin had appointed a Pigeon to be sent thus with letters to the besieged, to with them be constant, and expect his coming suddenly. The Christians caught her, and tied a contrary letter to her, and sent her away. Whence it fell out, that they despairing of relief, yielded themselves. So there can be no certain security in human affairs, but there may be fraud in all things. Themistius says, that among animals, Pigeons have the best memory, as having a clear and refined mind. Wherefore, though all other animals make hast to their young ones, when they are taken from them, yet none of them carried far, can come back, because their memory fails. I have seen the trial with Pigeons. When my servant came from my farm, he brought home some young Pigeons taken from their Dams, and he wrapped them up in a cloak as we went. And when we came home at night, they were shut up in the house. But when the morning came, they flew out of the windows. And discovering the country afar off, they took upon the wing, and flew all home again. Wherefore in Genesis, Noah sent forth a Pigeon which returned. But the Raven returned not. For the Raven wants memory. I remeber in Plutarch's works, what is worth relating that I read there, that by the Pigeon sent forth of the Ark, in Deucalions flood, was shown, that the waters were sunk down, and the storms past. Animals that have newly brought froth young ones, will do the same.

Chapter VIII

"How messengers may be sent, who shall neither know that they carry letters, nor can they be found about them."

Our ancestors had another art that could not be discovered, invented by strange craft. Herodotus mentions it from Hestiaus,

who was the author of it. He being born in Asia, when of noble place, when Darius ruled, when he was with the King in Persia, and would privately write to Aristagoras to fall from him, fearing lest if he should not do it cunningly, he should be discovered, and be in great danger, he invented this way. He shaved off his servants hair of his head, as though he meant to cure him, who for a long time had been troubled with sore eyes. And on his head, with good ink, he wrote letters, that contained what he meant to have done. He kept this fellow at home with him, until his hair was grown again. When that was done, he sent him away to Aristagoras, bidding him say, when he came to him, that he should do unto him, in shaving off his hair, as he did before. When the servant came to Aristagoras, to Milesus, he said what his master had him say to Aristagoras. He supposing the business not to be idle, did what he was ordered, and so read the message. The Ancients found out these inventions, to send messengers with. Yet that can be no safe way, to shave off the hair, and to write letters upon the head, for the head will easily sweat, and put them out. and if the skin be pricked with a needle, this will not avoid suspicion, if he that wears the writing, be laid hold on by the way. For then is there most diligent search. For fear and necessity will make men watchful, and they are never satisfied, till they have searched every place. Sometimes they try men by fair promises, sometimes they frighten them with threats. And if these will not do, they torment and torture them., to make them confess. And if this will not do, that letters may not be secretly conveyed, not only their hose and shoes use to be searched, their clothes plucked off, and the seams ripped, but they will search their very guts. So far is it from keeping any secret upon the head, that shall not be looked for. But I can send letters, and write so, that it can be understood by none, but those that the letters are designed for. And he that carries them never so far off, if he should be taken by the way, and examined by torments, he can confess nothing, because he knows nothing of it, and the letter shall always remain secret. Nor will length of time, or sweat in travel, blot out the letters. Nor is it any matter if the messenger pass through rivers, seas, or rain. For wet will not hurt them. What good princes may get by this, I leave to your cogitations. For they have most need of this, when they would declare anything to their friends that are besieged. And often upon one message, may the victory of a city or army depend. The invention of the Ancients, was partly good, and partly bad. They wrote letters on the head, which he could not read. Nor would water or sweat, wash them off, because they were printed into the head. And when the hair grew out, they could not be seen. And that the messenger might be ignorant what was written upon his head, they took occasion for it, saying, he had a pain in his eyes, that they would cure. And thus he knew not the craft they used. But this fraud seems not very secure. For one that should suspect it might shave off the hair and find out the secret. Moreover, if the messenger were to be sent suddenly, how could he stay a month, till his hair were grown again? And when his skin was pricked for to make the letters, he must suspect something. But let us see,

"How Hestias could make the letters on his head indelible."

He wounded the skin with the point of a needle, or opened it with a razor, and cast in the powder of Colophonia burnt. For so we use to make the names of masters upon the faces of bond slaves, that they shall never come forth, and in time they will look green. Also,

"Letters may be made between the skin, that are indelible, upon any part."

