

The school of arts; or fountain of knowledge : containing several hundred truly valuable and useful receipts, selected from the works and communications of the most eminent British artists. Particularly adapted for the use, emolument, and pleasure of the public in general and the encouragement of arts, manufactures, and science.

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50
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SCHOOL OF ARTS.

To stain wood a beautiful red or mahogany colour.

PLACE a square piece of any wood, a line in thickness, into pounded dragon's blood, from the Canaries, mixed with oil of turpentine, over the fire, in a glass vessel, the wood will slowly assume the colour, even before the spirit has volatilised. After more than an hour take the vessel from the fire, and let it stand the whole night, when the wood will appear of a mahogany colour, not merely on the surface, but also in the interior parts. The denser fibres will be somewhat less coloured; but this, instead of injuring the beauty of the wood, will rather add to it. The red dye can be made stronger or weaker, by taking a greater or less quantity of dragon's blood, and by a greater or less degree of digesting and boiling. The wood of the plane-tree is best for this purpose, because it can be easily sawn and polished, and is of a white colour; is neither too hard nor too soft, and neither contracts nor warps; has beautiful white spots with veins that cross each other; and because artists, who make inlaid works, have long attempted to colour it by staining. The wood, when stained, can very easily be freed from the dragon's blood adhering to it, by means of rectified spirits of wine. The spirit of turpentine makes the wood more compact, and makes it more susceptible of a fine polish.

Composition to take off casts of medals.

Melt eight ounces of sulphur over a gentle fire, and with it mix a small quantity of fine vermilion; stir it well together, and it will dissolve like oil; then cast it into the mould, which is first to be rubbed over with oil. When cool the figure may be taken, and touched over with aquæfortis, and it will look like fine coral.

To dissolve wax in water.

To every pound of white wax take twenty-four ounces of pot-ash dissolved in a gallon of warm water. In this boil the wax, cut in small pieces, for half an hour; at the end of this time take it from the fire, and suffer it to cool. The wax floats on the surface in the form of white soap; triturated with water it yields what is commonly called milk of wax, and may be applied to furniture, pictures, &c. An hour after the application, the coated parts are to be rubbed with a piece of woollen cloth, which will give a great brilliancy to paintings, and a fine polish to furniture.

To harden quills.

In order to harden a quill that is soft, thrust the barrel into hot ashes, stirring it till it is soft; and then taking it out, press it almost flat upon your knee with the back of a pen-knife, and afterwards reduce it to a roundness with your fingers. Another method to harden quills is by setting water and allum over the fire, and while it is boiling put in a handful of quills, the barrels only, for a minute, and then lay them by.

To obtain the true shape and fibres of a leaf.

Rub the back of it gently with any hard substance, so as to bruise the fibres; then apply a small quantity of linseed oil to their edges; after which, press the leaf on white paper, and upon removing it, a perfectly correct representation of every ramification will appear, and the whole may be coloured from the original.

Rules for fishing.

When the wind is in some points few fish will bite; the most unfavourable is the Eastern quarter. A warm lowering day, with flying showers, and a slight ripple on the water, is the most favourable. Water slightly disturbed prevents fish seeing the tackle; and in it they take the bait most readily. Hence whatever tends to disturb it, so as to hide the line, without obscuring the bait, is of advantage. In waters affected by the tide, the flood is the best time for angling. Whirlpools, eddies, mill tails, sides of bridges, and beneath their arches, are places where fish most readily bite, chiefly for the above reason; and in general, a certain degree of darkness in the water

whether occasioned by the shades of buildings, rocks, or other bodies, or caused by the agitation of its surface, or by muddy streams flowing into it, is favourable to angling.

To prevent hay-stacks from taking fire.

When there is any reason to fear that the hay, which is intended to be housed or stacked, is not sufficiently dry, it is only necessary to scatter a few handfuls of common salt (muriate of soda) between each layer. It would be very ill judged to regret this trifling expence; for the salt, by absorbing the humidity of the hay, not only prevents the fermentation and consequent inflammation of it, but it also adds a taste to this forage, which stimulates the appetites of cattle, and preserves them from many diseases.

Experienced method of catching larks.

The common way of taking larks, of which so many are used at our tables, is in the night, with those nets which are called trammels. These are usually made of thirty-six yards in length, and about six yards over, with six ribs of packthread, which, at the ends, are put upon two poles of about sixteen feet long, and made less at each end. These are to be drawn over the ground by two men, and every five or six steps the net made to touch the ground, otherwise it will pass over the birds without touching them, and they will escape. When they are felt to fly up against the net, it is clapped down, and then all are safe that are under it. The darkest nights are properest for this sport; and the net will not only take larks, but all other birds that roost on the ground, among which are woodcocks, snipes, partridges, quails, fieldfares, and several others.

To destroy insects on wall-fruit trees.

