

**Hocus pocus: or, a rich cabinet of legerdemain curiosities, natural and artificial conclusions ... / [John White].**

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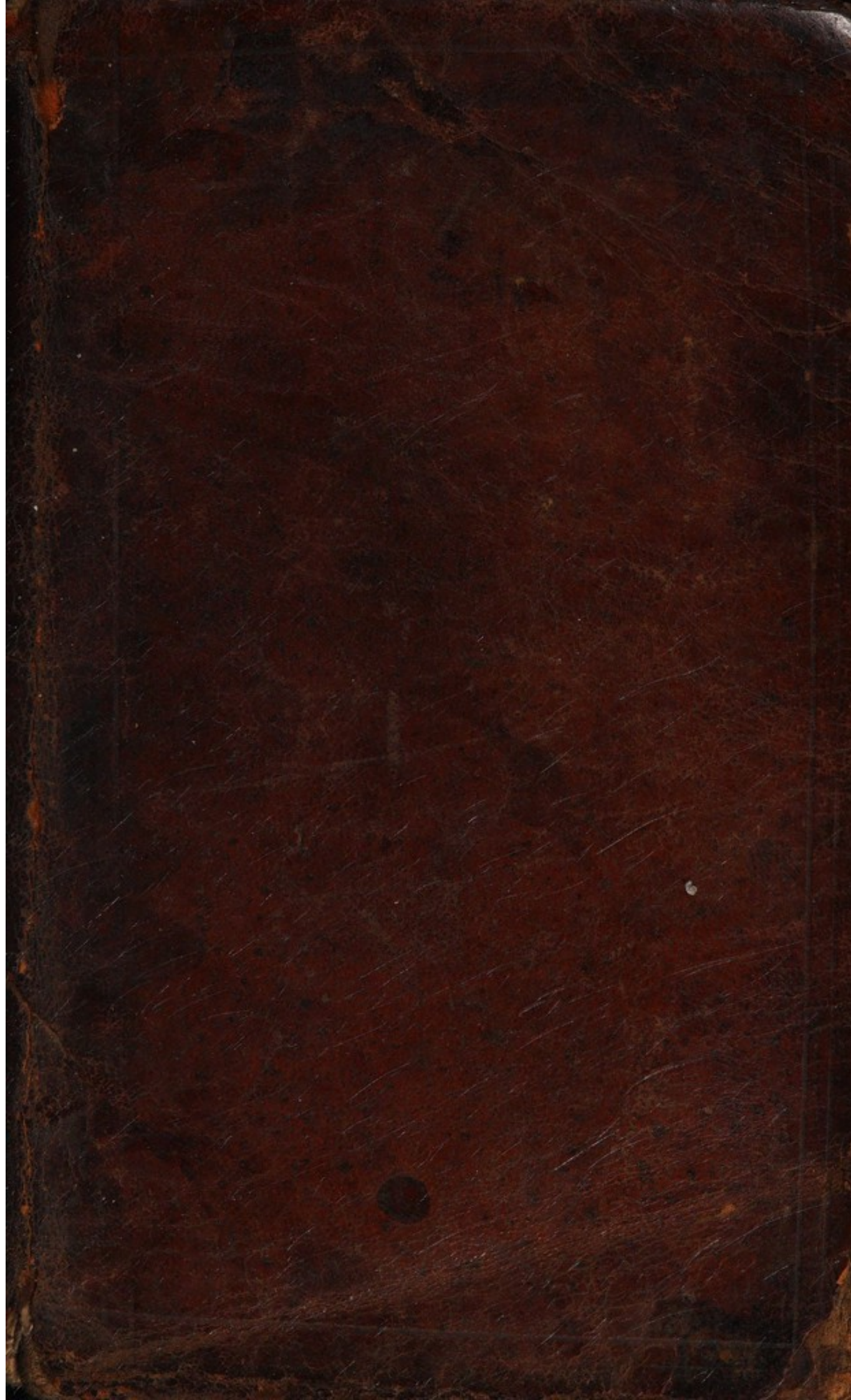
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# Hocus Pocus:

OR, A  
RICH CABINET  
OF

Legerdemain Curiosities,  
*Natural and Artificial Conclusions.*

SHEWING

1. How to cleave Money.
2. To make Sport with Cats, Ducks, or Poultry.
3. To hang two Knives on the brim of a Glass.
4. To wash your Hands in melted Lead without damage.
5. To make a Sixpence seem to fall thro' a Table.
6. Teach Children to Read by Dice.
7. Divers wonderful Things done by the Loadstone.
8. To catch Kites, Crows, Magpies, &c. alive.
9. To catch a Pick-pocket.
10. To name a Pack of Cards, and not see 'em.
11. To write Love-Letters secretly.
12. Experiments in Drawing, Painting, Geometry, Astronomy, &c.
13. To make variety of Fireworks.
14. To keep Fowl, Venison, or any Flesh sweet a month.
15. To make a Drink when you cannot relish other Liquors.
16. To fox Fish and Fowl.
17. To make one Candle outlast three.
18. To preserve Fruit all the Year.
19. To make excellent Plastering for Ceilings or Walls.

With many other Natural and Artificial Conclusions, affording great variety of innocent Sport and Pastime.

---

*Adorn'd with above 40 curious Cuts.*

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By J. WHITE, a Lover of Art and Ingenuity.

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To all Lovers of  
**Artificial Conclusions.**

**I** Have here open'd to your View a Rich Cabinet of Curiosities, both profitable and diverting, of which I think I may say, the like was never extant in the English Tongue. For which reason these few Receipts (several whereof are my own) I dedicate freely to thy use, not doubting but there are things contain'd in this small Volume that will give satisfaction to the Ingenious.

JOHN WHITE.

---

*Some more Books of Art and Ingenuity, sold  
by G. C. at the Ring in Little-Britain.*

**T**HE French Perfumer, price 1 s. Arts Masterpiece 1 s. Mystery of Vintners, 1 s. Butler on Bees, 1 s. Young Sportsmans Instructor, 6 d. Ladies Companion 1 s. Compleat Vermin-killer, 6 d. fitcht. A new Book of Knowledge, by W. Winstanly, 1 s. The Experienced Fowler, 6 d. Compleat Fisher, 6 d. A Family Jewel, 1 s. The Traders sure Guide, 3 s. Tryons Letters, 2 s.



*To make two Knives hang upon the brim of a Glass.*

Take a little Stick, about four inches long, and make it sharp at one end like a Butcher's Scuer, and then get two Knives, somewhat of an equal poise, and prick the points of them towards the bigger end of the Stick on each side slope wise, as you may see here in the Figure; then put the small end of the Stick upon the rim of a Glass of Wine or Beer, and you may take up the Glass & drink, and they will not fall off.



*To wash your Hands in melted Lead without danger.*

Take an ounce of Quicksilver, two ounces of good Bole Armoniack, half an ounce of Camphire, and two ounces of *Aqua vitae*, then mingle them together, and put them into a brazen Mortar, and beat them with a Pestle; having thus done, anoint your Hands all over thoroughly well with this Ointment, and then you may put your Finger into melted Lead, or you may wash your Hands therewith, if one pour Lead on them, and it will neither scald nor burn.

*A ready way to teach Children their A B C in manner of Play.*

Cause four pieces of Bone, or Wood to be cut into fix square like Dice, and upon every side or square let one of the Letters of the Alphabet be engraven or writ; as A. B. C. D. E. F. upon one of them, then G. H. I. K. L. M. on the other, and so of the rest in order, as you may see here in the Figure.





Now the Child taking delight, and using to play with them (amongst other Children) and being told what Letters are uppermost, will soon learn their Alphabet, as it were by the way of Sport and Pastime.

*An excellent way to teach one to Read speedily and truly.*

Take any Book of small value, and at every Syllables end underneath, or at the top, with a small Pen of Ink, make a little speck or mark; but if the speck or mark were made with red Ink it were the better; or if it be in a Book that you would not deface, then take a small Pin or Needle, and prick little Holes at each Syllable, which will hardly be perceived. This Experiment is best to be made with hard Words of many Syllables, as in the Example following:

*Abraham, Achitophel, Bartholomew, Mathematician.*

.....

These to the ingenious will suffice, for I have known those that by this method soon learn to Spell well.

*Divers Things performed by the Load-stone.*

Many and wonderful *Mathematical* Conclusions are performed by the *Magnet*, or *Load-stone*, only I will give a touch at some few for Recreation.

These Stones are to be had at the *Ironmongers*, but they ought to be polished and made fit by a cunning Artift. This Stone hath his two Poles, one *North*, the other *South*, answerable to the Poles of the World; for if you take a piece of Wyre of 4 or 5 Inches long, and touch one end thereof with a *Load-stone*, and then thrust it through a piece of Cork, putting it to swim in a Bason of Water, presently you shall see one end of the Wyre will turn full *North*, and the other full *South*.

This Receipt is profitable for some Travellers, who having a sewing Needle about them that is touched with this Stone, may prick it into some little light piece of Wood or Cork, and place it in the Water, and it will set out the *North* and *South* instead of a Compass.



If for Recreation you take two Wyres, and put each Wyre into a Cork, touch one Wyres end with the *North* end of the Stone, and the other Wyres with the *South* end of the Stone, and then put them both into a Bason of Water a pretty way asunder, yet they will begin to move and stir, and draw nearer together, and on the sudden join and meet: Now, if upon those Wyres or Corks there were placed little paper Tilters on Horse-back, they would run their course at one another in the Water very prettily.

Also, if this Stone or *Magnet* be enclosed in a Box of Wood, Stone, Silver or Brass, yet it will extend its Operation and Working by many pretty and ingenious Practices admirable to behold.

As for Example, If you will make the Forms and Pourtraitures of divers Things in thin Pasteboard, as Horsemen, Footmen, Ships, Boats, Beasts, Birds, *Flies*, Worms, Serpents, or the like, you may closely convey into them a short piece of Wyre, and set them upon a Board, Trencher, or Pasteboard, and if you will have them move or walk, then hold the *Load-stone* close in your Hand under the Board, and that way which you move your Hand underneath, that way the Images will move and creep on the top.

Also, If you place the *Load-stone* privately to, or near the Cieling, or over a Door, and then hold a piece of Iron near to it (tying a Thread to the Iron) that it touch not the Stone, which will attract it, and then the Iron will seem to hang in the Air: If you touch an Iron Ring with this Stone, it will take up a dozen, or more Rings together, hanging one to the other like a Chain. Also, if a Knives point be touched therewith, it will take up Needles or Wyre, and by it you may know the Counterfeit, or *Newgate* Halfpenny, as some call them.

Many other rare Conclusions may be performed by this Stone, which I forbear to write of. Fire, Garlick, or Onions spoileth the Vertue of this Stone; therefore let it not touch or come near them.



*To catch Kites, Crows, Magpies, &c. alive.*

Get *Nux vomica*, beat it to powder; this done, take raw Flesh or Liver, and cut it into little pieces, that the Fowl may swallow them whole, then cut Holes in the same, and put your powder therein, and then lay these pieces where they haunt, but as soon as they have swallow'd down the same, they will fly to the next Tree they can come at, and this presently makes them so drunk or sick, that they will fall down to the Ground; but be sure to watch them, and run presently to the Tree, for they will soon recover and fly away.

I believe if it were sodden with other Grain, it would have the like operation with other Fowl.

*To catch Pidgeons, or other Fowl.*

Take pieces of brown Paper, and roul them round, making Coffins of them, such as the *Grocers* make to put their Fruit in; let them not be above a Finger long, paste the sides and ends of them with some starch, clip the upper part of them round with a pair of Sheers, then anoint the inside of the uppermost skirts of them round about with Birdlime, or some stuff that will but cling to the Feathers; but you must (a day or two before you use it) lay or strew some Peas, or other Grain to make them haunt the place, and they will be the less fearful; then if you please, make a hole in the Ground a little way, and put your Coffins upright or sloping, putting a few Peas or Corn in them, strewing here and there Peas near them, and when she picketh into the Coffin, she is immediately hooked, and blindfolded, not seeing which way to fly: And thus you may take them easily.

*A sure way to catch a Pickpocket.*

A Gentleman being in a throng in a Fair, had his Purse pickt out of his Pocket, he missing it, presently buyeth two pennyworth of Fish-hooks, and causeth a Taylor to sew them round about toward the upper part of his Pockets, with the points of them downwards, and so the next day away he goes to the Fair again amongst the throng, seeming careless of his Pockets,



kets, presently there was a Diver nibbling at the Bait, and nimbly had his Hand in his Pocket; the Gentleman being wary (perceived that the Fish had swallowed the Hook) gives a jerk aside, which caused the Hooks to catch good hold in his Hand, and then he had him sure; then said the Gentleman, *Fellow, what makest thy Hand in my Pocket? O good Sir,* (reply'd the Pickpocket) *pardon me, I cannot pull it out:* The Gentleman told him of the Loss he had sustained the day before, and making of him to restore back his Money, he cut out his Pocket and let him go, with store of picking work to get the Hooks out of his Hands again.

*To make Fowls, and all small Birds drunk.*

What Meat they eat, as Wheat, Barly, or other Grain, lay the same to steep in the Lees of Wine, or in *Aqua-vita*, or in the Juice of Hemlock, and strew the same Grain in the places where the Birds do haunt.

*Another.*

Take Tormentil and boil it with strong Wine, Wheat, Barly or other Grain, then strew it where they haunt, and the Birds will eat the pieces among the Grain, which makes them so drunk they cannot fly away.

*Another.*

Make PASTE with Barly, Meal, Onion-blades, and Henbane-seeds, and throw it where the Birds do haunt.

*To make Sport with a Cock.*

Hold a Looking-glass before him, and he'll fight as eagerly with his Shadow as if it were a live Cock.

*An excellent Bait to catch Fish with an Angle.*

Make PASTE with fine Wheat flower, tempered with a little Saffron and Sugar, and bait your Hook therewith, and they will bite apace: This is a good Bait for Roch, Dace, and suchlike.

*Another.*

Take the Crum of a new penny white Loaf, and an ounce of *Coculus India*, and an ounce of Henbane-seed finely powdered, temper the same well with good *Aqua-*

*vite*



*vite* into a Pafte, and divide them into small pieces bigger than grains of Wheat, and then caft handfuls in at once into the Water where is ftore of Fish, and you fhall prefently fee them drunk.

*To make one watching Candle outlaft three.*

Take a Pail or Bucket, and fill it full of Water, and fet it in the place where you intend that your Light fhall ftand; then take your Candle and warm it at the lower end, and there ftick a brafs Farthing Token, or fuchlike; and when you will light your Candle, put it gently down into the middle of the Water, (but be fure that the bottom of the Candle do not touch the bottom of the Pail) and then it will swim upright to the very edge near the light: The reason that the Candle will laft fo long, is caufed by the coldnefs of the Water; and this is a fafe way that no Rat can run away with the Candle lighted, as I have heard that they have done, and endanger'd the Houfe with Fire.

*To write any Name upon a Paper, and then burn it to Afhes, yet afterward it may be read plainly.*

Take a new clean Pen that was never writ with, and dip in your own Water as you do in Ink, then ftrip up your Shirt-fleeve above your Wrift, and upon your Arm write your Name, or any Name, or any Mark, and then let it dry on your Skin, and nothing will be feen, then put down your Sleeve and button your Wrift; do this privately, and it will caufe fome wonder; then take a piece of white Paper and write your Name, or the Mark thereon with another Pen of black Ink, (but let it be written as like the other as you can) then take the Paper and burn it, and lay the Afhes on a Table, and ftipping up your Sleeve, rub the Afhes hard with your Finger, where you had written with your Water, then blow off the Afhes, and the Name or Mark will plainly be read on your Arm in black Letters.

*To view the back-part of your Head by Glaffes.*

If you would behold the back-part, or fhadow of your Head for a Wound, or the like, take a Looking glafs



glass and hold it behind your Head, and then take another Looking-glass and hold it before you, and from the Glass behind, you may see your Shadow in the Glass before you.

*To name all the Cards in the Pack, and never see them.*

Privately drop a drop of Water or Drink (about the bigness of twopence) on a Table before where you sit, and let any body shuffle the Pack of Cards, and then taking them into your hand, place a Candle on the Table before you (for this Trick is best to be done by Candle-light) and holding down your Head (as you may see in the Figure) lift the Cards above the brim of your Hat close to your Head, that the light of the Candle may shine on the Cards, then in the drop of Water (like a Looking-glass) you shall see every speck of each Card before you draw them, which you may name, or putting your Finger upon the Spots, you may say that you feel them out; then lay down your first Card, and name the next, as your first Card was the Duce of Clubs, the next is the five of Spades, and so of the rest.