You may soon do it thus. Let .Cantharides steep a whole day in strong water, but sooner is it done in water separation. Then make the letters with a pen-knife, or fit instrument, upon the upper skin of the arm, or any other part. The flesh hurt with the moisture, will rise in blisters, and be ulcerated. So by the force of this corroding water, will there always remain the prints of white letters, and they will never be blotted out. And this is best done by Hestias secret, because letters could not be read under the hair, whereas white letters, like Milk, would be seen. But would we have them stay only for some time, and not always, we may do it many ways. If you make letters with Aquafortis, that has eaten Silver or Brass, they will appear many days. So it may be done with Oil of Honey. Now I will show,

"How a man may carry letters that are indelible and invisible, and unknown to him; and how to make them visible when need is:"

You may do it thus: By writing letters on the messengers back, that he may not know of, having first given him an Opiate to make him sleep soundly, then write, and let them dry in. When he awakes, send him away, the letters dried on will not be seen. The Ancients know this. Ovid says it:

"Write on his back, for paper, so you shall

Better conceal your purpose from them all"

But let us see whether we can write on the flesh with any Liquor, that passing through rivers and rain, the letters may not be blotted out with any moisture, and then by strewing on of dust, may be made visible again. Write on a mans back, which shall be visible only, by being wet with some Humor, and no man can find out, unless he knows the secret. If you write with water, wherein Vitriol is dissolved, with a decoction of Galls, it will be seen. If it be made very sharp, it will pierce the skin, and the letters will be delible. We may do the same with the oil of it. Salt Ammoniac with Quicklime, or Soap, will make a blue color. If they are rubbed with oil of Litharge, they will appear white, with Aqua vita, or its equal, distilled Vinegar, and water and Salt.

Chapter IX

"How characters may be made, that at set days shall vanish from the paper."

I shall attempt to show how letters may be written on paper, or in other matter, that shall disappear at set times. And other letters shall be made invisible, that at a time certain shall disappear, not only useful secret marks, but for other purposes necessary for our lives. Letters that decay and vanish, may be made two ways. Either with Aqua fortis, that eats the paper, or some decaying Liquors, that will vanish with any light touch, and leave the place where they were, without any spot. I shall teach,

"How letters are made, that eat the paper."

If you mingle Oil of Vitriol with common ink or any other black color, in few days by corroding the paper, or the ink itself, the letters will vanish, or in a month, as you put in more or less of the oil. And this you may try before you send away your letter. If you would have it work more slowly, add but a little oil. If faster, put in more. You may, when it is too strong, put some water to it. The same is performed, if you mix a strong Lye, they call it Capital, with your ink. For first they will be yellow, and then they will vanish. The same is done by Oil of Tartar, or Salt Alkali, or Soda, and strong water of separation of Gold. For these corrode the letters, and the paper, that nothing of the letters will appear. If you desire to know,

"How letters may be made, that will soon vanish."

Make them with the strongest Aqua vita, or use Camphire and burned straws. For the letters in time, will decay and vanish. The Tincture will fall off, when the glutinous matter is gone. Make a powder of a very fine Touch-stone. For the sandy stone will sooner decay, that no letter shall be seen. Also it is done,

"Another way,"

Infuse the small filings of Steel in water of separation. Take a triple quantity of this, and add thereto liquid Pitch, or soot of Turpentine, to make it blacker. And cover the vessel. Grind this on a Porphyry-stone, write, and they will vanish and fall away. This secret I thought not fit to overpass, because it is the principal thing to be considered, to make trial often. For it it stay long on the paper, add more strong water to it. And if you be careful, no mark of the writing will remain. You shall do it like to this, another way. If it be good so to counterfeit. Take Chrysocolla, Salt Ammoniac, and Alom, all alike. Powder them all, and put them into a Crucible, and make a strong Lye of Quicklime. And laying a Linen cloth over the mouth of the vessel, that must receive it, strain it. Boil it a little, and mingle this with your ink. They will remain awhile, but a short time the letters will vanish away. Set it up for your use. But contrarily, if you will,

"That invisible letters after sometime, shall become visible."

And show themselves. I will give you some examples, that you may invent more thereby yourself. If you write with juice of Citrons or Oranges, on Copper or Brass, and leave this so for twenty days, the letters will appear green upon the places. The same may be done many other ways, namely by dissolving Salt Ammoniac in water, and writing with it upon Brass, the place will sooner appear of Verdigrease color.

Chapter X

"How we may take off letters that are written upon the paper."