Take an old tin watering pan, or any similar vessel, and make a charcoal fire in it; add a tube or pipe, made of either tin, leather, or stiff paper, to the spout, which may be of any sufficient length; then throw some brimstone, tobacco dust, fine shreds of leather, &c. upon the fire, in the pan, and cover the top; having a pair of bellows ready, hold the wind-flap over the tube or pipe to receive the smoke, which it will do very effectually when you use the bellows. By this means the suffocating vapour may be directed through the bellows to any part of the tree with the greatest ease and facility, and the tree

soon cleared of all vermin. This method is much more effectual than the old one, where a chaffing-dish has been recommended for this purpose, because the latter method is more troublesome, and requires the wind to blow from a particular quarter right against the trees, which can seldom be obtained.

Substitute for Indian ink.

Boil parchment slips, or cuttings of glove leather, in water, till it forms a size, which, when cool, becomes of the consistence of jelly; then, having blackened an earthen plate, by holding it over the flame of a candle, mix up, with a camel hair pencil, the fine lamp-black thus obtained, with some of the above size, while the plate is still warm. This black requires no grinding, and produces an ink of the very colour, which works as freely with the pencil, and is as perfectly transparent as the best Indian ink; it possesses the advantage of furnishing artists with a substitute for that article, which may be prepared in situations where it might be difficult to obtain the ink itself.

To remove spots of grease from books or prints.

After having gently warmed the paper stained with grease, wax, oil, or any fat body whatever, take out as much as possible of it, by means of blotting-paper. Then dip a small brush in the essential oil of well rectified spirit of turpentine, heated almost to an ebullition (for when cold it acts only very weakly) and draw it gently over both sides of the paper, which must be carefully kept warm. This operation must be repeated as many times as the quantity of the fat body imbibed by the paper, or the thickness of the paper, may render necessary. When the greasy substance is entirely removed, recourse may be had to the following method to restore the paper to its former whiteness, which is not completely restored by the first process. Dip another brush in highly rectified spirit of wine, and draw it, in like manner, over the place which was stained, and particularly round the edges, to remove the border, that would still present a stain. By employing these means, with proper caution, the spot will totally disappear; the paper will assume its original whiteness; and if the process has been employed on a part written on with common ink, or printed with printer's ink, it will experience no alteration.

To keep iron from rusting.

Rub the iron over with vinegar mixed with ceruse, or with the marrow of a heart, if it be rusty, oil of tartar per deliquium, and it will presently take the rust away and cleanse it.

Another way.

Take an eel, fry it, press out the oil, and rub your iron therewith.

To make Japan ink.

Gum arabick and Roman vitriol, each one ounce, galls well bruised, one pound, put them to rape vinegar, set them in a warm place, stir them very often, till the liquor becomes black, then add to every gallon one ounce of ivory black, and a quarter of a pint of seed-lack varnish.

To make the London powder ink.

Take ten ounces of the clearest nut galls, bruise them and sift the powder very fine; then add two ounces of white coperas, four ounces of Roman vitriol, gum arabic or saudarach an ounce; pound and sift them very fine, so that though they appear white, a little of it being put into water, it will in a little time turn black, and an ounce of powder will make a pint of very black ink.

To make a very good black ink.

Take Thames or rain water two quarts, nut-galls only broken into small bits half a pound; coperas two ounces, infuse all in a gentle sand heat for six weeks shaking the bottle four or five times every day; then dissolve in it four ounces of gum-arabic.

To make red writing ink.

Take raspings of bazil one ounce, white lead and allum of each two drachms; grind and mingle them, infuse them in urine one pound, with two scruples of gum arabic, or a dram at most.

The valuable fire-ball, manner of making it, and its use in families.

Take a ton of soft mellow clay, and as much dung as will work well, and is free from stones, to this clay is to

be sifted six or seven bushels of small sea-coal, and this is to be well mixed with the clay and dung, in the manner the labourer works his mortar: having thus done, it may be made into such sized lumps that will best suit your fire-grate. I have commonly seen them in countries where they are acquainted with their use, about three or four inches square, though they may be made either large or small, according to the quantity of fire you stand in need of; when made into lumps it will be necessary to lay them in a shed or barn, to dry for use, as they burn much better than when newly made and wet; but in case you are obliged to use them immediately, it is very proper to lay a few of these balls either behind, or near the fire, where they get dry very soon. When your fire burns clear place three or four, or more of these balls in the front of your fire, as you do large coals, and you will soon find the benefit you will receive from them, for they not only burn exceeding clear, without the least smoke, but give a far better heat than the best coals you can get. The charge of a load of clay will not exceed 5s. the labourer for making up about 2s. 6d. dung 2s. coals worked into the clay (supposing at 2s. per bushel) 12s. It appears that the whole charge of making up the ton of clay, will not exceed 20s. though the balls are preferable to, and will do more service than a chaldron of the best sea-coals. Those who are inclined to make use of this cheap way of keeping a good and wholesome fire, are to take notice, that the balls are not to be laid on, till the fire burns clear and well, and then they will give great satisfaction. This is a choice fuel to burn in chimneys inclinable to smoke.

How a countryman may know how much hay or corn his barn will hold, before it is put in.

This has been desired by many, especially upon taking barns and out houses, where they desired to know how they will answer the stores designed to be laid up in them; and for their satisfaction I have here found out an easy way to inform them, if they know ever so little of arithmetic.