*To keep Fowl, Venison, or Flesh sweet a Month.*

Make a strong Brine with bay Salt and white mingled together, so as the Water be over-glutted with salt, and being scalding-hot, parboil therein the Fowl or Flesh which you intend to keep for some reasonable time, (that is to say, according to the greatness and greatness thereof) then hang it up in a convenient cool place, and it will last a sufficient time, without



any bad or over-saltish taste. This is a good way for Seamen and others in hot Countries, who are enforced sometimes to Victual themselves in such intemperate Climates where no Flesh will last sweet four and twenty Hours together, by reason that they have no means to make the same to take Salt, which without question will enter this way, and make penetration very speedily, by reason of the hot and fiery spirit of Salt thus prepared.

*A Drink when you cannot relish Beer or Ale.*

Take a quart of good Water, put therein five or six spoonfuls of good *Aqua-vita*, or Brandy, and an ounce of Sugar, with a branch of Rosemary, brew them a pretty while out of one Pot into another, and then is your Drink prepared.

*Another.*

Some mingle Vinegar with good Water, and it serveth very well to quench the Thirst; or Sugar and Water, or Treacle and Water is an excellent Drink, better than Beer.

Some carry a piece of Allom in their Pocket if they are to Travel, and know not how to get Drink or Water, and when they are a dry, they put a piece of that in their Mouth, and it will fetch up moisture which will assuage Thirst. Or take a spoonful of Oatmeal and brew or mix it well together with Water.

*To harden Leather that it shall last a long time.*

This is a good and profitable Receipt for many poor labouring Men, and is thus performed. Take and lay such Leather as is well tanned to soak in Water, where in there hath been some store of filings of Iron a long time, or else in the Water that hath long lain under a Grinding-stone, into which such Iron as hath been from time to time ground away hath there settled.

This is good also to harden Leather for the Caulks or Pumps of Ships, or others, to make them last long.

*To make a Walking-staff have knots where you please.*

Get a straight piece of Wood (of your desir'd length of Holly, Ash, Service-tree, Walnut-tree or Pear-tree



let it be free from Knots or Shakes, then plain it into six or eight sides, a good deal bigger than your Staff shall be ; this being done, get a short punch of Iron, and let the small end be filed about the bigness that you intend your Knobs shall be, filed about a Bench or Table, and where you will make the Knobs, with a Hammer punch Holes therein, and so do on every side ; then plain it over again till you have made your Staff smooth, that there be no dents seen thereon ; when you have thus done, put it into some Cauldron of boiling Water for a good space, and when you take it out again, you shall see that it will be full of Knobs, for with the heat of the Water it forceth the Bruises (which were made with the Punch) to swell out of the Wood again.

You may file your Punch like a Star, or other Work, and it will shew very pretty : I once saw a Partizan, or Captain's Leading-staff, which was done in this manner, and being put into a Dyer's Cauldron when he dyeth blacks ; when it was dryed, and rubbed well with Linseed-Oil, it shewed like Ebony.

*To know when the Moon is at Full by a Glass of Water.*

Take an ordinary drinking Glass, and fill it full of Water up to the brim, so that it doth not run over, let this be done a little before that the Moon be at full, and then at the very instant that the Moon is at the full, the Water will presently boil over.

*To know the Moon's Age at her encrease.*

I have been told, that a thin piece of Cypress, such as they had wont to make Hatbands of, if you hold it before your Eyes in an Evening at the encrease of the Moon, you shall know how many days old she is ; as when she is one day old, you shall see but one Moon, at two days old two Moons, at three days old three Moons ; but afterward you shall see but one again.

*To write Letters secretly, that cannot be discovered.*

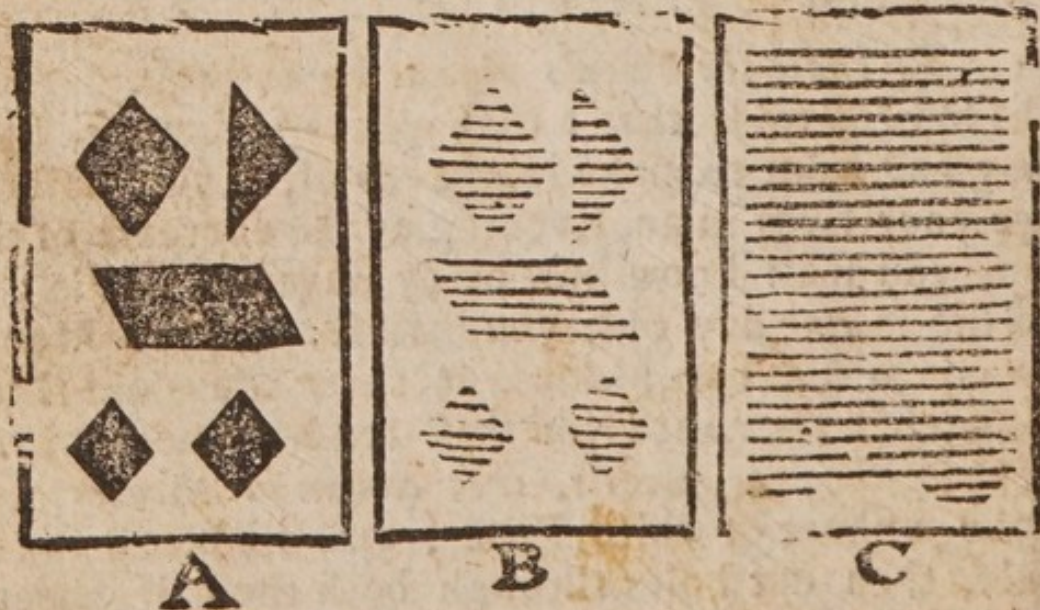
Take a Sheet of white Paper, and double it in the middle, then cut holes through both the half Sheets, let the holes be cut like the panes of glass Windows,



or other forms what you best fancy, and then with a Pin prick two little holes at each end, and cut your Paper in two halves, give one half to your Friend (to whom you intend to write) the other half keep too your self: Now when you do write, lay your cut Paper on a half Sheet of writing Paper, and stick two Pins through the two holes that it stir not; then thro' those holes that you did cut, write your mind to your Friend; when you have done, take off your Paper with the holes again, and then write some other idle Words both before and after your Lines; but if they were written to make some little sense, it would carry the less Suspicion; then Seal it up and send it.

When your Friend hath received it, he must lay his Paper on the same, putting Pins into the Pin-holes, and then he can read nothing but your mind which you writ, for all the rest of the Lines are covered. Observe the Figure, and it is easily apprehended.

Where the Letter *A* is placed, that doth signify the half Sheet of cut Paper with holes; where the Letter *B* is placed, doth signify the substance of the Letter which you write, and where the Letter *C* is, doth signify the Letter filled up with Lines to joyn to the other Words. Now when your Friend writes to you, he must do the like.





*Another.*

Write a Letter (what you please) on one side of Paper with common Ink, then turn your Paper, and write on the other side with Milk, (that which you would have secret) and let it dry; (but this must be written with a clean Pen :) Now when you would read it, hold that side which is written with Ink to the Fire, and the milky Letters will then show blewish on the other side, which may be perfectly discerned.

*To fetch Oyl or Grease out of Books, Writings, or Cloaths.*

Buy a pennyworth or two of Oyl of Turpentine, and put a drop or two upon the place which is oily or greasy, rubbing it on, and you shall see how it will drink up the Oyl or Grease and be presently dry and fair, for this Oyl of Turpentine is a great dryer, and is good to put amongst Oyl Colours to make them dry speedily.

*To refresh and scowre old Pictures in Oyl, making them to look almost as fresh as new.*

Take the Picture out of the Frame, then wipe or brush off the Dust very clean, and then lay it level upon a Board or Table, pouring good sharp Vinegar all over the same, and there let it lie and soak for three or four hours; if the Vinegar be dry'd up, then pour on more, continually keeping it wet; then beat a piece of dry Brick very fine to powder, (and see there be no Lumps or Stones therein, for they will raze and scratch the Picture) and then put the Powder into a coarse linnen Rag, and tie it, and then dip it well in a Porringer of Vinegar, and with your Rag and Powder, rub and scowre your Picture all over very hard, and then with fair Water or a wet Clout wash the filth away; but if you see any spots or filth remain, then scowre it again and wash it; then dry it very well with a Cloth, and when you have dry'd it, put it again into the Frame, and set it in the Sun for a day or two, (for the Sun refresheth the Colours very much) and then rub it hard with a dry woollen Cloath till you



make it shine, and then hang it up. This will cause it to look almost as fresh as when it was new.

Some use to wash them in Soap, and then oil or varnish them over, but that is not good, because that the Oyl or Varnish will turn yellow and gather Dust.

*To keep Sword-blades, Pistols, Edge-tools, or other Things from rusting for 7 years in a dry House.*

Take Fish Glue, or Isinglass, and cut it in pieces, then with a Hammer beat or bruise it upon an Anvil or Stone, and then put it into a little Skillet, or suchlike, with Water, and let it dissolve over a gentle Fire, still stirring it as you do your common Glue; then when it is well boiled take it off, and with a Pencil, or small hair Brush lay the same, while it is hot, all over your Sword-blade as thin as may be, and then lay it to dry, and it is done. This thin Coat keepeth the moistness of the Air from the Metal, that it cannot rust; but when you are to wear it or use it, take a blunt Knife, and you may easily scale off the thin substance, and then it will be as bright as any Silver.

I verily believe, that our common Glue will do the like, keeping of it in a dry Room.

*A Cement for broken Glasses, China-Cups, and suchlike.*

Take one part of Virgin Wax, and two parts of the Tears, or clear drops of Mastich, melt them together and Cement therewith. But the better is, if you beat the whitish Fish Glue or Isinglass with a Hammer till it begin to be clear, and then cut the same into very small and short pieces, and dissolve and melt the same over a gentle Fire with *Aqua-vita*; then let one that standeth by, hold both the pieces that are to be cemented over a Chafing-dish of Coals till they be warm; and during their heat, lay on the dissolved Glue with a fine Pencil, then bind the Glass with Wyre or Packthread to keep it steady, and so let it remain till it be cold and dry. White Lead and Oyl mixt, such as Painters use, will also do it.

*Another.*

Take a little quantity of unslacked Lime, Wheat flower



flower and the white of an Egg, and incorporate them together. Mastich, *Aqua-vite*, and white Lead is good ; so is Ifinglass, being dissolved and melted with Rhenish-wine.

*To catch Fish in a dark Night, with a Candle under Water.*

Get a Urinal, and put pretty soft Clay therein, and with something that is flat at the end, press the Clay gently to the bottom of the Glass, smoothing it as well as you can, then take a Stick and shape it about the bigness of a Candles end, wet the Stick, and put it into the neck of the Glass, making a hole in the middle of the Clay, as you make Clay Candlesticks, then make a little Hoop of a Willow-stick, and tie pieces of Cork in four places of the Hoop equally distant, and get a thin, light, round piece of Board, and with four little Sticks of an equal length, tie one end of them to the Corks, and the other ends fasten to the Board to support it, as you may see here in this Figure.

In the Board you must make a hole in the middle to put the Neck of the *Glass* thro', and there tie it and make a loop with a string to the Board that you may with a long Pole put it into the Water ; when you will use it, put your Candle into the Glass in the clay Socket, a little below the brim, that the Wind blow not the light out ; if you please you may with Wax or Glue put lit-



tle pieces of Looking-glasses, or other Glass under the Board on the side next the Water, and this Light will shine



shine a great compass in the Water, and the Fish will straight resort to the same, where you may very easily take them with a Net.

This might be done with the Glass alone, by tying Corks about the neck of the Glass, to keep the mouth above Water.

*To grave Arms, Posies, or other devices upon Eggs.*

Melt Suet pretty warm, and dip in your Eggs in this manner; hold the Egg between your Thumb and Forefinger, and quickly dip one half therein, and hold it in your hand till it be cold, and then dip in the other end that it be thinly covered all over, then take a little Bodkin or Needle, and grave in the Suet what Letters or Words you please, then lay the Egg thus engraven in good Wine-Vinegar, or other Vinegar in some Stone-pot or Vessel for the space of six or eight hours more or less, according to the strength or sharpness of the same; then take out the Eggs, and in hot Water dissolve the Suet from the Shells, then lay the Egg to cool, and the work will appear to be graven in the Shell of Russet colour. And if the Egg lie long enough in the Vinegar after it is so graven, the Letters or Works will appear upon the Egg itself, being boiled, and so you may serve them up at the Table: And if you care not to lose the Meat, you may pick out the same, when the Shell is through graven, and you shall have a strange piece of Work performed on the same.

*To make Wax either red or green, or soft Wax.*

Take to one pound of Wax in Summer, three ounces of the clearest Turpentine; but if you make it in Winter, take four ounces of Turpentine, melt these together over a soft Fire, stirring them with a Stick, and when they are well melted together, take it off, and let it cool a little, and then mix with the same the red Root of *Anchusa*, or Vermilion ground an ounce, and an ounce of sweet Oyl; stir these well together again over the Fire, then take it off to cool, and pour it into cold Water, and then upon a wet Board, and your

Hands



Hands wet, you may roul it into what form you please. Instead of Vermilion, you may take three times as much red Lead, but that is not so good.

If you will make green Wax, instead of Vermilion take the like quantity of Verdigrise. For black, put Lamp-black, or black Earth.

*To make a glorious Light with a Candle.*

This is fit for those that perform curious and fine Works by Candle-light, as Jewellers, Engravers, or the weak-sighted to read by, never dazeling the Eye.

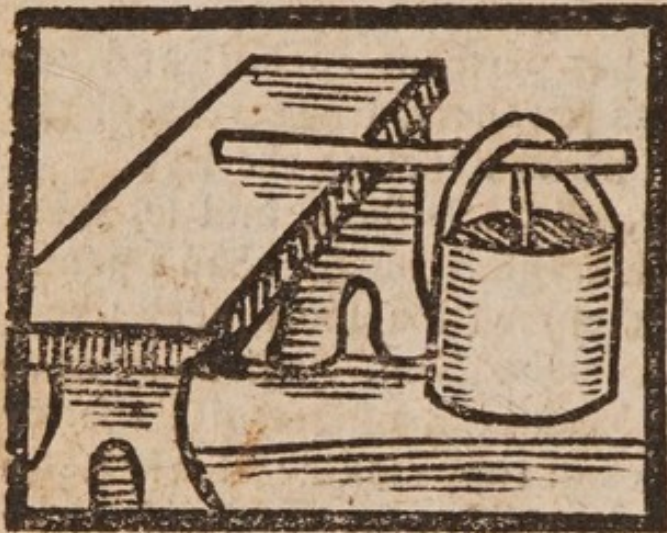
Go to the Glass-house, or Glass-shop, and let them blow you a thin round Globe-glass, bigger than a penny Loaf, (the bigger the better) with a short neck like a Bottle, they know how to make them. When you have this Glass, with Glue or Wax bind a piece of Tape or Packthread about the neck or top, making a little Loop therewith to hang by; then fill your Glass with the purest Conduit or Spring-water you can get (putting some *Aqua-vitæ* or Brandy therein to keep it from freezing) stopping it close to keep the Dust out; having thus done, if you will use it at a Table or Bench, knock a Tenterhook or Nail into the Cieling or Shelf, and with a Tape or Packthread fasten it to the Loop, and hang it up; but a round Stick were better to hang it on, putting it into a post or hole in the Wall, that you may let it higher or lower at your pleasure in turning the Stick; then behind your Glass set a Candle lighted upon the Table, and you shall have a glorious Light thro' the Glass and Water for your purpose; behold the Figure. Some use to place a Sheet of oily Paper betwixt 'em and the Candle, and this will cause a good Light.





*To lay one end of a Stick upon a Stool or Table, and hang a Pail of Water at the other end.*

Lay one end of a Staff or Stick a pretty way upon a Table or Stool (so that it roul not off) letting the other end hang over the Table likewise, (as you may see in this Figure) then take a Pail full of Water, and



hang the Pail, or handle upon the same; but you must have another short stick that will reach just from the inside of the bottom of the Pail to the long Stick on the Table, placing the short Stick just under the Pail very stiff, and

then shall the Pail of Water hang from the Ground upon the long Staves-end on the Table without falling, seeming very strange; this is difficult at first, till you hit just in the centre of Gravity, yet I have often done it.

*To make a bunch of Grapes of green Wax seem Natural.*

Get a little Sick turned round at the end, about the bigness of an Arrow, and then have your Vessel of green Wax melted, dipping your Stick in the same about the third part of an inch deep, and it will be almost in the fashion of an Acorn-cup; make a good many of them: Then take an Egg and make a little hole in the bigger-end of the Shell, less than a Penny, and get out the Yolk thereof, and dry the Shell; then with a piece of your green Wax hold it to the Fire, rub or dawb the Shell therewith thinly all over; then hold the Shell in your Left-hand, and with your other Hand take up first one Cup, holding the same a little near a Candle to warm, and quickly stick it on your Egg, and so do with all the rest of the Cups, till you have filled it all over; they must be set something close together. Now when you have thus done, take a little Stick about the bigness



bigness of the tag of a Point, and tie a Packthread in the middle thereof, and then put the Stick into the hole of the Shell, and so hang it up; you may cut Leaves like Vine-leaves in green Paper, and fasten them to the String or Stalk above the Bunch: I have made some Womens Mouths to water at this Conceit, they seem so natural to the Eye; and these Grapes will last all the Year.