If we would take letters from off the paper, or that such as are blotted out might appear again, we must use this art. As, if we would,

"Take letters off the paper,"

Or from parchment. Take Aqua fortis, that is it that parts Gold from Silver. With a pencil wipe some of this upon the letters, it will presently wipe off letters, written with Gall and Copras. Or rub it with Salt Alkali and Sulphur, making little balls of them, and that will eat them out, that nothing shall be seen. But if you desire to write anything in the place you have made clean. First, wet the place with water, wherein Alom is dissolved, for the ink will not run about. If you desire,

"To renew letters decayed,"

Or to read as are vanished. Boil Galls in Wine, and with a Sponge wipe over the letters. The letters will presently be seen, when they are once wet thus, and be well colored as they were at first.

Chapter XI

"How to counterfeit a Seal and writing."

It may be of great use when places are besieged, and in armies, and affairs of great men, to know how to open letters, that are sealed with the General's Seal, and signed with his name. To know what is contained within, and to seal them again. Writing others that are contrary to them, and the like. I will show how,

"To counterfeit the Seal."

Melt Sulphur, and cast it into powder of Ceruse, while it is melted. Put this mixture upon the Seal, but fence it about with paper or Wax, or Chalk, and press it down. When it is cold, take it off, and in that shall you have the print of the Seal. I will do it another way. Fill an earthen pot with Vinegar. Cast Vitriol into it, and a good deal of Verdigrease. Let it bubble on the fire, put plates of Iron to it. After a short time take them out, and from the outside with you knife, scrape off a knife of rust it has contracted, that is dirty as it were. And put this into a dish under it. Again, put them into the earthen pot, and scrape more off when you take them out. Do this so often, till you have some quantity of this dirty substance. Cast Quicksilver into this, and make a mixture. And while it is soft and tender, lay it on the Seal and press it down. And let it remain in the open air, for it will grow so hard, that you may almost seal with it. For it will become even like to a metal. It may be also done another way. Take the filings of Steel, and put them in an earthen Crucible at a strong fire. Put such things to it, as will hasten the

melting of it. When it is melted, cast it into some hollow place, pound it with a Brass Mortar, or it will be easily done. Do it so three or four times. Then powder it, and mingle Quicksilver with it, and let it boil in a glazed vessel six hours, till it is well mingled. Then press the Seal upon it, and let it cool, and it will become exceeding hard. It is possible,

"To make a great Seal less,"

If it should happen that we want a letter Seal, we must do thus. Take Isinglass, and dissolve it in water. Anoint the figure with Oil, that it may not stick to the glue. Compass the Seal about with Wax, that the matter run not about. Put the Isinglass to the fire, and melt it, pour it upon the Seal. After three hours, when it is cold, take it away, and let it dry. For the Seal when it is dry, will be drawn less equally. If you will,

"Imitate the form of a writing,"

Do thus. Open the letter upon a Looking-glass, that wants the foil. Upon the letter lay white paper, and a light under the glass. Temper your ink as the writing is, and draw your lines upon the lines of the letters you see through. We may,

"Open letters, and shut them without suspicion."

We use to seal letters, putting paper upon them, which goes through the letter on one side, and Wax is put on the other side, where it comes forth, and there it is sealed. You shall open the letter thus: Break away that part of the paper, that is put upon the place, where it passes through the letter, and the hole is, the letter opens presently. Read it, and shut it again, and put the paper torn off, in its proper place. First, anointing the crack with Gum Traganth, dissolved in water. For the paper will be so glued, that it will be stronger there then elsewhere. Press it with a small weight, till it grows dry. The fraud cannot be discovered, because the glue is white, and is not known from the color of the paper.

Chapter XII

"How you may speak at a great distance."

There are many ways how we may speak at a very great distance, with our friends that are absent, or when they are in prison, or shut up in cities. And this is done with safety, and without suspicion, as I shall show. Two things are declared here, either to do it by open voice reduplicated, or else by a Trunk. We may,

"With open voice show some things to those that are confederate with us."