After taking the dimensions in feet, multiply the height of the barn to the beam by the breadth, and that product by the length; then for that part of the barn above the beam, multiply the breadth by the length, and that

product by half the height above the beam: add the two products together, and divide by 400; the quotient is the number of loads the barn will hold. The loads are here supposed to be equal in bulk to a load of hay of 36 trusses. For example:

Suppose a barn to measure in length 50 feet, in breadth 30 feet, and the height to the beam 18 feet, and that part above the beam 10 feet; how many loads will it hold?

First multiply 18 feet by 30, and that product by 50 is 27,000 feet;—then multiply 30 by 50, and that product by half 10, which is 5, and it is 7,500 feet; add the two products together, and divide the whole by 400 thus,

FEET.	FEET.
First 18	Second 30
30	50
<hr/>	<hr/>
540	1,500
50	5
<hr/>	<hr/>
Product to the beam 27,000	Above the beam 7,500
<hr/>	<hr/>

First 27,000 }
 Second 7,500 } Added together.

Divide by 400)34,500

Answer 83 loads, and 1 quarter.

By this simple rule, any person may find the measurement not only of barns, but all other out houses intended for a similar use.

The measures that ought to be in cords or stacks of Wood.

To measure the quantity of wood for fuel, plank, or timber going to a load, is necessary to be known in the management of country affairs; for at one time or other the honest countryman cannot but stand in need of such knowledge to advantage him; wherefore I here set down.

A cord of wood ought to be 4 feet over, 8 long, and 4 deep, making in all 128 cubit feet.

A stack of wood ought to be 3 feet over, 3 deep, and

12 feet in length, which makes 108 cubit feet; and to a load of solid timber there goes 50 feet; a cubic foot contains 1728 inches, a cubic yard, 27 cubic feet, or 6656 inches.

300 feet of two inch plank, 200 of three inch plank, 115 feet of four inch plank, 400 feet of one inch and half plank, 600 feet of one inch, makes each of them a load of plank, in true account, &c.

To make artificial thunder and lightning.

Mix a quantity of spirits of nitre and oil of clove; the least drop of the former is sufficient, as to the quantity of the latter you need not regard: when mixed, a sudden ferment with a fine flame, and sometimes if the ingredients be very pure and strong, there will be a sudden explosion like the report of a gun. It is a little dangerous to the person who makes the experiment; for when the effluvia of acid and alkaline bodies meet each other in the air, the fermentation causes such a rarefaction as makes it difficult to breathe for all who are near it.

Chinese method of mending china.

Boil a piece of flint glass in river water, five or six minutes, beat it to fine powder, and grind it well with the white of an egg, and it joins china without riveting, so that no art can break it again in the same place. You are to observe, the composition is to be ground extremely fine on a painter's stone.

Sure method to know the state of the weather.

It is found by experience, that the leech, kept in a common eight ounce phial, three-fourths filled with water, changed once a week in summer, and twice in winter, and covered with a bit of linen rag, is a sure prognosticate of the weather. First: in serene weather it lies rolled up in a spiral form at the bottom. Secondly: when it rains before afternoon it creeps to the top, and remains till the weather is settled. Thirdly: against wind it keeps in rapid motion, and seldom rests until it begins to blow hard. Fourthly: if a remarkable storm of thunder and rain is to succeed, it lodges some days before continually without the water, and is very uneasy

and convulsed. Fifthly: in frost, as in clear weather, it lies at the bottom; and in snow, as in rain, it keeps at the mouth of the phial.

To make an artificial earthquake.

Chemistry furnishes us with a method of making artificial earthquakes, which have the great effects of the natural ones, and as it may illustrate the process of nature in the production of those terrible phænomena underground, we here insert it. Provide eighteen or twenty pounds of sulphur, and as much of the filings of iron, make it into the consistence of paste with common water; this being buried under ground, in eight or ten hours time will vomit flames, and cause the earth to tremble all around the place to a considerable distance. Such is the effect of even two cold bodies in the ground; there only wants a sufficient quantity of this mixture for a real *Ætna*. If it were supposed to burst out under the sea, it would produce a water-spout, and if in the clouds, the effect would be thunder and lightning.

To take spots or stains out of silk, stuffs, &c.

Take a trotter-bone, burn it and beat it to powder, mix it with fullers'-earth, and a little Castile soap; wet it with fair water; rub it on the place, and then dry it in the sun, or by a gentle fire; then rub it hard with a wet brush, and when it is dry again the spot or stain will disappear.

To take out pitch, wax, rosin, or tar.

If any of these happen on a garment, either silk, linen, or woollen; pour a little oil of turpentine on the place and let it soak in about half an hour; then rub it, but not too hard; and you will find the turpentine has soaked out the glutinous quality, so that it will crumble out like small bits of dry dirt.

To take spots or stains out of linen.

Take the juice of a lemon and red onion mixed together, put into it a little gum sanderach, and crumbs of stale white bread, heat these gently over a fire, and then dip the part that is stained often in it; let it then dry, and get in readiness a hot lather of soap and water, to wash it immediately; and doing so in two or three washings it will quite disappear.