*To know the Hour of the Day or Night by a Ring and Glass.*

Take a small Thread, and put it through a Gold-Ring, or otherlike Ring, and doubling the Thread, tie a pretty big knot at the end, and cut it off, and let the doubled Thread be seven or eight inches long, then take a Bole-glass, and set it on a Table, and hold the knot of the Thread something hard betwixt the ends of your Fore-finger and your Thumb, as you see here in the Figure, which will cause the Pulses of your Wrist to beat; let the Ring hang in the middle of the Glass a little within the rim, then the working of your Pulse will make the Ring to move, striking upon the sides of the Glass the hour of the Day or Night, and then the Ring will stand still again.



*To grave and inlay Colours into Gold, Silver, Iron, or Copper, so as to shew like Enamell.*

First cover your Metal with a crust of warm Wax, and when it is cold, with a fine sharp Bodkin, draw or cut out the shape or proportion of what you please, either Letters, Flowers, Borders, or Escotcheons of reasonable



sonable largeness; then pour upon the same empty places (which you have engraven upon the Wax) some few drops of strong Water or *Aqua fortis*, and let them lie a while, and when you find them deep enough graven, mingle Orpiment and Mastich melted together for a yellow Colour, and Vermilion and Mastich for red, and Bice and Mastich for a blue, and Ceruse for white, and Ivory burnt for a black. Now when your Mastich hath been melted with any of the foresaid Colours, let it cool, and beat the same into powder, and lay the same powder within the graving, and after lay the Metal upon a small Charcoal Fire till the Mastich be melted, and it will remain fast and firm therein a long time.

*To inlay Boxes, Cabinets, or other things with hard Wax.*

With a Pen draw upon your Box any thing that best pleaseth your Fancy, as Birds, Beasts, Flies, Flowers, Fruits, Leaves, Trayls, Anticks, Letters, &c. then take a little Knife ground sharp at the point, and cut or grave out the work pretty deep which you have drawn with your Pen upon the Wood; when you have so done, lay upon the same some red or green hard Wax, and with a hot Iron melt and rub hard the Wax all over into the crevices, or works which you have cut out, and so let it cool; then take a Knife and scrape away the Wax to the Board, and then you shall have your Work which you drew to be inlaid very perfectly in the colour of your Wax, as tho' it were drawn with a Pen, and will never wash nor wear off; when you have scraped it clean, hold it a little to the Fire, and it will fetch a gloss on the Wax, and make it to shew the pleasanter.

*To harden white of Eggs into Gum for many uses.*

Separate the Whites of Eggs clean from the Yolke, and beat the Whites very well into a clear Oil or Water, and when it is settled, skim off the froth; then put the same into Bladders, and hang them in a Chimney-corner where Fire is usually kept, to dry, and in a few days the same will become as hard a Gum Arabick;



in hot Weather you may hang your Bladders in the Sun to dry: This Gum may be used instead of other Gums, and with it you may varnish Prints or other things that are washed in Colours.

*To cast off Flowers in Wax of divers Colours.*

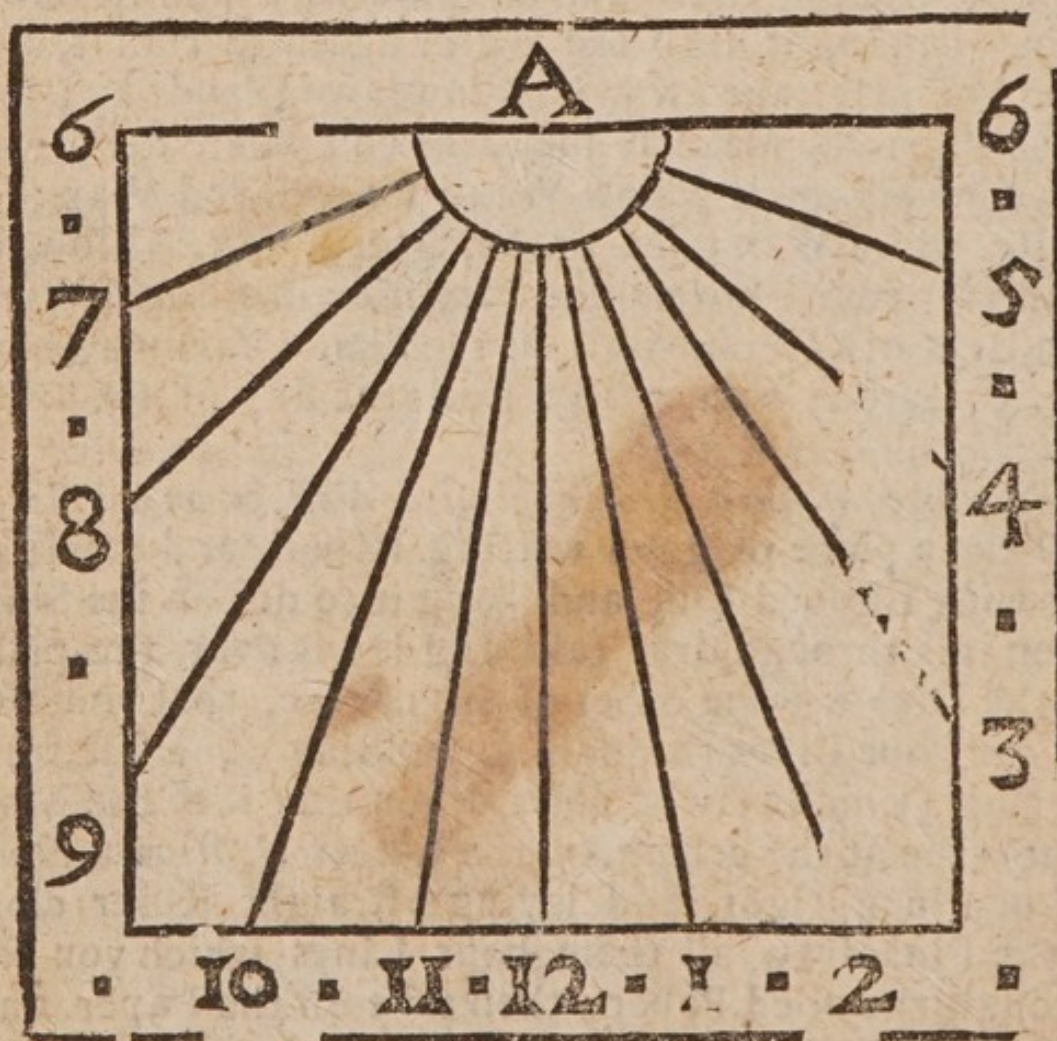
Cause a Stick to be turned round at one end, (somewhat taperwise) like the fashion of a poking Stick, lesser or bigger (according to the bigness of the Flower you intend to cast) and at the smaller end thereof with your Knife, cut Tents or Nicks in the same longwise; then take a little Panikin, and in the same melt your Wax with a gentle Fire, and when it is melted take it off, and then take your Stick (having a Porringer of fair Water by you) and dip the end into the Water, and then shake off the Water, or suck it off, and then dip the Stick in the Wax, and suddenly pull it out again, dipping it into the Water again to cool it, and then you may take off your Flower and lay it by; and in this sort you make as many as you please: For yellow Flowers, melt yellow Wax; for red, red Wax; for white, white Wax; for green, green Wax. Now for Stalks for your Flowers you may stick in a small Wyre, or a Bent of a Raison-frail, or the like. You may have the coloured Wax ready made at any of the Wax-Chandlers.

*To make a South Dial against a Wall, or on a Pole.*

Take a piece of good writing Paper, and rub it over with Linseed-Oil, and hang it to dry in the Sun; when it is through dry, take and lay it over the print of the Dial or some other of this nature, that you may see the hour Lines through it, holding of it safe from stirring (which may be done by pinning it to the Margent) then at the centre, by the Letter *A*, stick a Needle or Pin upright, and laying a straight Ruler close to the Pin, draw all those hour Lines which you see through the oiled Paper; then take off the Paper, and when you would mark out a Dial, do thus: Get a Board of what size you please that is smooth plained, and will not warp, drawing a straight Line just down



the middle thereof, and lay this Paper thereon, and then put your Pin through the centre-hole toward the top of the straight Line on the Board, and put another Pin towards the bottom of the Line, which is your 12 a-Clock Line, with a Bodkin prick a hole through every hour Line of your Paper into the Board, and then take it off; then stick your Pin into the centre-hole of the Board again, and laying these two Pins, keep your Paper steady; then with a small Ruler close to the Pin, and close to each hole in the Board, mark and draw your hour Lines; and note, that you may extend these hour Lines to what length you please, according to the bigness of the Board, and then Figure it as you see in this Example following.



Now for the Clock, or stile of your Dial, It must be set in the 12th hour Line, and must be just equal in height



height from the Board, as the triangle Figure marked with *B* sheweth; the Line with Pricks is but to direct you which side must be next to the Board: The Stile may be made of a thin Iron Plate, and cemented in, or of a stiff Wyre; the upper-end of which must be put just to the centre by *A*, equal to the 6 hour Line. When this is done, you must get some Painter to paint it in Oyl-colours, and so set it up.



*To keep Cherries, Pears, Nuts, or other Fruit a Year  
as fresh as they came from the Tree.*

When they are pretty ripe, cut off the Stalks, and put them into an earthen Pot well leaded, and then cover them well with Honey; then stop the Pot with Pitch or Wax, that no Air may enter in, and then put the Pot in some Cellar or cool place, burying it well in Sand, and so let it remain till you use it.

*To make Grapes and other Fruit to have no Kernels.*

It is said, That if you do plant or set the smaller-end of the Twig of a Vine somewhat deep into the Earth (which will take Root) that those Grapes that will grow thereon shall have no Stones: The like effect have Peaches, Apricocks, Damscens, and other stone Fruits, if the small end of the Vines be grafted into the Stocks. Also, If you bend down both the ends



of an Apple or Pear-tree Cyon, and graft them on both sides of the Stock, and the next Year when they have grown, cut the Cyon in the middle, one shall bear Fruit with Kernels, the other none.

*To make yellow Roses grow, and to make Trees and other things grow green all the Year.*

I have been informed, that if you graft a white Rose upon a Broom-stalk, or on a Furzen bush, that the same will bear yellow Roses, but they will have no sweet scent. Also, If you will graft a Rose, or other thing upon a Holly-stock, the Leaves of the same will grow green all the Year.

*To make Apples, Pears, and other Fruit of several Colours, and to give them a pretty taste of Spices.*

If you will give a pleasant Colour to your Fruit, do thus: For a Red boil Brasil, Turnfoil or Sanders, and for a Yellow use Saffron or Turmerick. Now to give them a pretty Taste or Smell, you must beat Cloves,

mace, Cinnamon, and Nutmegs to powder, and mix them with the Water of your Colours with some Honey; then with an Augre bore a Hole in the biggest part of the Tree unto the middle, something slooping downwards, and then pour your Water and Spices into the Hole, then with a Pin made of the same Wood or Tree, beat it hard into the Hole, and saw off the end, and wax it about: This must be done in Winter before the Spring, because when the Sap riseth, the Colour, Scent and Taste also ascendeth with the same.

*A strong and glistering Mortar for Cielings or Walls.*

It is said, that in *Italy* they much use this Conceit for plaistering of their Cielings, Floors or Walls; which is by mixing and well-tempering together Oxen and Cows Blood with fine Loam or Clay, and it will be of a very strong and binding Substance, and being well smoothed, it will glister and become very hard.

*To bake Bread that it shall not be hard-crusted nor crummy.*

Go to the Plate-worker, (such as maketh ordinary Dripping-pans) and cause him to make a Pot, or Pots of his Latten-plate, which may contain half a Peck, or greater



greater or less, as you please; according as you mean the bigness of your Loaf shall be; let this Pot be made with a bottom at the lower end, and open at the top, almost like a Beaker, as you may see here by this Figure; and when it is done, take a little Butter, and anoint the inside of the Pot therewith, and when your Dough is moulded, put it into the same (not full to the top) and thrust it down hard to the bottom, and then set it into an Oven amongst other Bread, with the lesser end downward, and when it is baked, it will easily come out; this Loaf will have no hard Crust, nor crumble as other Loaves do, and will shew smooth, standing like a Sugar-loaf upon the Table, and in a little compass. If you knead your Household-bread very well, and use Leaven, and bake it, letting your Oven mouth stand open, it will be much whiter and better, and keep a long time.



*To help the raging pain of the Teeth without drawing.*

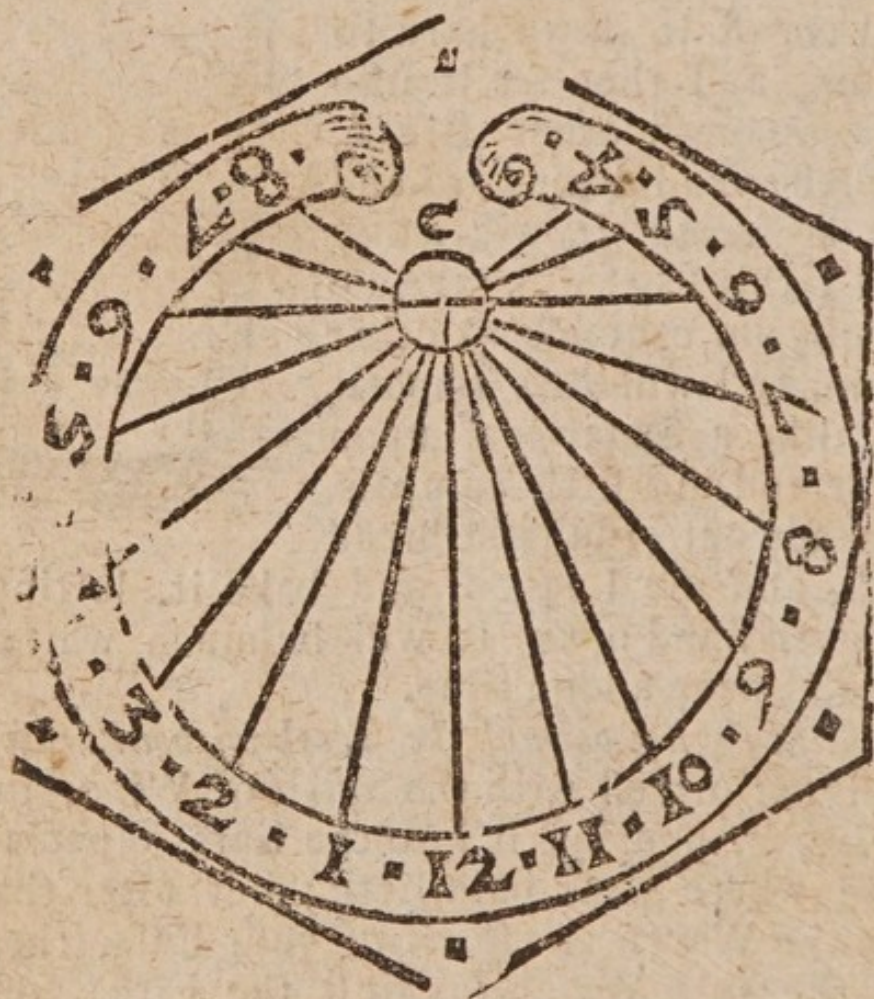
This is performed with the Spirit of Wine, or good *Aqua-vitæ*, by pouring it into the Ears, especially on that side where your pain lieth; but after that you have let the Water run forth of your Ears, then with more of the same Water (against the Fire) you must rub and chafe your Cheeks, and under your Jaws, and behind your Ears, stroking of them upwards with your Hands toward the Neck to drive back the Humours; for it is nothing but a cold Rheum that distilleth from the Head into the Gums which causeth the pain; therefore be sure to keep the Head very warm when you have done. I have been certified, that three Teeth taken out of a dead Man's Skull, and sowed in a clout or piece of Leather, and worn about them, which were much subject to the Tooth-ach, gave them present ease,



and they were never troubled with the same so long as they had them about them.

*To make a Horizontal, or flat Dial.*

This Dial may be made into sundry Forms, either four, six, or eight-square, or round as you please, and it is to be placed on the head of a Post, either in Garden, Yard, or at the outside of a Glass Window where the Sun cometh: Behold the Form.