It is wonderful, that as the light, so the voice is reverberated with equal angles. I shall show how this may be done by a glass. It is almost grown common, how to speak through right or circular walls. The voice passing from the mouth goes through the air. If it goes about a wall that is uniform, it passes uncorrupted. But if it be at liberty, it is beaten back by the wall it meets with in the way, and is heard, as we see in an echo. I through a circular building, that was very long and smooth, spoke words to my friend, that heard them round the wall, and the words came entire to his ears. But one standing in the middle heard not any noise, and yet I heard again what my friend answered to me. In the morning when as I walked by the sea shore, I heard above a mile, what my friends talked in a boat. The sea was very calm, and scarce moved, and the words came clearly to me, carried on the plain superficies of the water. I hear that at Mantua, and other places, a great gallery is built, wherein one speaking in the corner, is heard by another that knows the business, standing in another corner. But those that stand in the middle, perceive nothing of it. But more exactly and clearly,

"To signify to friends all things by a Trunk,"

Let the pipe be of earth (but Lead is better) or of any matter well closed, that the voice may not get forth in the long passage. For whatever you speak at one end, the voice without any difference, as it came forth of the speakers mouth, comes so to the ears of him that harkens. And I doubt not but this may be done some miles off. The voice not divided or scattered, goes whole a long way. I have tried it for above two hundred paces, when I had no other convenience, and the words were heard so clear, and open, as the speaker uttered them. Upon this it came into my mind, to intercept words spoken by the way, with leaden pipes, and to hold them so long as I pleased close in. That when I opened the hole, the words should break forth. I perceive that the sound goes by degrees, and that being carried through a pipe, it may be shut up in the middle. And if a very long Trunk should take away the convenience of it, that many winding pipes might shut it up in a close place. I read that Albertus made an artificial head, that spoke at set times. I might hope to do the same by this invention. Yet I never tried this farther then I have said. Yet I have heard by my friends, that lovers have spoke a long time through a leaden pipe, from their houses that stood far asunder.

Chapter XIII

"By night we may make signs by fire, and with dust by day."

It remains to show whether we can make signs in the night by fire, and in the day by dust, to declare our business. This may fall out two ways. For by fire of a sudden, we show to our confederate friends, or when we please, by certain numbers of torches, we represent letters fit to demonstrate what our purpose is. That those that are far off, seeing and observing the motions may perceive our intent. The first way, we read that Medea promised the Argonauts, that if she killed Pelias, she would signify so much to them by night with fire from a watch tower, and by day with smoke. When therefore the business was effected, as she would have it, she counterfeited, that she must pay her vows to the Moon, by making a fire, by lighting torches in the open air, from the top of the place, as she had promised. And when the Argonauts understood it this way, they invaded the King's palace, and killing the guard, they made her to enjoy her wishes. We read also that Maga, having possession of Paretonium, agreed with the watch, that at night in the evening, and again in the morning betimes, they should set up the light that was for confederacy. And by that means signs were made, that the messengers came as far as Clius. Also to friends that live out of the city, by fire we may figure out revenue, and the quality of provision. It is apparent, that Hannibal, as Polybius writes, when the people of Agrigentum were besieged by the Romans, by many and frequent fires by night, did show forth the intolerable famine of his army, and for that cause many of his Soldier, for want of victuals, fell off to the enemy. Also the Grecians compacted with Sinon, that by night, when the Trojans were asleep, those that came to Troy should have a token, when he should open the Trojan Horse, to let forth the Soldier that were within. Whence Virgil,

"When Kings fleet lift up the flames, just then

Did Sinon let forth all the Grecian men."

Also by torches letters may be signified, as we find it in the manuscript of Polybius. tops of buildings or towers, are very fit to set up the torches on. Let the letters be divided into two or three parts, if there may be eleven, or seven parts of each. If they be seven, the first letters are shown by single torches, the second by double ones, the third by three torches. The number may be also divided into four parts. But in representing them, we must observe the variety of motion. For one torch once lifted up, shall signify A, the same lifted up twice B, thrice C. So seven times. The last of the first order G, after that two once H, so many twice I, thrice signifies L, and so the rest of the same order. Then Q by the third order, once, R, by the same, twice, and

thrice as many of the same, signifies S. And so it holds for four. Thus a woman from a watch tower, with three lights showed five times, then with double ones twice, then with treble lights twice. Then again with one at once, and with the same four times, then five times with three lights, then thrice. And with as many four times, shall signify, *vir adept*, "the man his come." Also the lights may be of diverse colors, if they would show that friends are near. Also by smoke, we may show that our enemies are near, or some other thing. Hence it was, that by the policy of Amilcar, the men of Agrigentum, being drawn off far from the city, among their enemies that they pursued, unto an Ambuscado, where the enemy lay hid, and a by wood set on fire, suffered a great overthrow. For when they were called back by their friends, by reason of a smoke they supposed to come from the walls. When they turned their course to go to the city, Amilcar commanding, the Carthaginians followed them, who fled before, and so slew them.