To make Indian ink.

Take horse-beans, burn them till they are perfectly black, grind them to a fine powder, and with a weak gum arabic water make it into paste, and form it into long square cakes.

The valuable effects of the juice of sloes, from an Indian manuscript.

Whatever linen or woollen is marked with this juice, such letters or mark are not to be discharged by any means whatever. Put three ounces of burnt horse-beans in a piece of linen, and boil it half an hour in the sloe-juice, and it makes a writing ink, in all respects far superior to any other, not being to be discharged by art, or defaced by time. In a physical way, it immediately stops bleeding in either man or beast, by bathing the wound therewith, and the knowledge of this article has been of the utmost service to great numbers, for by the use of this juice, more linen may be marked in one hour by the pen, than could be accomplished by the needle in many days: you are to take care the linen is dry before you mark it. When washed, the marks on the linen are of a fine purple colour, and has this very great advantage over marking with a needle, that there is no other way of removing whatever marks are put on, but cutting out the piece.

How to make oil cloth, very necessary for country people, or any that travel in wet weather.

You are first to make a drying oil by taking red lead and umber, of each half an ounce, linseed oil two pounds, which boil for a quarter of an hour, or longer; let it stand two days, and it will have a skin over it, and be fit for use. You are now to take off the skin, set the oil on the fire, and dissolve some good rosin in it, and let the quantity be such as may make the oil fit to spread upon the cloth; when the rosin is dissolved, you may add to it some colour, as verdigrease for green, umber for brown, or indigo for white, or a light colour, &c.

To make black wax for cabinet-makers, to fill up flaws, &c. in furniture.

Take two ounces of bees-wax, half an ounce of Burgundy pitch, melt them together, then add one ounce and a half of ivory black, ground very fine and dried,

To make Japanese cement, or rice glue.

This elegant cement is made by mixing rice flour intimately with cold water, and then gently boiling it. It is beautifully white, and dries almost transparent. Papers pasted together by means of this cement, will sooner separate in their own substance than at the joining, which makes it extremely useful in the preparation of curious paper articles, as tea trays, ladies' dressing-boxes, and other articles, which require layers of paper to be cemented together. It is, in every respect, preferable to common paste made with wheat flour, for almost every purpose to which that articles is usually applied. It answers well, in particular, for pasting into books the copies of writings taken off by copying-machines on unsized silver paper.

With this composition, made with a comparatively small quantity of water, that it may have the consistence similar to plastic clay, models, busts, statues, bass-reliefs, and the like, may be formed. When dry, the articles made of it are susceptible of a high polish; they are also very durable.

The Japanese make quadrille fish of this substance, which so nearly resembles those made of mother-of pearl, that the officers of our East Indiamen are often imposed upon.

Turkey cement for joining metals, glass, &c.

The jewellers in Turkey, who are mostly Armenians, have a curious method of ornamenting watch-cases, and similar things, with diamonds and other stones, by simply glueing them on. The stone is set in silver or gold, and the lower part of the metal made flat, or to correspond with the part to which it is to be fixed; it is then warmed gently, and the glue applied, which is so very strong that the parts never separate. This glue, which may be applied to many purposes, as it will strongly join bits of glass or polished steel, is thus made:

Dissolve five or six bits of mastic, as large as peas, in as much spirits of wine as will suffice to render it liquid; in another vessel dissolve as much isinglass (which has been previously soaked in water till it is swollen and soft,) in French brandy or in rum, as will make two ounces, by measure, of strong glue, and add two small bits of gum-

galbanum, or ammoniacum, which must be rubbed or ground till they are dissolved; then mix the whole with a sufficient heat. Keep it in a phial, stopped; and when it is used set it in hot water.

Blood cement for repairing copper boilers, &c.

This cement is often used by coppersmiths, to lay over the rivets and edges of the sheets of copper, in large boilers, to serve as an additional security to the joinings, and to secure cocks, &c. from leaking; it is made by mixing pounded quick-lime with ox's-blood. It must be applied fresh made, as it soon gets so hard as to be unfit for use.

If the properties of this cement were duly investigated, it would be found useful for many purposes to which it has never been yet applied. It is extremely cheap, and very durable.

Method of taking impressions of plants.

The impressions of plants, well taken off upon paper, look very little inferior to the best drawings, and may be done with very little trouble. For this purpose, some printer's ink, and a pair of printer's balls, such as are used for laying the ink on types, are necessary. After rubbing these balls with a little of the ink, lay the plant between them, and press it so as to give it sufficient colour; then take the plant, and lay it carefully on a sheet of paper, and press it with the hand, to give it the impression of the plant to the paper, which may be afterwards coloured according to nature; a piece of blotting paper may be placed betwixt the plant and the hand to prevent the latter from being dirtied by the ink. But if white paper be employed, instead of blotting-paper, we acquire at the same moment two impressions, or both surfaces of the same plant.

A black varnish for gentlemen's old straw or chip hats.