*Note,* That the hour Lines of this Dial do vary from the former, and so doth the Stile in height; but you must work with this as in the other with your oiled Paper to draw the hour Lines, and to make a Line just in the middle for your 12 a-Clock Line. The centre of this Dial is hard by the Letter C. and must be more near the middle than the other, because it containeth more Hours thereon, for the other will serve but from 6 to 6, but this from 4 to 8. You may make this Dial in Stone, Wood or Metal, and remember to make the height



height of this Stile or Cock according to this triangle marked with the Letter *D*, for it must be higher, as you may perceive by this Figure. You may make Cement for to fasten the Stile with *Rozen*, powder of *Brick* and some *Chalk* mingled together, and with a hot *Iron* melt it into the *Crevice*.

*Note*, That these *Dials* will not serve in any part of *England*, but within 10 or 20 Miles of *London*.



*A curious Receipt to strengthen and comfort the Eyes.*

This Receipt I had of a curious Engraver, who every Morning before he went to work, in the corner of his Handkerchief (or a clean linnen Rag) did put a few drops of *Aqua-vita*, and with the same did wipe the corners of his Eyes, Eyebrows and Temples, which did keep back the Rheum, and greatly strengthen and comfort the Eyes. I have often proved it.

*A precious Salve for those that have had any Member out of joynt; called Jeremy of Brunswick's Salve.*

This famous Surgeon, with this Salve, hath healed those that had formerly their Members out of joynt, or those that had been wounded and could not stir or bow the Member where they had the hurt; for by this Salve did he bring many stiff and crooked Joynts again to their former Strength, to the great admiration of all Men.

*How to make the Salve.*

Take of old Hogs-grease, Ducks-grease, and Goose-grease, Hens or Capons-grease, of each two Ounces,  
Oyl.



Oyl-Olive eight ounces, Opopanax, Mastich and Frankincense, of each an Ounce: Dissolve the Gums in Whitewine that are to be dissolved, and powder the other; mingle them all together, and add Wax and Turpentine to them, then boil them all together with good stirring.

*An excellent Unguent for green Wounds, especially in the Head.*

Take of the best Turpentine an ounce and a half, and as much of Gum Elemi, or Capons-grease an Ounce, melt these at the Fire, and mingle them. When you use it, melt it and anoint the edges of the Wound, and dip a pledge of Lint in it, and then lay a Plaister on the top of the same, and roul it gently.

*To make a sovereign Oyl, or Balm for all Wounds.*

Take three Pound of common Oyl, two Pound of Turpentine, Wheat that is cleansed five Ounces, St. John's Wort a Pound, Valerian, Carduus Benedictus, of each fourteen Ounces; bruise the Herbs, and infuse them in Whitewine six or eight hours, then put thereto the Wheat and Oyl, and boil them on an easie Fire till the Wine be consumed; then strain them, and put the Turpentine in, and then boil them again on a soft Fire to perfection. This cures all Wounds simple or confused.

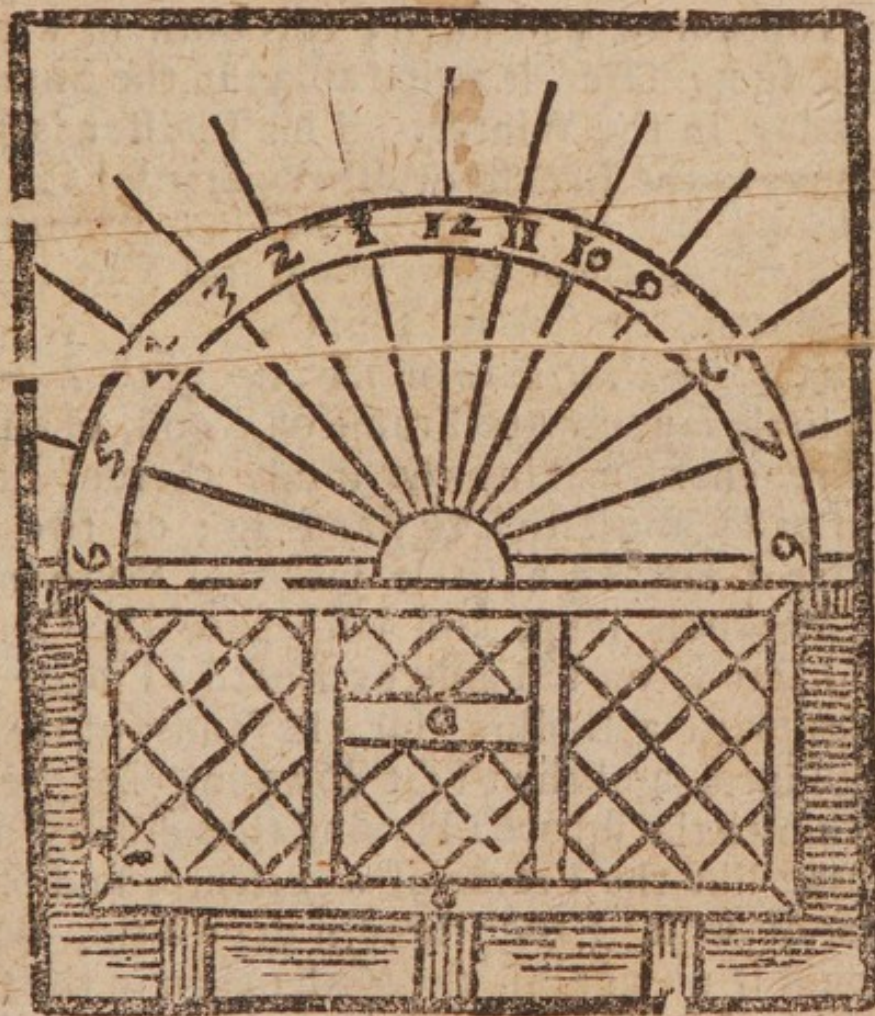
*An excellent Emplaster good for all Wounds or Ulcers.*

Take Deer's Suet four Ounces, Rosin and Perrosin, of each a Pound and a half, white Wax and Frankincense, of each four Ounces, Mastich an Ounce; melt the Wax and Suet, and powder the Gums, and put them together, and when they be melted, strain them thro' a piece of Canvas, then add to them a Pottle of Whitewine, and boil them all to the composition of the Wine, with continual stirring, and then take it from the Fire, and when it is almost cold, put thereto four Ounces of Turpentine washed in Whitewine, and of Camphire powder'd two Ounces; then make rous of it, and keep it for use.



*To make a Sun-Dial on the Cieling of a Room, or Chamber, to know the time of Day as you lie in Bed.*

If you have any Window South-East, or South, which is best, and that is for your turn, in the lower Post or Frame of the inside of your Window, about the middle, fasten with Wax a little round piece of Looking-glass, or other Glass, about the bigness of a two-pence; you may cut it round with an old pair of Scissars; but if you place it higher in your Window on a Ledge, it will be the better (as you may see here in the Figure) set-



ting it level with the Horizon, and the reflection of the Sun in the Glass will shew on the Cieling the hour of the Day, the centre of the Dial will be without the Window, and not perpendicular to the Glass. This Dial must have no Stile, and it must be made like the last Horizontal Dial: You may draw the Circle, hour Lines and Figures with a Pencil or Coal. The black Spot is the piece of Looking-glass, the Dial is the Cieling.

*An*



*An excellent Plaister for Wounds in the Breasts, or other Parts.*

Take Rosin that is fresh, clear and sweet, a Pound, Oyl of Bays and Turpentine, of each two Ounces, Gum Elemi sweet and good, four Ounces; melt the Rosin and Gum together, and stir them well; then put in the Oyl and Turpentine, and let it boil, with continual stirring, and then strain it, and reserve it for your use in a close Pot. When you use it spread it on a piece of Leather bigger than the Wound by three Fingers breadth, and make a hole in the middle of the Leather for the Corruption to run forth; this doth it without Tent or Pledges: Dress it twice a-day in the Summer, and once a-day in the Winter. This Plaister is good for all Wounds in the Breast, or other parts, for it draweth the hollow Parts of all Wounds, and strengthens the Parts, clearing them from unnatural Matter, and dryeth all Wounds caused by Thirsts.

*To make a Candle-Dial to know the hour of the Night.*

Make a little four-square Frame of Wood, of a piece of a thin Trencher, making the inside thereof fit for the bottom of a Candlestick to stand in; on two sides of the Square I fastned a little piece of Wyre not a quarter of an Inch long, and just where the Candlestick should stand, on a Table or Board, I made two little Holes with a Bodkin for the ends of the two Wyres to go into, and then I set down my Candle and Candlestick into the square: Having thus done, I made a long Frame like the Frame of a Picture, and pasted half a sheet of white Paper therein upon a thin Board, and so hang'd it up against the Wall; then in the Ceiling I fasten'd a small Pulley, and on that Pulley I had two little Plummets of Lead, one broader at the bottom than the other, and ty'd them to a piece of Packthread at each end, and so hung them in a Pulley (as you may apprehend by the Figure following) the broadest Plummets I pulled down till it gave a shadow on the lower-end of the Paper in the Frame on the Wall, which is now the 1 and 7 a-Clock Line, and where the



the broad bottom  
cast a shadow I  
made a *speck* with  
my Pen, and then  
turned an Hour-  
glass, and when  
that was run out,  
I made another  
*speck*, which is the  
2 and 8 Line, and  
so of the rest; by  
these *Divisions* you  
may with a pair  
of Compasses di-  
vide the rest of  
the hour Line up-  
wards, you must  
pull down the  
Plummet and set  
it at any time at  
what hour you



please, as by this, it shews that it is half an hour past 4 or 10 of the Clock. You must remember to have your Candles always of one size or weight, as of the eights, or twelves in the Pound, or such as you usually burn. You may take away your Candle and Candlestick out of the square Frame, if you have occasion, and then set it down in its place again, which keeps all right. I have placed the Figures at each end of the hour Lines, as from 1 to 7 on the first side, and then from 7 to 12 on the other side. *Note*, When it is just 7 on the first side, then pull down the Plummet to 7 on the other side, which I hold to be the best way.

*Of the Significations of Sickneses, either present or at hand.*

These following Presages and Tokens of Sickneses are worth the observation of all Men: First, to prepare themselves for God, if he be pleased to call them; otherwise that they may in time, before they be too much spent, have the counsel and help of learned and expert Physicians.

*Signs*



*Signs of Sicknes are these.*

If the Body be hotter, colder, moister, dryer, leaner, fatter, or the Colour more pale, or more swarthish, or the Eyes more hollow than they were accustomed to be, and on the sudden change, all these are certain Fore-runners and Messengers that the Body is disposed to Sicknes, or already Sick.

*Of the Signification of the several Colours of some Urine.*

The Colours and Symptoms of Urines are many and various, as are the Diseases, and therefore ought to be judged on by the Learned; but thus much in brief:

Red and thick Urine betokeneth Sanguine.

Red and thin betokeneth Melancholy

White and thick signifieth Flegm.

White and thin betokeneth Melancholy.

The highness of the Colour signifieth Heat, but the pale, black, or green betokeneth Cold.

Also the grossness or thickness of the Urine signifieth Moisture, the cleanness or thinness Dryness.

Urine of the colour of bright Gold, or of the colour of Gilt, signifieth perfect Digestion or Health.

Red as a red Apple or Cherry, or base red like Bole Armoniack, or red like glowing Fire, betokeneth excess of Digestion.

Clear and white like Water, or grey as a Horn, or white like Whey, or the colour of a Camel's hair, signifieth lack of Digestion.

Pale, like to Broth, or Flesh sodden, betokeneth the beginning of Digestion.

Citrine colour, or yellow, sub-citrine, or paler signifieth the middle of Digestion.

Colour of a Beast's Liver, or of dark Wine, or green like to Coleworts sheweth adustion of Humours.

Urine of a Lead Colour, or black as Ink, or black as a Horn, or dark above, and clear beneath, betokeneth feebleness of Nature, Mortification and Death.

Take a quantity of Snails, and make them void their stinkiness, then dry and powder them, then make a Loaf and a mouthful of that will suffice to live on 7 days.





*To make*

# FIREWORKS,

For either Land or Sea.

*And, 1<sup>st</sup>, of the Pike.*

**H**AVING treated of divers modern Curiosities, I hold it convenient to speak something in brief concerning Works for Service, both by Land and Sea, which may thus be perform'd.

If you would make good a Breach, or enter a Ship, take strong Canvas, being cut, sew'd, and ty'd hard on a Pike with Marlin Cord; then with this Receipt following (being compounded and workt up together) do thus:

Take Roch-water one part, and Petre in meal, as much Sulphur mealed two parts, three parts of Rosin in roch, Turpentine one part, as much of Linseed Oil, one half-part of Verdigrise, Bole-Armoniac, Bay-salt, Colophonia, of these three one third part; and if you think fitting, half a part of Arsenick; coat the same over with this liquid mixture melted in a pan or pot; then take four parts of Pitch, one of Linseed Oil, a third of Turpentine, one part of Sulphur, Tar one third part, and one part of Tallow. After these are melted, being cold, bore two holes in each of the same an inch deep with a sharp Bodkin of Iron, filling

D

the





the same with fine bruised powder, and put in each hole a little stick of two or three inches long, to be taken out when you would fire the same; (this Composition will burn furiously.) If you please, you may fasten to the same Receipt on your Pike, divers light Pipes or Canes of Iron, or Brass of six or seven inches long, being Pistol or Caliver bore (as the Figure marked with *B* sheweth) placing the touch-hole thereof close to the Canvas, boring the said Canvas thro' and priming the same with fine Powder, pasting a Paper thereon, and then coat the same over as before-said; this being charged with Powder and Bullet, will do great execution in a Throng, either defensive or offensive.

*To arm a Dart or Javelin with Wild-fire for Sails or sides of Ships*

You may arm a Dart, Javelin, Partizan, or suchlike Weapon to do excellent Service, being in the hand of a valiant Soldier, as you may see by the Letter *C* in the same; the same should be filled with the self-like Receipt, as before is shewed for the Pikes with Wild-fire, which will be a very good Weapon to go into the Sides or Sails of Ships. Or you may place upon the Staff of your Javelin certain Pistol-barrels of once length, about ten or twelve inches, letting the same into the Wood round about the Staff a little, as a Pistol-barrel is into the Stock (as the Figure marked with the Letter *D* sheweth) which Staff should have so much substance at the one end, whereto you may nail the same Barrels fast at the breech; and about the midst of the same put over a Hoop of Iron, as close as ever you can, the which is to be charged in this manner following, *viz.* First charge every Barrel with two inches of Powder, after put in a Bullet a little lower than the Bore of the same Piece; then take of this following Receipt following.

Of bruised Powder four parts, of Salt-petre in measure Linseed Oyl, Brimstone finely beaten, Varnish, and of Willow or Hazle-cole moistned with a little Vinegar.



gar; (of all these five last Ingredients one part;) which must be well wrought together with the Hand in some wooden Vessel, till you feel that it will cling together, of which you must put in after the Bullet two inches, and thrust the same together with a Rammer-stick; and then again put in 2 inches of Powder, and after that a Bullet; and lastly, two inches of this slow Receipt, until you have filled every one of the said Barrels within half an inch of the Mouth, the which is to be filled up with the said slow Receipt, and Powder bruised and mixed together, that it may the sooner fire: This being done, bind a Paper over the Mouths of the same, until you will use them, and giving Fire to any one of the same it will fire all the other, and every one will



discharge three or four Shots a-piece one after another, to the hurt of the Enemy, being used in Service either to offend or defend, to the pleasure of the Beholders, being used in triumph with Bullets of Receipt rolled in Tow, and coated with Brimstone.

*To defend a Breach in a Ship, or other place of Defence.*

To perform this, you may arm a Partizan, Javelin, or Fork with Fire-works, and to shoot every one of them with seven or eight Pistol or Musket-bullets in nailing a Plate of Iron cross the Pike or point of the said Javelin, or between the grains of the Fork piercing certain holes thro' the same, unto which with a strong Wyre you may make fast on either side so many Pipes of Iron, of seven or eight inches long, as



you think convenient to fix upon either, or any of the said Weapons, and charging the same with Powder, Bullet and Wadd, you may cause the same to fire one



after another, in filling a roll of Canvas sewed together, (as the Figure F sheweth) with slow Receipt, and coated as before is shewed; and this being placed artificially upon the short Barrels or Pipes (as the Figures G H sheweth) and primed with fine Powder directly against the touch-holes of the Barrels, pasting a little Paper over the same, firing the said Trains at both ends, which as they burn, shall still

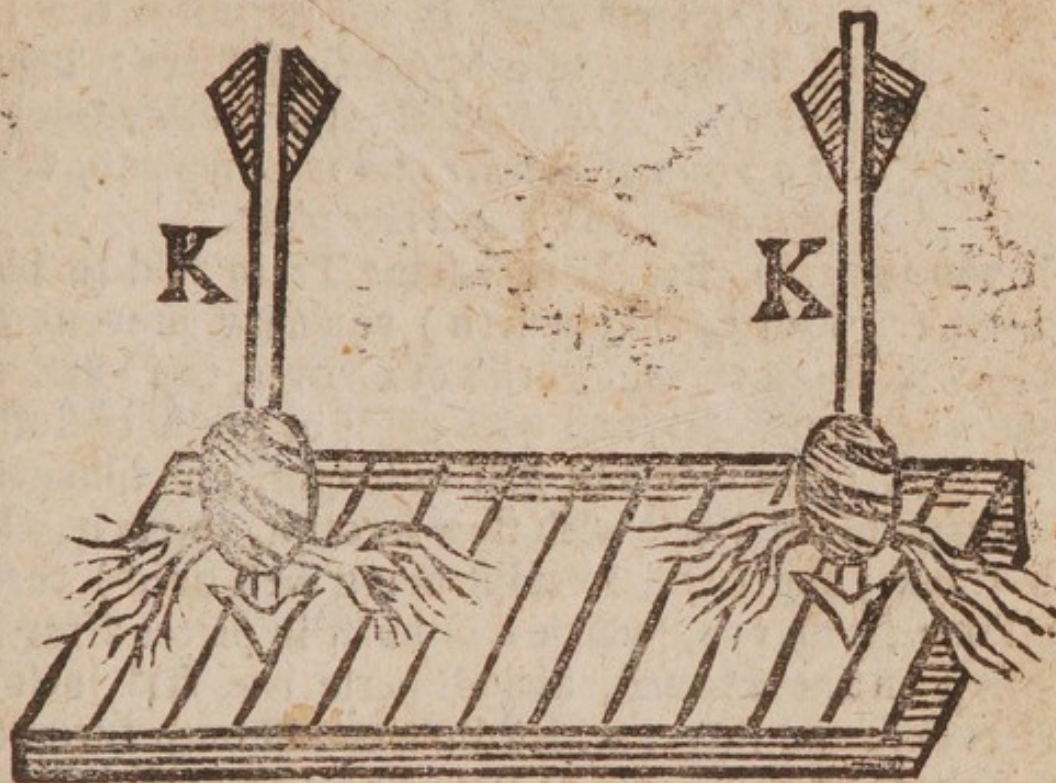
discharge the short Pieces one after another, to the great hurt of the Adversary.

*How to burn wooden Bridges, Gates, Houses, &c.*

To perform this and the like military service, if you can come to anoint the same with some such liquid composition as before shewn for the coating of Fireworks, melting in the same a good quantity of bruised Brimstone, and sticking in the same Arrows of Wild-fire made in proportion as the Figure at K doth shew. The Recipe's may be made as the former for Pikes, with Wild-fire, which will certainly set the same on fire, for the Receipt is so forcible, that it will certainly burn in the Water.

*How*





*How to do excellent Service against an Enemy who would enter a Breach, a Gate, a Bridge, a Ship, &c.*

If that the Enemy will enter (and that you intend not to yield) it is necessary to have in readiness divers hollow Bullets, made of two plates of Iron, or other metal, so that the one may close about the other round like a box, which being filled with pebble Stones square pieces of Iron, called Dice-shot, Musket-bullets, or the like, which being discharg'd out of a murdering Piece, it will do great execution: if you will fill cases of wood, made like unto a





Laathorn, with the same stuff, it will perform the like Service, being shot out of a Murdering Piece: Behold both the figures marked with the Letter A foregoing.

*How to prevent a Train of Powder laid to blow you up before you enter a Ship, or other place.*

If you imagine that there is some Train laid to blow you up (as it often happeneth) you may prevent the same by washing certain Purses of Canvas, filled half full of good Corn-powder, and with eight or ten fiery Bullets of an inch, or an inch and half in height, and filling the other part of the Purse with slow Receipt, you may, when you think good (the Receipt being well fired) throw the same from you, which will burst in pieces after the lighting on the ground, and disperse the said inclosed Bullets here and there, which Bullets will burn furiously, and if there be any Train of Powder laid near, it will presently fire the same. The said Purses are very good to throw out of hand, or may be shot out of a Mortar-piece amongst Men in Battle-array, to disorder them, or into a Town; the Figure B sheweth how to fill the Purses, and the Letter C sheweth the proportion of it; being made up, filled and coated over.

The Receipt for making these Bullets of Wildfire following: Take of Sulphur in meal six parts, of Rosin in meal three parts, melting the same in some pot or pan over a slow Fire; then take of Stone-pitch one part, of hard Wax one pound, of Tar one fourth part, of Aquavita one half-part, of Linseed-Oyl as much, of Verdigrise one fourth part, and of Camphire one eighth part, melting all these together likewise, and stir into the same two parts of Peter in meal; and, taking the same from the Fire, put therein four parts of bruised Powder, working the same well together in your hands, and roul the same round of the bigness that you would have your Balls of, boring two holes thro' the same a-cross, which when you would use, must be primed full of bruised Powder; these Balls will be as hard as stone, and need no coating; and, being fired, will burn furiously, and cleave to any thing, not diminishing in quantity being burnt to ashes, which



which Ashes will kindle an Oaken board : If you please, you may shoot these Bullets out of a Piece of great Ordinance. The Figures for the Purfes here follow.



*To drive away Mice.* Take Vervain and steep in Water 24 hours, and sprinkle it about the House, and they'll go away.

*To make Hair quickly grow.* Take the Juice of Nettles, that grow in the Sun-rising, moisten you Comb Teeth with it, and every Morning comb the Hair upward. *Probatum est.*

*To whiten Teeth.* Take Syrup of Roses, Rose-water, Honey, Plantane-water, of each half an Ounce, Spirit of Vitriol four Ounces, mix them together, and then rub your Teeth with a linnen Cloth, and wash them with equal parts of Plantane and Rose-water, or rub your Teeth with Brickduft, and it will whiten them.

*To make a great deal of Cream.*

Take a red Snail, and by a Thread let him hang in the middle of your Cream-Vessel, and all that is above the Snail will turn to Cream.

*Heart-burn.* Chew five or six white Pease some time ; then swallow them and keep in your Breath, and it will cure you.

*Deafness and Noise in the Ear.* A little Oyl of bitter Almonds put into the Ear upon a little black Wool.

*Consumption.* Follow after the Plow, or walk in a Morning and cut up a Turf of Grass in the Fields and smell to it a pretty while.



## Experiments in Painting, &c.

**H**AVING treated of these Matters in *Art's Master-piece* and *Art's Treasury*, a little I have to add ; that, To be a Proficient in this Art, you must provide a Grindstone of Marble, or a hard Rance, or some other close-grain'd Stone that is not spongy or full of small Pores, otherwise it cannot be well cleaned, and the Relicks of the Colours will spoil the Beauty of those Colours which you grind after thereon : This Grindstone shou'd be about a Foot and half square, and such a weight and thickness as it may be steady and fast, that it may not move when you grind upon it.

2. You must have a Mullet, which is a pebble Stone of the shape of an Egg, the bigger end whereof you must break off, and grind it flat and smooth with Emery, or some sharp Sand upon some other hard flat Stone ; let the edges be well rounded off to make the Colours slide better ; when you move it round, about two inches or three at most is sufficient for its diameter on its flat end, let it be about five inches high for to command it better when you grind with it. If you cannot get a spotted Marble (which is of a half Colour compacted of Kernels as it were in its Greet) you may use any sort of hard Marble, white or black ; some use a Slate which they cover their Houses with in *Sussex*, which for common Painting I have known do very well, if it be above two Foot square, and an inch and half thick ; if you cannot get a good shap'd Stone for your Mullet, a piece of any smooth-sided Stone cemented (with Brickduft and Rosin mixt) in a piece of Wood fitly shaped to hold it by may do as well as the best Mullet you can buy.

3. Get a Voider, which is a Lanthorn-horn, of three inches one way, and 4 the other ; with this Voider you clear off the Colours from the Stone after ground, it keeps them together whilst grinding lest they spread too much ;



much; if you have not this, a smooth piece of Wood of the same size will serve, if it be cut thin and made very sharp and even on the edges.

4. You must have Pans and Pots of Tin or Earth of divers sizes, as the quantity of Colours to be ground require, in which you still put them as grinded, till so much Colour of each sort be ground as is needful for your Design and Work; but if you wou'd grind at once so much of each Colour as may suffice for a long time together, put them ty'd up close in Ox, Hogs or Sheeps Bladders, which will keep them a long time from drying or spoiling: I have known Colours so ty'd up in Bladders for above 15 years, were fit for use when opened, after they were mixt with a little fresh Oil again.

5. You must have Brushes and Pencils of all sorts and sizes; the Brushes are all made of Hogs Bristles, of divers shapes and sizes, of which some be flat, and some round, the round ones are from a quarter of an inch diameter, to two inches; you must use the larger for priming your Work, and laying such Colours useful in great quantities, and colouring the Superficies of large Work, whether Wainscot, Posts, or Pales, &c. but you use the smaller Brushes in such places as the larger sizes can't well work in; your flat Brushes are chiefly used for drawing of Lines, and to imitate Walnut and Olive Work.

Pencils are made of smaller and finer Hair, which are also of several sizes, but are generally all round and fitted commonly into Geese, Swans, or Ducks Quills, ficht and pointed: There are also a larger sort of Pencils in Tin Cases, and some in Stocks like Brushes, which are all made of fine Hair. When you chuse Pencils and Brushes, mind that the Bristles for your Brushes be fast bound in their Stocks, and, that the Hair be strong, and lie close together, for they will never work well if the Hair spread and doth not lie close, for the Bristles will come out and so spoil the Work when used, if they be not fast bound in the Stocks, which dispa-  
rageth



rageth the Work when the Hairs are seen buried up and down therein ; therefore, if they be not fast bound, put in some thin wooden Wedges between the Thread with which they are bound, and it may prevent it ; for so you will secure and make the Bristles tight.

In chusing Pencils, especially pointed ones, put 'em in your Mouth and moisten 'em a little, drawing them out between your Tongue and Lip ; if they come out with an entire sharp point, not cleaving in two, then such are good ; but see that they are thick and full set next the Quill, and fast bound ; if they are lean and thin next the Quill, they'll not draw clever and sharp, neither will they stand well to your Work. Be sure fit a neat Stock to every Case or Quill-pencils at least nine inches long, for you cannot command it well, nor work so neat, unless you hold your Pencil a good distance from your Hand. You must support your Hand as usual with a Ruler, one end whereof hold in your left Hand, and let the other rest on your Work, yet so as it may not injure it. I shall now give you the Value of those Utensils before premised.

A Marble Grinding-stone, siz'd as before mention'd, may be from 10 s. to 5.

A Mullet 1 s. 6 d. or 2 s.

Brushes of the largest size 6 d. each, the smaller from 4 d. to 1 d.

The largest Pencils of fine Hair, either in Wooden Stocks or Tin Cases, from 8 d. to 2 d. each. Those in Swan Quills 1 d. but those in Goose or Duck Quills about 6 d. a dozen.

The best Black-Lead Pencils, in Cedar Cases, about 3 d. a-piece.

An Ounce of the finest Black-Lead in the lump will do as much service as six Pencils, and if good, will cost about 6 d. Brass Compasses, from 18 d. to 6 s. a pair. A pair of about eight inches long in the Shank, about 2 s. 6 d. A pair of the same size with three points, viz. a Steel, a Pen point, and a Black-Lead point, will cost about 6 s. if well made.



Crucibles (if large) about 2 *d.* apiece, the other sizes a Penny, but the smallest a Halfpenny.

All sorts of Pencils you may buy at the *Colour-shops*; but the Brass Compasses and Squares are to be had at the Mathematical Instrument-makers. Crucibles are to be had at the Ironmongers in *Foster-lane*.

## S E C T. II.

*Of the several Colours for painting in Oil; also how to make, and the Nature of 'em. And first of Whites.*

**H**ERE you must observe, that *White Lead* is chief of all *Whites*, but the full and plain description of its making is to be found in Sir *Philip Vernatti's* Philosophical Transactions, printed and communicated to the *Royal Society*. There are two sorts of this to be had at the *Colour-shops*, the one is call'd *Ceruse*, which is the purest and cleanest part; the other is call'd only *White Lead*. These *Whites* work with ease, and will grind as fine as the Oil itself; on what Work soever it be laid, it binds hard and lies smooth. 'Tis best to work it in Linseed Oil, if you paint Stonework or Timber-work with it, for it binds it hard when laid very stiff on the Work, but 'tis best to mix it with drying Nut-Oil if it be used within doors, because Linseed Oil turns yellow, spoiling its beauty, which Walnut-Oil prevents, and keeps it in its constant whiteness.

There is another *White*, call'd *Flake-white*, the which some hold to be best, but perhaps the scarcity and dearth of it may give it the preference; but the best *Ceruse* may be as good, and 'tis much cheaper.

### *Of Blacks.*

*Lamp-black* comes from the North Countries, and I think is only the Soot raised from the fat rosin parts of Fir-trees, perhaps from *Norway* or *Sweden*. This *Black* is most used, being cheap and plentiful; 'tis good for most Uses, and will on common Occasions work without grinding, if mixt with Linseed Oil, because it is fine of itself, but it requires a long time to dry if thus used,



used, unless it be mixt with much drying Oil, or Verdigrise finely ground, which is better. Some add Oil of Turpentine, for without some of these 'twill not dry in a long time. If you burn this *Black* in the Fire till red hot, and it cease smoaking, 'twill destroy the fatness in it (which keeps it from drying) and make it dry much sooner; but then it will not work fine, unless it be ground with Oil. There is another sort said to be the Soot of a Lamp, which some hold to be of a finer body and brighter colour, but it is not to be had in great quantities, so used only in very fine work.

*Ivory-Black* is made of the waste Fragments of Ivory, or Comb-makers Raspings; these put up close in a Crucible and burnt or charred to a black Coal, make a delicate *Black*, being ground very fine. This you may have at the Shops well prepar'd, and levigated or ground fine with Water on a marble Stone, and afterwards dry'd in small lumps. It will grind more easily in Oil when 'tis thus prepar'd, and will lie as smooth as most others do, but is not used in common work, because 'tis dear.

*Willow-Charcoal* ground fine in Oil makes a very good *Black*, but is not much used, because it is not so easily got as *Lamp-black*.

#### *of Greens.*

The most useful *Green* is Verdigrise, and is made out of Copper; the best is said to come from *Montpellier* in *France*; see Mr. Ray's Travels, p. 454. This delicate *Green* inclines to a *blue*, but makes the best *Grass-green*, if mixt with a little *Pink-yellow*. It requires some Labour to grind it fine, but when so done, it works well, and lies with a good body. There is a sort call'd *Distilled Verdigrise*, which when purified from Dross and Filth, makes very fine work, but is too dear for common Painting.

*Green Verditer* and *Green Bice* are both of a sandy nature, and so not used much, unless in Landskips where they are for Variety.





# *Hocus Pocus :*

O R,

# Legerdemain.

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*How to make it freeze by the Fire-side.*

**C** All for a Joynt-stool, a Quart-pot, and a handful of Snow, a little Water, a handful of Salt, and a short Staff or Stick; first, pour a little Water upon the Stool, and upon it set a Quart-pot, and put the Snow into the Pot, the Salt also, but privately, then let him hold the Pot fast with his Left-hand, and take the short Stick in his right, and therewith churn the Snow and Salt in the Pot, as if one should churn for Butter, and in half a quarter of an hour the Pot will freeze so hard to the Stool you can scarcely, with both Hands, pull it off from the Stool. *Probatum est.*

*How to make two Bells come into one hand, having put in. o  
each Hand one.*

This Feat must be perform'd with three Bells, you must put one Bell into your left sleeve, then put one Bell into one hand, and another Bell into the other hand, (they must be little Morris Bells) withdraw your Hands, and privily convey the Bell in your left hand into your  
E right;



right; then stretch both your hands abroad, and bid two Folks hold your hands fast, but first shake your hands, and say, Do you hear them? The Bell that is in your sleeve will not be known, by the rattling, but that it is in your hand: Then say, he now that is the arrantest Whore-master or Cuckold of you both shall have both the Bells, and the other shall have none at all: open your hands then and shew them, and it will be thought that you deal by Art-Magick.

*How to make a Juggling Book, or Book of Wagery.*

You must provide a Paper-book in Octavo, of what thickness you please, first turn over seven Leaves of it; and then, upon both the open sides, draw or paint the Pictures of Flowers, then turn over seven Leaves more; and paint the very same; do this until you have turned the Book once quite over: Then unto the farther painted Leaves paste a little stay of Paper or Parchment, one directly over another. Then turn over the Book again, and having turned every sixth Leaf, draw the Picture of Flower-de-Luces, and then paste stays of Parchment upon them, as you did upon the first; but these stays must all of them be a little lower than the former. Then turn over the Book again, and after the fifth Leaf, throughout the Book is turned, paint Horns: Do thus until you have painted the Book full of Pictures, only let there be one part of the Leaves fair Paper; having thus finished the Book, when you use it, hold it in your Left-hand, and with your Right-hand, your Thumb set upon the Parchment stays, shew them orderly and nimbly, but with a bold and audacious Countenance, for that must be the grace of your Tricks: say, This Book is not printed thus; as some of you may suppose, but it is of such a Property that whatsoever bloweth on it, it will give the Representation of whatsoever he is naturally addicted unto; and then turn the Book, and say, see, it's all fair Paper.