Take best black sealing-wax, half an ounce; rectified spirit of wine, two ounces; powder the sealing-wax, and put it with the spirit of wine, into a four ounce phial; digest them in a sand heat, or near a fire, till the wax is dissolved; lay it on warm with a fine soft hair brush, before a fire, or in the sun. It gives a good stiffness to old straw hats, and a beautiful gloss equal to new, and resists

wet. If the hats are very brown they may be brushed over with writing ink, and dried before the varnish is applied. Spirit of turpentine may probably be used in the place of the spirit of wine.

Composition of a cement to resist the action of fire and water.

Take half a pint of milk, and mix with it an equal quantity of vinegar, so as to coagulate the milk. Separate the curds from the whey, and mix the latter with the whites of four or five eggs, after beating them well up. The mixture of these two substances being complete, add quick lime to them which has passed through a sieve, and make the whole into a thick paste of consistency of putty. If this mastic is carefully applied to broken bodies, or to fissures of any kind, and dried properly, it resists water and fire.

To make transparent screens for the exhibition of the phantasmagoria.

Transparant screens are to be prepared by spreading white wax, dissolved in spirits of wine or oil of turpentine over thin muslin. A screen, so prepared, will roll up without injury. A clearer screen may be produced by having the muslin always strained upon a rectangular frame, and prepared with turpentine instead of wax. Such a screen is not always convenient, and it cannot be rolled without cracking and becoming, in a short time, useless. Therefore nothing can be better for the purpose than the former.

For taking greuse out of the leaves of books.

Fold up, in two small bags made of fine open muslin, some ashes of burnt bones, finely powdered, or of calcined hartshorn, which is always ready prepared at the shops of the druggists; lay the bags of muslin, containing the powder, one on each side of the greasy leaf; and having heated a pair of fire tongs, or hair dressers' pinching tongs, of a moderate warmth, press with them the two bags against the greasy spot, and hold them some time in that situation. Repeat the process, if necessary.

When the irons cannot be conveniently used, the powder may be heated over the fire, in a clean earthen vessel;

and, whilst hot, applied, without any muslins, on each side of the grease spot, and a weight laid on it to assist its effect.

White varnish.

Take of gum-sandarch, an ounce and a half; mastic, in drops, half an ounce; gum-elemi, a quarter of an ounce; oil of spike lavender, a quarter of an ounce; put them into a half pint phial, and fill it up with best spirits of wine. Let it stand in rather a warm place, till all the gums are dissolved, and then pour off the varnish into a clean phial, and it will be ready for use.

Excellent composition to take out stains or grease spots from silk cotton or woollen.

To two ounces of spirits of wine add one ounce of French chalk and five ounces of tobacco-pipe clay, both in fine powder; make this mixture into rolls about the length of a finger, and let them dry. This composition is to be applied by rubbing on the spot, either dry or wet, and afterwards brushing the part rubbed therewith.

Process for painting on glass, sufficient for the purpose of making a magic lanthorn.

Take good clear rosin, any quantity, melt it in an iron pot; when melted entirely, let it cool a little, and, before it begins to harden, pour in oil of turpentine sufficient to keep it liquid when cold. In order to paint with it, let it be used with colours ground with oil, such as are commonly sold in colour shops.

To discover whether flour to be adulterated with whitening or chalk.

Mix with the flour some juice of lemon or good vinegar; if the flour be pure they will remain together at rest, but if there be a mixture of whitening or chalk, a fermentation, or working like yeast, will ensue. The adulterated meal is whiter and heavier than the good. The quantity that an ordinary tea-cup will contain has been found to weigh more than the quantity of genuine flour by four drachms and nineteen grains troy.

Substitute for currier's oil.

A cheap substitute for the oil used by curriers in the preparation of leather, is made by boiling whale-oil for a few minutes, at a temperature of twenty-five degrees Reaumur, with nitric acid, in proportion of half an ounce of the acid to a pound of oil.

Genuine windsor soap.

To make this famous soap for washing the hands, shaving, &c. nothing more is necessary, than to slice the best white soap as thin as possible, melt it in a stew pan over a slow fire, scent it well with oil of carraway, and then pour it into a frame or mould made for that purpose, or a small drawer, adapted in size and form to the quantity. When it has stood three or four days in a dry situation, cut it into square pieces, and it is ready for use. By this simple mode, substituting any more favourite scent for that of carraway, all persons may suit themselves with a good perfumed soap at the most trifling expence. Shaving boxes may be at once filled with the melted soap, instead of a mould.

To recover damaged gunpowder.

The method of the powder merchants is this:—they put part of the powder on a sail cloth, to which they add an equal weight of what is really good; then, with a shovel, they mingle it well together, dry it in the sun, and barrel it up, keeping it in a dry and proper place.

How to multiply patterns, for working muslins, &c.

When a print or drawing is to be copied in this way, it must be placed upon a sheet of white paper, and the outline pricked through both with a pin or needle; the pierced sheet may then be laid on a second clean one, and a muslin bag of powdered charcoal shook or rubbed over it, when, upon removing the former, the latter will be found a perfect copy.

To soften ivory.

Slice half a pound of mandrake, and put it in a quart of the best vinegar, into which put your ivory; let it stand in a warm place for forty-eight hours, and you will be able to bend the ivory to your mind.