*Boxes to change Grain.*

Make one Box of Wood, Tin, or Brass, let the bottom fall a quarter of an inch into the Box, and glew thereon a laying of Barley, or such-like Grain: Draw the Box



with the bottom downwards, and say, Gentlemen, I met a Country-man going to buy Barley, and I told him I would sell him a Pennyworth, also I would multiply one Grain into so many Bushels as he should need, then cast a Barley-corn into your Box, and cover it with a Hat, and in the covering it, turn the bottom upside down: then cause some-body to blow on the Hat, then uncover it, and they will think strangely of it. You may make another Box of Wood like unto a Bell, to hold so much just as your former Box will, and make a bottom to this Box of Shoe-sole Leather, to thrust into the bottom of the Bell; then fill it with Barley, and thrust up the Leather bottom, for it will keep the Barley from falling out. Take this Box out of your Pocket, and set it down gently upon the Table, and say, I will cause all the Barley to go out of my Measure into my Bell, then with a Hat cover the Box that hath the Barley glew'd unto it, and in covering it, turn it with the Barley downward, then say, first, let us see whether there be nothing under the Bell, and clap it hard down upon the Table, so the weight of the Barley will thrust the bottom down; then bid some one blow hard on the Hat, then take it up, where they will see nothing but an empty Measure, then take up the Bell, and all the Barley will pour out. Sweep it then presently into your Hat or Lap, lest their busy prying may chance to discover your Leather bottom.

*A Conceit to procure Laughter.*

Take a Ball in one Hand, and another in the other, and stretch your Hands as far as you can one from the other, and if any will, lay a Quart of Wine with him that you will not withdraw your Hands, and yet will make both of them come into either Hand, which they please. It is no more to do than to lay one down upon the Table, and turn your self round, and take it up with the other Hand, and your Wager is won, and it will move no small Laughter to see a Fool so lose his Money.

*How to knit a hard knot upon an Handkerchief, and seem to undo the same with Words.*

Make one plain loose knot, with the two corner ends



of a Handkerchief, with seeming to draw the same very hard, hold fast the body of the said Handkerchief (near to the knot) with your Right-hand, pulling the contrary end with the Left-hand, which is the corner of that which you hold. Then close up handsomely the knot, which will be yet somewhat loose, and pull the Handkerchief so with your Right-hand, as the Left-hand end may be near to the knot: then will it seem to be a true and firm knot: and to make it appear more assuredly to be so indeed, let a Stranger pull at the end which you hold in your Left-hand, while you hold fast the other in your Right-hand; and then holding the knot with your Fore-finger and Thumb, and the nether part of your Handkerchief with your other Fingers, as you hold a Bridle, when you would with one Hand slip up the knot, and lengthen your Reins. This done, turn your Handkerchief over the knot with the Left-hand, in doing whereof, you must suddenly slip out the end or corner, putting up the knot of your Handkerchief with your Fore finger and Thumb, as you would put up the aforesaid knot over your Bridle. Then deliver the same (cover'd and wrapt within the midst of your Handkerchief) to one to hold fast, and after the pronounciation of some Words of Art, and Wagers laid, take the Handkerchief and shake it, and it will be loose.

*To transform any one small thing into another form by folding of Paper.*

Take a Sheet of Paper, and fold or double the same, so as one side be a little longer than the other: Then put a Counter between the two Leaves of the Paper up to the middle of the top of the fold, holding the same so as it be not perceiv'd, and lay a Groat on the outside there right against the Counter, and fold it down to the end of the longer side: and when you unfold it again, the Groat will be where the Counter was, and the Counter where the Groat was, so as some will suppose that you have chang'd the Money into a Counter, and with this many Feats may be done.



*To seem to blow a Six-pence out of another Man's Hand.*

Take a Six-pence, blow on it, and clap it presently into one of your Spectator's Hands, bidding them to hold it fast: Then ask of him if he be sure to have it, then, to be certain, he will open his Hand and look. Then say to him, *Nay, but if you let my Breath go off, I cannot do it*: Then take it out of his Hand again, and blow on it, and, staring him in the Face, clap a piece of Horn in his Hand, and retain the Six-pence, shutting his Hand your self. Bid him hold his Hand down, and slip the Teaster between one of his Cuffs. Then take the Stone that you shew Feats with, and hold it unto his Hand, saying, *By vertue hereof I will and command the Money to vanish you hold in your Hand; Vade, now see*: when they have look'd, then they will think that it is chang'd by vertue of your Stone. Then take the Horn again, and seem to cast it from you, retaining it, and say, *Vade*; and anon say, you have your Money again: He then will begin to marvel, and say, I have not: say then to him again, you have, and I'm sure you have it: Is't not in your Hand? If it be not there; turn down one of your Sleeves, for 'tis in one I'm sure, where he finding it, he will not a little wonder.

*To cast a piece of Money away, and to find it in another Man's Mouth, Pocket, or Purse.*

The Jugler calls for some one piece of Coin, as a Teaster or a Shilling, of any one in the Company, he willeth him to mark it with what Mark he will, then he takes it and casts it away, and coming to his Confederate, (who is furnish'd beforehand with the like piece of Coin, mark'd with the very same Mark) bids him deliver the Money out of his Pocket, Purse, or if he say the word Mouth, for this is concluded of beforehand. Now *this* Confederate (to make the matter seem more strange, will fume and fret, asking how he should come by it, till having found the Mark, he will confess it to be none of his, wondering at his Skill, how he should send it thither: and all the rest be taken with a real Admiration of his extraordinary Cunning.



*By the sound of a Counter phillip'd to tell whether Cross or Pile.*

The Jugler draws a Counter out of his Pocket, and saith to the Company, *See here is a Counter, take it who please, and let him phillip it up, and I will by Cunning tell you whether Cross or Pile be uppermost by the very sound, for you shall hoodwink me.* Now there are three or four, or more Confederates in the place, who, seeming Strangers as well as the rest, will be very importunate to have the philliping it, and before one of these shall have it, who by some sign of the Fingers or Countenance (fore-known to the Jugler) give him Information after he is demanded. Of the same nature is that Trick formerly mention'd in the Book, and call'd, *The Decollation of John Baptist.*

To make one dance naked is a Trick of the same nature, for the Party aforesaid is agreed to do it, and also the manner and circumstances: So that the Jugler, to blind the People, pronounceth sundry Words to such a Person, he then begins to rave like a Mad-man, and puts his Cloaths off with a kind of violent Carelesness, tho' (God knows) the Party knows as well what he doth as your self that reads it.

After the same manner shall you know what Money another hath in his Purse, and casting Money into a Pond, findeth it under a Stone or Threshold in another place.

Also to make a piece of Money to leap out of a Cup, and run to another by means of a small Hair fastned to the Money, which Hair the Confederate guideth. With a multitude of suchlike strange Feats, which may seem impossible (to the Judgment of the common People) to be effected without assistance of the Devil or some Familiar, which to nominate is neither needful, nor will my Occasions permit so much Leisure as to do it.

*Bread to encrease a quarter, and keep 30 Days longer than common Bread.*

Eoyl Pomkins in fair Water, till it grow thick, and with that Water make your Bread, and it will be very good. *Probatum.*



## variety of Inventions.

*Another.*

Take your Bran and boil it in a Kettle of Water, then strain it, and make your Bread with that white Water, and it will be a quarter more, and more substantial than ordinary.

*Another.*

Bread may be made of Parsnips, Carrots, Turnips, or Potato's: Boyl'd well, then mash'd, and with some Flour mix'd with it, make it as other Bread.

*To greaze any creaking in Wood.*

Rub it with Soap, and it is done.

*To kill Ants.* Shit upon their Nests. *Probatum.*

*To catch Moles.* Put Onions, Beets, or Oyl, into their Holes, and they'll run out presently.

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## Experiments in Arithmetick.

*A number of Men being delivered to an Officer to make thereof a square Battail, and suddenly to tell how many Ranks he shall have, and how many Men in each Rank.*

**S**uppose the number of Men delivered to be 144, therefore extract the square Root of 144, which is 12, and so many Men shall you have in Flank, and as many in File.

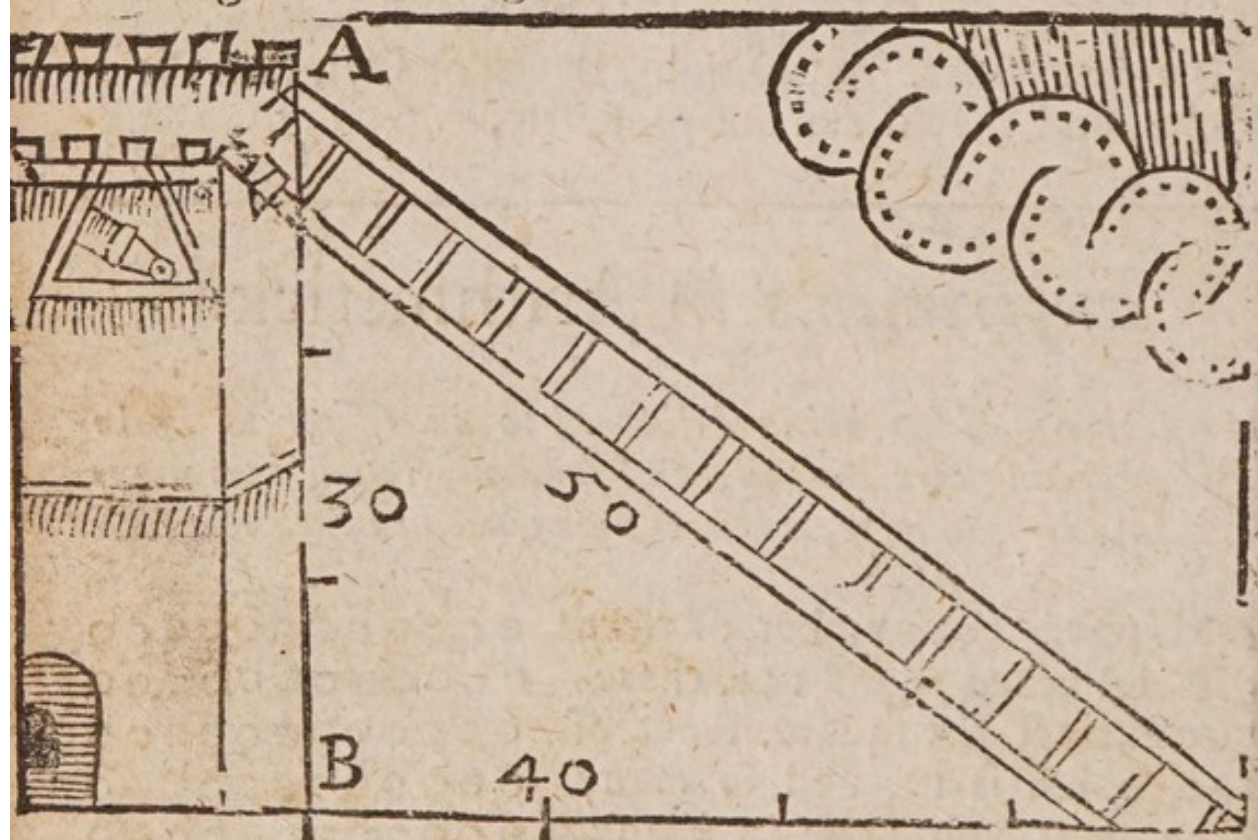
*Note,* That if the number had not been a square number, there would have been some odd Men remaining.

*The Wall of a Fort or Castle being 30 Foot high, and the breadth of the Trench about the Wall 40 Foot broad, I demand the length of a Scaling-Ladder that will reach from the edge of the Trench to the top of the Wall?*

This



This Experiment is grounded on the 47th Proposition of the first of *Euclid*, who saith in all right-angled Triangles, the square of that side which lieth against the right Angle, is equal to the two squares of both the other sides. From whence we may gather, that if the heighth of the Wall be squared, and the breadth of the Trench likewise squared, and those two squared numbers added together, and from them extract the square Root, that Root so extracted shall be the length of the Scaling-Ladder required. As for Example in the Figure following.



Let  $AB$  represent the Fort, being 30 Foot high, and the breadth of the Trench 40 Foot, then square 30, *fecit* 900, likewise square 40, *fecit* 1600, which added make 2500, the Root of which number is 50, the length of the Hypothenuſal, or Scaling-Ladder required.

*Admit the Semi-diameter of the Earth to be 3346 Miles, and that there is a Mountain one Mile in height, I demand how far ſuch a Mountain may be ſeen at Sea, or on Land?*

And the Semi-diameter of the Earth and the Mountain together, *fecit* 3437, whose square is 11812969, from which ſubſtract the ſquare of the Semi-diameter of the Earth,



Earth, viz. 11806096, there remains 6873, whose Root is 82 and three fourths; wherefore you may conclude, that the Mountain may be seen almost 82 Miles.

*A General delivered to his Master-Gunner 5 Pieces of Ordnance, together with 168 pound of Powder, the biggest of which Pieces spent at a shot 6 Pound, the second 4 Pound, and the third 2 Pound; who commanded him to employ them against the Battery of a Sconce, demanding of the Gunner how many Shots each Piece would make, being discharged one as often as another, and also how much Powder each Piece would spend?*

Let the quantity of each Piece be set *lib.*  
 down in order, one under another, and *6 lib.*  
 added into one entire Sum, as 6, 4, 2. *4 168 lb.*  
*fecit* 12, behind which, towards the right *2 122 14*  
 Hand set down the Sum of the Powder *—*  
 delivered, viz. 168, which if you divide *12 1*  
 by 12, the quotient will be 14, which certainly telleth  
 that they will make 14 Shots a-piece against the Sconce.

Now, To know how much Powder each Piece *lib.*  
 will spend, multiply 14 by 6, *fecit* 84, for so much *84*  
 will the first Piece spend; again, multiply 14 by *56*  
 4, *fecit* 56, so much will the second spend; and *28*  
 lastly, multiply 14 by 2, *fecit* 28, so much will the *—*  
 last Piece spend; which being added into one en- *168*  
 tire Sum, the Total will be 168 Pound, which is  
 equal to the Powder by the General at first delivered.

*A General having drawn the Platform of a Fort, demanded of 50 Pioneers what time they required to finish it in? who reply'd, 6 Weeks, or 36 Days, (which is all one) but the Expedition was such, that it must be finished in 8 Days; now would I know what number there must be employed?*

The Resolution of this Question (to some) may seem difficult, but to others very plain and easie; for if you multiply 50, (which is the number of Pioneers) by 36, (the number of Days which they require) and divide that product by 8, (which is the time that the Fort must be finished in) the quotient of that division will be 225, and so many must be employed to finish it in 8 Days.

*Plea-*



## Pleasant Questions in Arithmetick.

Quest. 1. To tell the number that another Man shall think, be it never so great.

**L**ET the Party that thinketh, double the number which he thought, which done, bid him multiply the sum of them both by 5, and give you the product (which they will never refuse to do, it being so far above the number thought) from the which, if you abate the last Figure of the product (which will always be a Cypher or 5) the number thought will remain.

*Example.* Let the number thought be 53, which doubled maketh 106, and multiplied by 5 makes 530; then if you take away the Cypher, which is in the last place, there will remain 53, the number thought.

Quest. 2. Of the Accusation of a Thief.

A Thief breaking into an Orchard, stole from thence a certain number of Pears, and at his coming forth he met with three Men one after another, who threatned to accuse him of Theft, and for to appease them he gave unto the first Man half the Pears that he stole, who returned him back 12 of them; then he gave unto the second half of them he had remaining, who returned him back 7; and unto the third Man he gave half the residue, who returned him back 4, and in the end he had still remaining 20 Pears: Now do I demand how many Pears he stole in all? To answer this Question, you must work backward, for if you take 4 from 20, there will remain 16, which being doubled make 32, from which abate 7, and there will remain 25, which being doubled makes 50, from which subtract 12, and there will remain 38, which again doubled make 76, the true number of Pears that he gathered.

Quest. 3. Of three Sisters.

A certain Man having three Daughters, to the eldest he gave 22 Apples, to the second he gave 16 Apples, and



and to the third he gave 10 Apples, and sent them to the Market to sell them, and gave them command to sell one as many for a Penny as the other (namely 7 a Penny) and every one to bring him home so much Money as the other, and neither change either Apples nor Money one with another: How could that be?