To make the red sealing wax.

Take one pound of bees-wax, three ounces of fine turpentine, with one ounce of rosin finely powdered; when they are well melted, and the dross taken off; put in the red lead or vermillion, and stir them together till they are well incorporated; and you may, when it grows a little cool, make it up into what form you please.

To make an ordinary red soft sealing wax.

Take common bees-wax two pounds, turpentine six ounces, oil of olive two ounces; melt all these together, then add six ounces of red lead: boil them a little, and stir till it is almost cold; cast it into fair water, and make it up into rolls or cakes.

To make black soft wax.

Take bees wax one pound, turpentine three ounces, oil of olive one ounce, mix and melt them together, to which mix and melt, &c. as before.

To make fine hard sealing wax of all colours.

GREEN.

It is made after the same manner, and in the same proportions as fine red hard sealing wax, by mixing with the ingredients verdigrease instead of vermillion.

BLUE.

It is also made after the same manner, putting in blue malt, or ultramarine.

PURPLE.

Is made in the same manner, by putting in vermillion mixed with ivory black, or lamp black.

YELLOW.

This is done as the rest, with finely ground auripigmentum, or yellow masticot.

How to make sealing Wafers.

Take very fine wheat flour, mix it with flour of eggs,

isinglass, and a little yeast, mix the materials, and beat them well together; spread the batter (being made thin with gum water) on even tin plates, and dry them on a stove; then cut them out for use. You may make them of what colour you please, by tinging the paste with vermillion or brazil for red; indigo or verditer, for blue; saffron, turmeric, or gamboge for yellow.

To make a camera-obscura:

Make choice of a room that hath a north light (though an east or west may do very well) and let it be made so dark, that no light can come in but at the hole where your glass is to be placed, then make a hole in the shutter, about an inch in diameter or something more, and set open the casement, if there be one, for there must be no glass beyond the hole; then fasten the glass with its centre to the centre of the hole, and at the distance the focus of your glass is, hang up a white sheet, then will whatever is without the hole, and opposite to it, be represented on the sheet with such exquisite exactness as far surpasses the utmost skill of any painter; for if the sun shines brightly on the objects, you will have the colour of all things in their natural paint, but if the sun does not shine, the colours will be hardly visible; and you must by all means prevent the sun's shining near the hole, for then all things will be confused. Observe that all things appear inverted upon the sheet, to remedy which, take a common looking-glass, of twelve or fourteen inches square, and hold it near or under the chin, with an acute angle to the breast, and look down into it, and every thing will appear in their natural and erect position; and this reflection also from the glass, has a glaringness that is very surprising, and makes it look like some magical prospect.

To take out ink stains, stains with fruit, &c.

Take half an ounce of powder of allum, two ounces of the juice of house leek senegreen, and apply them, the allum being dissolved very hot.

An excellent receipe to mend china.

Take the white of two eggs, half an ounce of quick lime beaten to powder, a drachm of the powder of burnt flint, and the like quantity of gum sandriek; temper them

together, and moisten it with some lemon juice; then with a feather anoint the edge of the broken vessel, and put the pieces together by a warm fire: and if your hand is steady the fracture will hardly be discerned. Or you may use white lead and oil such as painter's use.

A good water cement.

Take one part of minium or red lead, and two parts of lime, mix them together with white of eggs.

Stone glue, whereby you may glue stone or glass.

Take white flint stone powder, which is dry and finely seared, then melt white rosin, in an iron or earthen pipkin, stir the powder in it, till it is a thick paste; warm the glass or what you design to glue together, then gild the joinings, and it will add a great beauty.

To polish ivory.

Ivory is polished with putty water, by means of a rubber made of hat, which in a short time produces a fine gloss.

A table for reducing pounds into shillings, pence, and farthings, and the contrary.

<i>Pounds.</i>	<i>Shillings</i>	<i>Pence.</i>	<i>Farthings.</i>
1	20	240	960
2	40	280	1920
3	60	720	2880
4	80	960	3840
5	100	1200	4800
6	120	1440	5760
7	140	1680	6720
8	160	1920	7680
9	180	2160	8640
10	200	2400	9600

This table is easy and wants no explanation: And turned backwards, it is Farthings into pence—Pence into Shillings—Shillings into Pounds, which at first sight may be thus computed.

Things necessary to be known by persons in trade or business.

- A bale of paper, 10 reams.
- A chaldron of coals, 36 bushels.
- A ream of paper, 20 quires—a quire 24 sheets.
- A hogshead of wine, 63 gallons.
- Ditto of beer, 54 ditto.
- A barrel of beer, 36 ditto.
- Ditto of ale, 32 ditto.
- An anchor of brandy, 10 ditto.
- A puncheon of rum, 84 ditto.
- A butt of sack is two hogsheads; of currants from 15 to 20 hundred.
- A pipe or butt of wine, is 120 gallons.
- A gross 144, or 12 dozen.
- A weigh of cheese, 256 pounds.
- The great hundred, 112 ditto.
- A last of corn or rapeseed, 10 quarters, or 80 bushels.
- A stone of fish, 8 pounds; of wool 14; the same for horseman's weight, and hay. Pepper, cinnamon and allum, have 13 pounds and a half to the stone.
- An acre of land, 160 perches.
- A rood of land, 40 ditto.
- A pole or perch square of land, 272 feet and a quarter,
- A palm or hand, 4 inches.
- A foot, 12 inches; a yard 3 feet.
- A furlong, 40 perches.
- A mile, 8 furlongs.
- An acre of land, 40 perches in length, and 4 in breadth.
- A load of bricks 500: plain tiles, 1000,
- Iron and shot, 14 pounds to the stone.
- A quarter in England 8 bushels; in Scotland, 4 bolls; in Spain, about 139 pounds weight of corn.
- A truss of hay 56 pounds; and a load of ditto, 24 stone.

Note—New Hay in June and August, ought to be 60 pounds to the truss.

To stain beech of a mahogany colour.

Take two ounces of dragon's blood, break it in pieces and put it into a quart of rectified spirits of wine; let the bottle stand in a warm place, shake it frequently, and when dissolved it is fit for use.

To clean and tighten cane-work in general.

Turn up the chair bottoms, &c. and with hot water and a sponge wash the cane work well, so that it may be well soaked; should it be dirty you must add soap; let it dry in the air, and you will find as tight and firm as when new, provided the cane is not broke.

OF BEES.

How to order, preserve, swarm, and gather their Honey, and all matters relating to them.

The Bee, though a creature numbered among insects, is exceedingly useful to man, their wax and honey being commodities trafficable in all nations; yet they are a nice, choice creature, and without much diligence and care cannot be brought to any extraordinary perfection, to the profit and advantage of the owners, which being proper to this understanding (for the general good) I shall, for the instruction of those that are ignorant in it, lay down choice rules and directions how they should be ordered, to preserve and increase their stocks, that so in a little time they may turn to the great profit of the owners.

First.—In the choice of your stock, see they be little, lively, and smooth; for those that are rough and unsightly will never prove well; above all, if you can see the master-bee, or king, consider if he be long and shining, shaded with golden spots, and cheerful; for on him chiefly depends the welfare of the whole stock; for if he be rough, drooping and sluggish, the rest will be discouraged, loiter, and never work cheerfully to fill their combs.

Secondly.—Observe the swarm be whole and great, which you may know by looking into the hive, or observing great numbers clustering about the mouth of it; but if this way fail, put your mouth to the mouth of the hive, and blow in, and if you are answered by a great humming noise, then it is full stock, but if with a little faint one, then but a weak thin stock.

Thirdly.—Beware how you transport them far, for change of the air frequently incommodes them: and if you cannot avoid this, to remedy it, place the hives on convenient stones, in pleasant gardens, and scatter sweet smelling wholesome herbs and flowers about their hives. In removing, beware of jostling, for that disorders their combs, and puts them so out of humour that they will scarcely stay where you place them. To carry them in sheets on poles, across men's shoulders, is the easiest way; the best time to remove them is in April, and let the place you remove them to, be as like the situation you remove from as may be; and upon a remove open them not in the day time, that by resting in the night they may settle themselves, and finding their hives open the next morning go the quieter to work. However, for two or three days observe them, that, find themselves in a strange place, they take not wing and leave you, for if they all go out of the hive it is a sign they are gadding.

Fourthly.—In placing your bees, observe it be so that in the winter and spring the face of the hives that they are to come out at may stand to the rising sun; and so order the matter that in winter they be not exposed to too much cold, nor in summer to too much heat. Place them (above all things) in a wholesome air, where such plants, herbs, and flowers are growing near as best agree with them, as thyme, cassia, rosemary, wild marjorum, wild thyme, saffron, bean flowers, melilot, poppies, roses, &c. As for yew, cornel, sprig-laurel, cucumber, gourds, elms, and all bitter herbs and flowers are enemies to them.

Fifthly.—They thrive better on a rising ground, where the air is free and open, than in close vallies; yet love to be near springs of purling water, that are not deep; and in such places where they sip, throw in spray woods, that they may lie above the water, so that if they chance to drop in they may get out again by that help.

Sixthly.—Place their hives in their ranks, standing a yard one above another, and keep from them, as much as may be, all hurtful creatures, that destroy the bees, or spoil the honey, as red-breasts, toads, wood-peckers,

moths, hornets, lizards, swallows, spiders, sparrows, butterflies, snakes, wasps, and the like; and so profitable are these little creatures that if it be a seasonable Spring and Summer, their honey may be taken three times a year, as in some countries it is frequently observed, viz. the latter end of May, the end of July, and the beginning of September: but to leave them a Winter supply the best is only to take it in May and August, for then they rest, and live upon part of what they got in Summer: and if they want, you must be compelled to feed them by putting carefully into their hives, little hollow canes made like troughs, filled with honey, or sugar and water boiled together, or they will perish (before they can get out to work again) for want of food; you may also put in for them fruit bruised, raisins, figs, currants, or any sweets that are wholesome in taste and scent. If the weather is open, after the 10th of March, you may let them go abroad, then will they frame new combs; and that done begin to breed, then they labour hard for the honey.