This (to some) may seem impossible, but to Arithmeticians very easie; for whereas the eldest had three pennyworths and one Apple over, the second two pennyworths and two Apples over, and the youngest had one pennyworth and three Apples over; so that the youngest had so many single Apples and one pennyworth, as the eldest had pennyworths and one Apple over, and consequently the second proportional to them both.

They made their Market thus: A Steward coming to buy Fruit for his Lady, bought all the Apples they had at 7 a Penny, leaving the odd ones behind; then had the eldest Sister three-pence and one Apple, the middle Sister two-pence and two Apples, and the youngest one penny and three Apples. The Steward bringing the Fruit to his Lady, she liked it so well, that she sent him for the rest, who reply'd, that there were but few remaining; she notwithstanding sent him for them, and bid him bring them at any rate: The Steward coming to the Market again, could not buy the odd Apples under a penny a-piece (who to content his Lady was fain to give it) then had the youngest Sister three-pennyworth, the middle Sister two-pennyworth, and the eldest one-pennyworth, and so had they all four-pence a-piece, and yet sold as many for a Penny one with another, and neither changed Apples nor Money one with another, as they were commanded.

*Quest. 4. Of one that bought and sold both at a rate, and yet in the end proved a loser.*

A Man bought 100 Eggs at three a Penny, having 120 to the hundred; also he bought a hundred more at two a Penny, having likewise 120 to his hundred; these Eggs being mingled, he sold them for 5 two-pence, and



and 120 to the hundred as he bought them; the Question is, Whether he gained or lost in that Bargain?

If you work by the *Rule of Three direct*, you shall find that his 120 Eggs at three for a Penny came to three Shillings and Four-pence, and his 120 at two for a Penny came to five Shillings, which being added, makes eight Shillings and Four-pence: Then again, to see what they come to at five for two-pence; work likewise by the *Rule of Three direct*, and you shall find that 240 at five for two-pence, come but to eight Shillings, whereby the Seller loseth four-pence of the Money they cost him.

*How to break a Staff upon two Glasses of Water.*

Place the Glasses (being full of Water) upon two Joynt-stools, or suchlike equidistant from the Ground, and distant one from another the length of the Staff; then place the ends of the Staff upon the edges of the two Glasses, so that they be sharp; this done, with all the force you can, with another Staff strike the Staff which lies on the Glasses in the midst, and it will break, without breaking the Glasses or spilling the Water.

*To know the Hour of the Day by the Hand and Fingers.*

Take a Straw, or the like, of the length of the Index, or second Finger, hold this Straw very right between the Thumb and the right Finger, then stretch forth the Hand, and turn your Back and the Palm of your Hand towards the Sun, so that the shadow of the Muscle which is under the Thumb touch the Line of Life, which is between the middle of the two other great Lines, which is seen in the Palm of the Hand; this done, the end of the shadow will shew what of the Clock it is, for at the end of the great Finger it is 7 in the Morning, or 5 in the Evening; at the end of the Ring-finger it is 8 in the Morning, or 4 in the Evening; at the end of the little Finger, or first Joynt, it is 9 in the Morning, or 3 in the Afternoon; 10 and 2 at the second Joynt; 11 and 1 at the third Joynt, and mid-day in the Line following, which comes from the end of the Index. *Note*, That this Experiment must be performed by the left Hand.





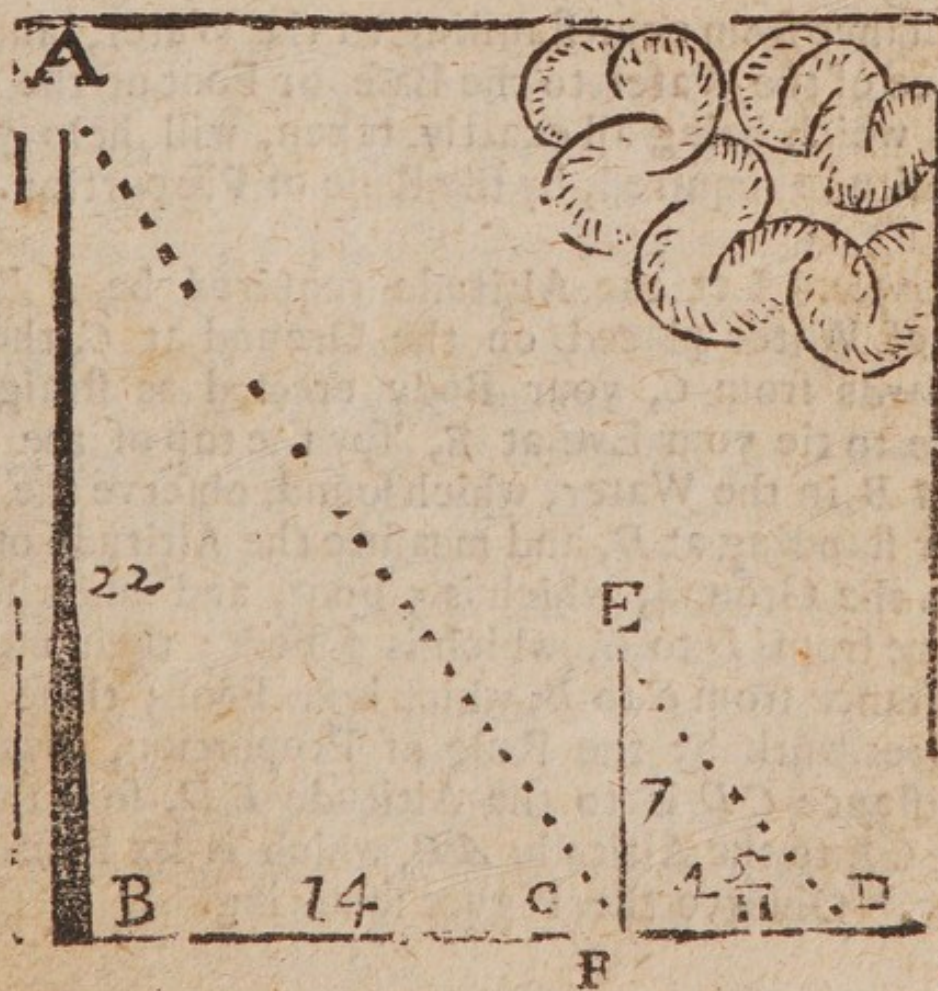
# EXPERIMENTS

IN

## GEOMETRY.

*How to make the Altitude of a Building, or other approachable Height by a Line and Plummets, the Sun shining.*

**L**ET the Building, whose Altitude you desire to know, be  $AB$ , representing a Maypole, casting a Shadow in a right Line on the Ground to  $C$ ; at  $C$  let fall a Line and Plummets (whose length before you





know in Feet or Inches) observing where the end of that Shadow lights, which suppose at  $D$ , then measure the length of the Shadow of the String, and consequently the Shadow of the Building, both which being exactly taken, work thus by the Rule of Proportion.

If  $CD$ , the Shadow of the Line and Plumbet 4 Foot, and  $\frac{5}{11}$  give  $EC$  7 Foot in Altitude, What Altitude doth 14 Feet give, which is the length of the Shadow of the Maypole?

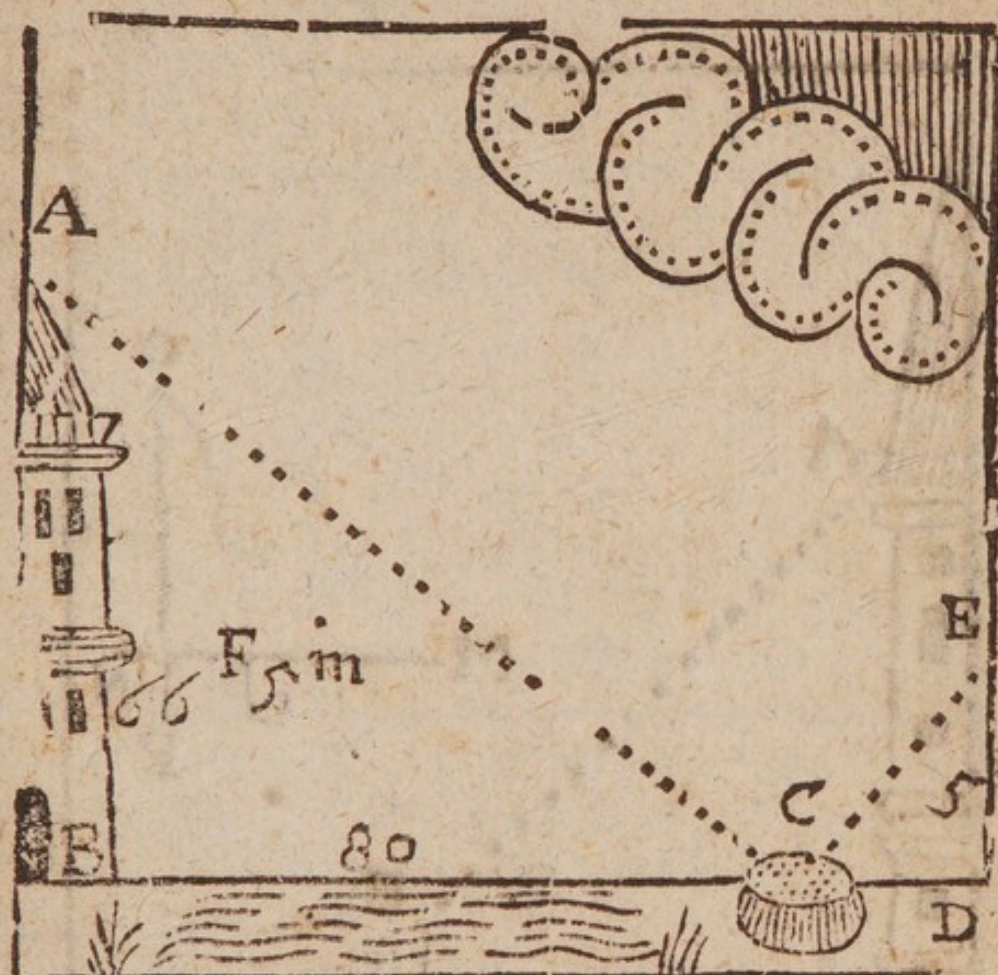
Multiply and divide according to that Rule, and you shall find in your quotient 22 Foot, which is the true Altitude of the Building required.

*How to take the Altitude by a Bowl of Water.*

Place on the Ground a Bowl of Water, which done erect your Body straight up, and go back (in a right Line) from the Building, till you espy in the centre or middle of the Water the top of the Altitude; which done, observe the place of your standing, and measure the height of your Eye from the Ground, together with the distance from your standing to the Water, and the distance of the Water to the Base or Foot of the Altitude; which being all exactly taken, will help you to the Altitude required, by the Rule of Proportion.

*Example.* Let the Altitude required be  $AB$ , the Bowl of Water placed on the Ground at  $C$ , then go backwards from  $C$ , your Body erected as straight as may be to tie your Eye at  $E$ , spy the top of the Altitude  $AB$  in the Water, which found, observe the place of your standing at  $D$ , and measure the Altitude of your Eye to the Ground, which is 5 Foot, and likewise the distance from  $D$  to  $C$ , which is 6 Foot; then measure the distance from  $C$  to  $B$ , which is 80 Foot; these three distances work by the Rule of Proportion, thus: As the distance  $CD$  is to the Altitude  $ED$ , so is the distance  $CB$  to the Altitude  $AB$ , which is six Foot eight Inches. Observe the Figure following.



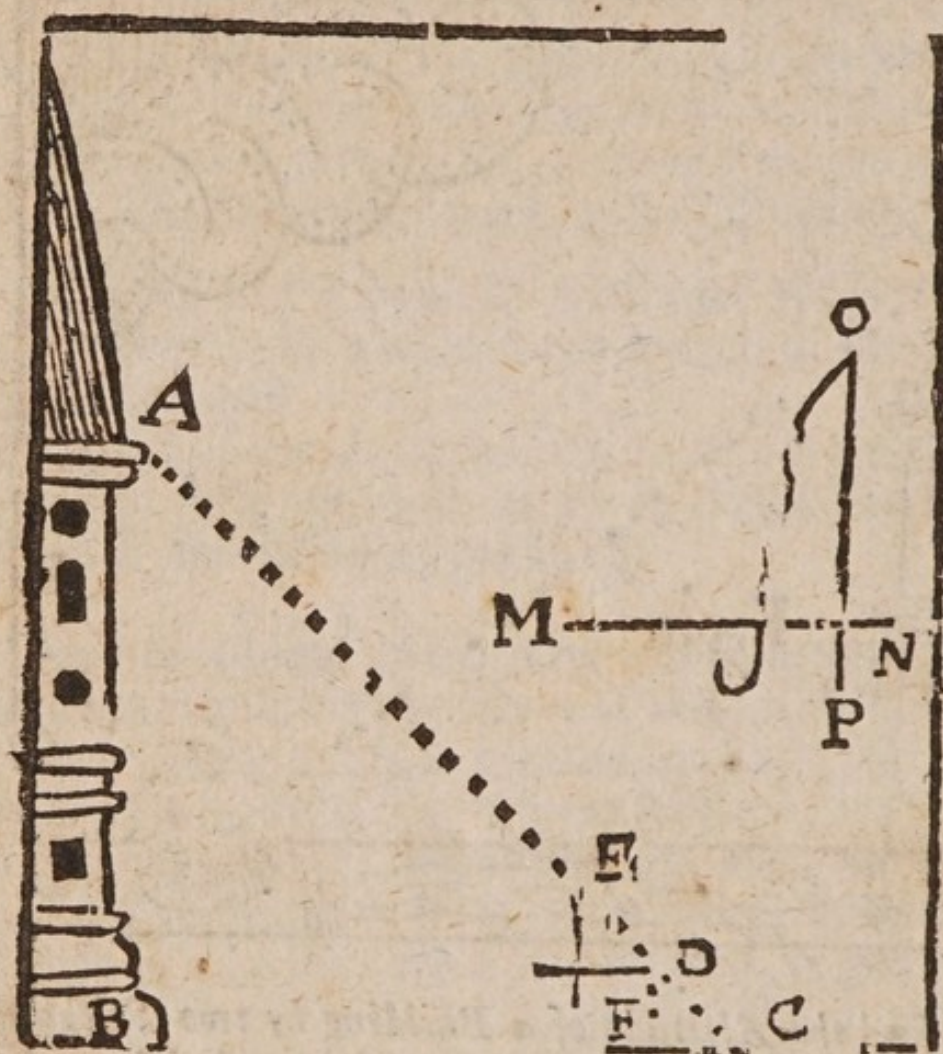


*How to find the Altitude of a Building by two Sticks of one length joyn'd in a right Angle, without Arithmetick.*

Cause two Sticks to be joyn'd in a right Angle, as is in the Figure  $MN$ , and  $OP$ , having at  $O$  a hole made wherein to hang a Thread and Plummet.

The two Sticks being thus prepared, come to the Building, whose Altitude you require, which Building let be  $AB$ , then applying the end  $A$  of your cross Staff to your Eye, hold it up or down till the Thread and Plummet hang just upon the Line  $CD$ ; then go back or forward (as occasion is given) till your Eye at  $D$  looking over  $E$  espy the top of the Building at  $A$ , which found, mark well the place of your standing, which is at  $F$ , and measure the distance from your Eye to the Ground, which is  $DF$ , and set that same distance from  $F$  to  $C$ , then measure the distance from  $C$  to  $B$ , for that is the true height of the Building  $AB$ , as may appear by the Figure following, and likewise by the Theorem on which it is grounded.





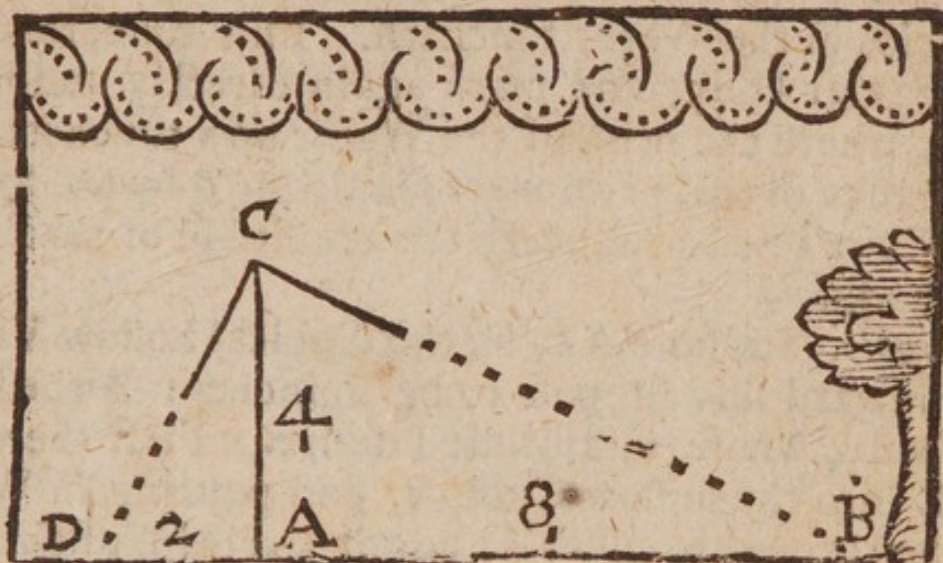
*How to find a distance by the two Sticks joyned square.*

This Experiment is grounded upon the fourth Proposition of the sixth of *Euclid*.

Let the distance which you desire to know be  $AB$ , sett up a Staff at  $A$  of 4 Foot long, (more or less at your pleasure) at  $AC$ , at the end of the Staff  $C$  place a Thread to  $D$ , then hanging the Angle of the square  $O$  on the top of the Staff at  $C$ , lift it up or down, till you see the farthest part of your Longitude, the square so remaining, and the Staff not removed, draw the String that is fastned at  $C$  close by the side of the square till it touch the Ground at  $D$ , then measure how many times the distance  $DA$  is contained in the Staff, for so many times is the Staff contained in the Longitude.



*Example.* The Staff supposed 4 Foot high placed at *A*, and the Square being hung thereon at *C*, the one end thereof pointing at *B*, and the other to *D*, then

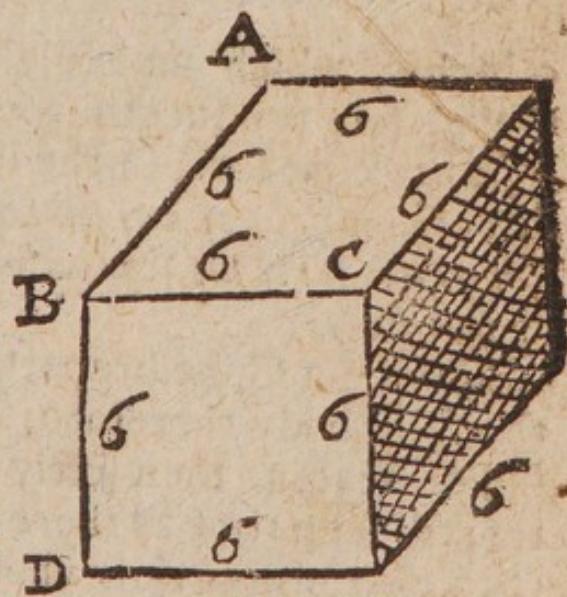


measure the distance *DA*, and you find it to be two Foot, then say, if *CA* contain *DA* two times, *AB* shall contain *CA* as many, that is eight Foot, as may appear by the Figure.

*How to measure the Solidity of a Cube.*

The Cube is a Body composed of 6 square Superficies of equal proportion, and is measured in manner following. If you multiply any one side in itself cubically, it produceth the said Cube.

*Example.* Let the Cube (*ABCD*) be given to be measured, the sides whereof are six Inches in length, the Square whereof is 36, which again multiplied by the Root, produceth 216, which is the content of a Cube in Inches whose sides are six Inches in length.



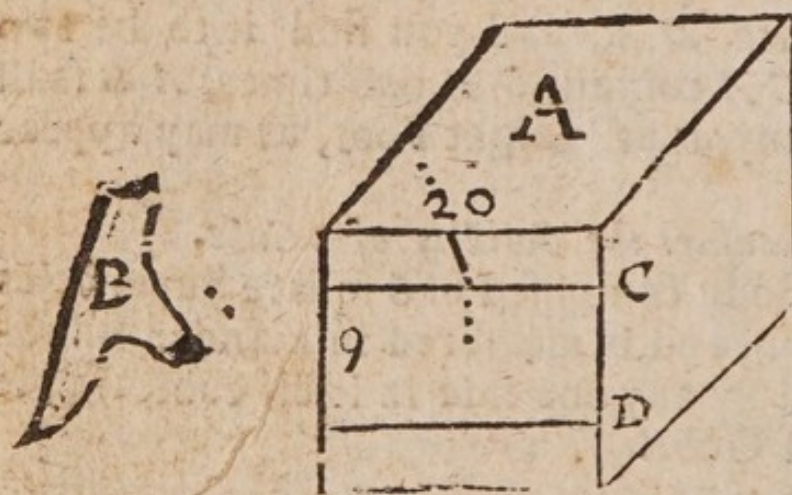
*How to measure the solid content of any body, how irregular soever it be, the form or fashion not regarded.*

Prepare an hollow Cube, into which put your irregu-



lar body, which being placed therein, pour in so much Water, till it no more than cover the body in the Cube, then make a mark in the inside of the Cube, where the superficies of the Water toucheth. This done, take out the irregular body, and mark again directly under the former, where the brim of the Water now toucheth, for the distance of these two marks multiply'd by the square of the Cube's side produceth the crassitude of that irregular body.

*Example.* Suppose A to be the Cubical hollow Vessel, whose inward side suppose to be 20 inches: B the irregular body, whose Crassitude I desire. First therefore I put B into the hollow Cube A, and pouring in Water till it be thoroughly cover'd, admit the brim of the Water reach unto C,



then taking out that irregular body again, admit the superficies of the Water fall to D; then measure the distance between C and D; which suppose is

9 inches, which multiply'd in 400, the square of the Cube's side produceth 3600, and so many Cubical inches are contain'd in the irregular body B.

*How the weight of any part or portion of a solid body may be known, without separation thereof from the other part of the body.*

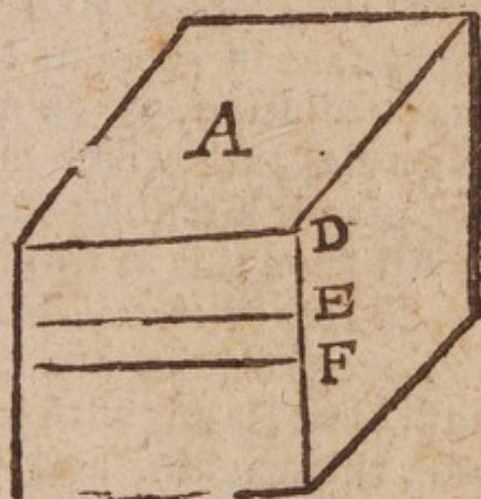
Having a Cube prepar'd as before declar'd, first put the solid body thereinto, which done, fill the Cube top full of Water, then softly lift that body out of the Water, till such time as there remain no more in the Water than that proportion whose weight you desire to know; at that instant make a mark on one side of the Vessel where the superficies of the Water then toucheth, then take out the body all together; this done, measure the distance from the former mark to the superficies of the

Wsa



Water, as it is now after the body is taken quite out. Likewise measure the distance of the Water's superficies from the top of the Cube, which done, augment the weight of the whole body by the lesser distance, and divide by the greater, your Quotient will shew the true weight of the Fragment requir'd.

*Example.* Admit B C to be in all 100 pound-weight, being either Brass, Iron, Silver, Lead, or other *Metal*, my *Desire* is to know the *weight* of the portion C: first



therefore, putting the whole body into the Vessel A, fill it full of Water, then lifting it softly up, till all the body be out of the Water, excepting C: I find the superficies of the Water to be fallen to E; where I make a mark, then take out the whole body, admit the Water is fallen to F, and that by measuring I find EF to be 8 inches, and DF 20 inches, 8 multiply'd in 100, (the whole Pillar's weight) yieldeth 800, which divided by 20 (the greater distance) bringeth in the Quotient 40, so many pound-weight I conclude the portion C to weigh.

*To make two Images, one shall light a Candle, and the other blow it out.*

Upon the side of a Wall make the figure of two Images, in the Mouth of each put a Pipe or Quill, so artificially that it be not perceiv'd, in one of which place Salt-petre very fine and dry and pulveriz'd, and at the end set a little match of Paper, in the other Quill Sulphur beaten small. Then, holding a lighted Candle in your Hand, say to one of those Images, by way of command, *Blow out the Candle*, then lighting the Paper with the Candle, the Salt-petre will blow out the Candle immediately, and going to the other Image (before the snuff of the Candle be out) touch the Sulphur with it,



it, and say, *Light the Candle*, and it will immediately belighted.

*How to make a Clock with one Wheel.*

Make the body of an ordinary Dial, and divide the Hour in the Circle in 12 parts, make a great Wheel, in height above the Axle-tree, to the which you shall place the Cord of your Counterpoise, so that it may descend, that in 12 hours time your Index or Needle make one revolution, which may be known by a Watch, then put a Ballance which may stop the course of the Wheel, and give it a regular motion, and you shall see an effect as just from this as from a Clock with many Wheels.

*To take off the colouring of the Hands of Dyers, &c.*

Take the Juice of a Limon, with a little Bay-salt, and wash your Hands with it, and let them dry of themselves; wash them again, and you shall find all the Spots and Stains gone: It is also good against the Scurf or Scabs.

*To prevent Fleas from Dogs.*

Take the green outward Shell of Walnuts and stamp them, and anoint the Dog with it where the Fleas vex him, and especially in the Ears, and the Fleas shall not touch him.

*To heal cleft or kided Heels.*

Take *Dragaul* and *Galbanum*, as much of one as the other, and make thereof a Powder, then take new Wax, Oyl of Violets, and a little Goat-suet or Ox-tallow, and melt it on the Fire, then put in the said Powders, and make of all these an Ointment, wherewith anoint your Heels, and they will be suddenly whole.

*To make an old Writing appear fair.*

Take Galls, boil them in Wine, and wash the Writing therewith.

*To take the Impression of the Seal of a Letter.*

Melt a little Brimstone, casting in some white Lead, put this mixture on the Seal, strengthening it with a small piece of Paper, a little bigger than the Impression is; being cold, take it off, and you shall find the print of the Seal thereon.



# Some further Observations on COLOURS.

## of Yellows.

**T**Here are two sorts of *yellow Oaker*, the one is call'd *plain Oaker*, the other *spruce Oaker*; the *plain* is of a lighter Colour than the *spruce*; most of the *yellow Oaker* comes from *Shotover-Hills* near *Oxford*, which with pains will grind fine; it will resist the Weather well, and bears a good Body.

*Pink yellow* is the Tincture of a Vegetable, which when dry'd becomes a good *light Yellow*, a little *greenish*, which will grind easily, and bears a good Body.

*Masticot* is an excellent *light Yellow* for most Uses, and especially to make *Greens*; several sorts may be formed of this Colour, if mixt with *Blues*. *Masticot* grinds fine, and bears a good Body.

*Orpiment*. Some do call it *yellow Arsnick*: It is good for some Uses, but troublesome to grind, of a poysonous Nature, be careful therefore that the Fumes of it (whilst grinding) do not offend your Brain.

## of Reds.

Of all *light Reds*, *Vermillion* is the most delicate, because 'tis of itself a perfect *Scarlet Colour*; it is made of *Brimstone* and *Quicksilver*, and the Method is prescribed in *Lemery's Chymistry*. It will (with pains) grind as fine as Oil itself, but the Glory of it doth not truly appear unless it be ground very fine, but will otherwise work coarse and look dull; yet, if fine ground, it goes far, bears a good Body, has an excellent Colour and Beauty, and works smooth.

The richest sorts of *Lake* are the best of all *dark Reds*, because they are pure *Crimson*, and take great pains to grind,



grind, will bear a good Body, and lie smooth ; if not well and thoroughly ground, it falls short of its true Glory, and will be difficult to work, and apt to cling together like Jelly, after its laid on, as warm Water on a greasy Trencher after wash'd with it ; to prevent which, temper it as thin as you can well work it, after it is well ground ; there are several sorts of it to be had which differ much, of a dead and pale Colour some are, but the best comes from *Venice* and *Florence*.

*Spanish Brown* is a dull, dark Red, and of a Horseflesh Colour, being dug out of the Earth, some of it looks pleasant enough ; it is very much used by Painters, and is generally the first priming Colour which is laid on all Timber-work, because it is plentiful and cheap ; if well ground it works well ; the best sort is of the deepest Colour, and most free from Stones, the other sorts look not so well, but may serve for a priming Colour, which seasons the Wood to lay other Colours upon.

*Red Lead*, which is the lightest of all Reds now used, is a harsh sandy Colour, and tho' you bestow great pains on it, yet it is not readily, or easily ground very fine ; the Method of making of it (which is out of *Litharge*) is to be seen in Mr. Ray's Appendix to his Catalogue of hard *English Words* : This Colour bears a good Body in Oil, binds well, and will dry soon.

#### of Blues.

*Blue Bice* is the palest in Colour, and bears the best Body of all bright Blues that are used in common Work ; it must have good grinding on a very hard Stone, then it will work well, but inclines a little to be sandy, if not well ground : Its a Blue lies best near the Eye of any now used, except *Ultra Marine*, which is got out of the Tincture of *Lapis Lazuli*, as may be seen in a Book call'd *Modern Curiosities* : This is so very dear that it is not used, unless in Pieces of great Price.

*Smalt* is a lovely Blue when it lies at a distance ; it must only be strow'd upon a ground of white Lead, because it is so Sandy that it bears no good body in Oyl, for Oyl changes the colour of it, making it look Black, unless



unless *Whites* be mix'd therewith; and yet they take off its Beauty by making it faint, so that the best way is to strow it on. There are two sorts of this Colour, one is much finer than the other, but the coarsest gives the most glorious Colour, if look'd on at a distance; near the Eye the Beauty is not so great: The finest is call'd *Oyl-Smalt*, which is ground with *white Lead*, and may be laid in *Oyl*, but it works with great difficulty, and bears not a good body.

*Indico* is a dark *Blue* when you work it by it self, to prevent which, mix *Whites*, and so you may make it a faint *Blue*; it will grind very fine, lies with a good body, and is very much in Use in vulgar Painting: the longer this Colour is ground, the fairer and more beautiful it will look.

*Blue Verditer* is somewhat Sandy, of it self not a very good Colour, being apt to turn *Greenish*, and is not of a good body; but if mixt with *Yellow* makes a good *Green*.

*Umber* is a Colour that really is neither *Black*, *White*, *Yellow*, *Red*, *Blue*, nor *Green*, and yet much us'd in Painting: It is of the Complexion which we call a *Hair-colour*, it will grind very fine, bears a better body than any Earthy Colour now used, and, when burnt, is the most natural Shadow for *Gold* of all others; it resembles New *Oak-Wainscot* the nearest of all Colours, if mixt with *White*: it will dry with a good Gloss, and that soonest too.

*Note*, If you wou'd know what is meant by saying, *It bears a good Body*, the Answer is, to bear a good Body, is to be of a Nature capable to be ground so fine, that mixing so well with the Oil, it seems only a very thick Oil of the same Colour, of which Nature are *Ceruse* and *White Lead*, *Vermillion*, *Pink*, *Lake*, *Ivory Black*, *Lamp-Black*, *yellow Oaker*, *Verdigrise*, *Amber*, *Indico* and *Spanish Brown*; as for *blue Bice* and *red Lead*, they are not so fine, yet they may be said to bear a very good Body when ground fine. All these Colours may be ground so fine as to be like Oil itself; and then they are said to work well when they spread so smooth and cover what you



you lay it upon so intirely, that you cannot see where the Pencil has gone, when the Colour is stiff enough workt; but *Verditors* and *Smalts* will never imbody well with Oil, nor work well, tho' ground never so much. *Red Lead* and *Bice* will hardly grind to an oily Fineness, nor lie entirely smooth in Work, yet because 'twill cover the Work, they are laid on very well, they may be said to bear an indifferent Body; and such Colours are readily part with the Oil when laid on the Work, are said not to bear a Body, or when there is a separation on the Work, the Colour in some parts, and the Oil in others, unless tempered extream thick.

Here observe, If you have any Colour left in the Pots the best way to preserve it is to cover it with Water, and it will prevent its drying in the hottest Weather.

As for your Pencils, as soon as you have done with them, wash them out in clean *Linseed-Oyl*, and afterwards in warm *Soap-suds*; for Colours or Oyl once dry'd in your Brush or Pencils spoils them for ever.

Observe also, If you lay your Colours too thick and stiff on, the Colours will crack and shrink up together (after some time standing in the Weather) like *Pitae* laid on a thing in the Sun.

To conclude, When you use your smallest Brushhoe and Pencils, mix your Colours on a wooden Pallat, rather than in the Pot of Colours, and they will keep a better point to work. See more in Page 47.

In the Year 1712, or thereabouts, near *Durham*, a Coal Mine was blown up by a Damp or Sulphur, where in less than a minute, 72 Persons were kill'd, and only *J. C.* a Person concern'd therein (formerly a Merchant on *Ludgate-hill*) was ruin'd and his Family, consisting of a Wife and 9 Children, is now reduc'd to a starving Condition, as appears under the Hands of 3 Members of Parliament, at this time for *Durham*, who knows the truth of this relation; his Loss is reckon'd 300 l. per *Ann*, he is now become an Object of Charity, having not been able to get into Business since.

*F I N I S.*