Seventhly.—If the hive, by reason of the young brood be over charged, which is perceived by their clustering about the mouth of it and the great humming noise within, prepare new hives, rubbed with sweet herbs, and watch the coming forth of the young fry, from eight to twelve in the morning, lest they take wing and be gone; and if they refuse to come forth, with the fume of galbanum you may drive the whole stock; and if they have two kings, they will settle separate from each other, and so hive each by themselves; or if the stock be decayed, you may incorporate two hives in one, if you kill one of the master bees; else there will be continual wars till they consume one another. If at any time you see them draw out to fight, it is but casting up some dust amongst them, and the fray will end.

Eighthly.—To know when the combs are full, watch if they drive out the drones, which is a sign; and soon after you will see them playing about the hive, rejoicing and neglecting their work. By no means take the combs before full, for that displeases the bees.

Substitute for mahogany.

The difficulty of procuring mahogany, and other precious woods, and the consequent exorbitant prices demanded for the ordinary articles of family convenience, has occasioned the art of the chemist to be applied to a subject peculiarly calculated to promote domestic embellishment at a trifling expence. It has been contrived to render any species of wood of a close grain, so nearly to resemble mahogany in the texture, density, and polish, that most accurate judges are incapable of distinguishing between this happy imitation, and the native produce. The first operation, as now practised in France, is to plane the surface, so as to render it perfectly smooth; the wood is then to be rubbed with diluted nitrous acid, which preserves it for the materials subsequently to be applied. Afterwards, one ounce and a half of dragon's blood, dissolved in a pint of spirits of wine, and one third of that quantity of carbonate of soda, are to be mixed together, and filtered; and the liquid, in this thin state, is to be rubbed, or rather laid, upon the wood, with a soft brush. This process is repeated with very little alteration, and in a short interval afterwards, the wood possesses the external appearance of mahogany. When this application has been properly made, the surface will resemble an artificial mirror; but if the polish becomes less brilliant, by rubbing it with a little cold drawn linseed oil, the wood will be restored to its former brilliancy.

To stain horn to imitate tortoiseshell.

Take an equal quantity of quick lime, and red lead, mix it up with strong soap lees, lay it on the horn with a small brush, like the mottle in tortoiseshell; when it is dry repeat it two or three times.

To make sky rockets.

The charges of sky rockets are made of saltpetre four pounds, brimstone one pound, and charcoal one pound and a half; or by another direction, saltpetre four pounds, brimstone one pound and a half, charcoal twelve ounces, and meal powder two ounces. These proportions vary again according to the size of the rockets: rockets of four ounces, mealed powder, saltpetre, and charcoal, are used

in the proportions of ten, two, and one ; but in very large rockets the proportions are, saltpetre four, mealed powder and sulphur one each. When stars are wanted, camphor, alcohol, antimony, and other ingredients, are required, according as the stars are to be blue, white, &c. In some cases gold and silver rain is required, then brass dust, saw dust, &c. enter into the composition ; hence the varieties may be almost indefinite. With respect to colour, sulphur gives a blue, camphor a white or pale colour, saltpetre a whitish yellow, sal-ammoniac a green, antimony a reddish, rosin a copper colour. These materials require preparations before they are fit for use ; and before a person can be well qualified for the business of fire-work making, he must understand the method of making the moulds, cases, &c. and be acquainted with the instruments used in the art, their dimensions and materials.

To make mezzotintos.

Mezzotintos are made in the following manner:—take a well polished copper-plate, and, beginning at the corner, rake or furrow the surface all over with a knife or instrument made for that purpose, first one way and then another, till the whole is of a regular roughness, without the least smooth part to be seen ; in which state, if a paper was to be worked from it at the copper-plate press, it would be all over black. When this is done, the plate is rubbed over with charcoal, or black lead, and then the design is drawn with white chalk ; after which, the outlines are traced out, and the plate finished, by scraping off the roughness, so as to leave the figure on the plate. The outlines and deepest shades are not scraped at all, the next shades are scraped but little, the next more, and so on, till the shades gradually falling off, leave the paper white, in which places the plate is neatly burnished.

To blue swords and steel, in general.

Take a piece of grindstone or whetstone, and rub hard on the work, to take off the black scurf from it ; then put it in the fire, and as it grows hot the colour changes, coming first to a light then to a dark gold colour, and lastly, to a blue. Indigo and saliad oil, ground together, is also used by rubbing the mixture on the work, with a woollen cloth, while it is heating, leaving it to cool of itself.

DYEING.

To dye a light carnation.

Take a pound of green woad, and as much allum, bruise them, then pour on them fair water, and half a pound of rasped brazil; set them over a gentle fire to mix, then put in the silks, suffering them to seeth therein, and so continue it, strengthening your dye, and dipping till you perceive the colour has taken well, after that rinse it in ley of wood ashes or oak bark, so clear it with fair water, dry and press it.

To dye silk a deep carnation.

Take white gall and allum, the herb called foli, well dried, the quantity of a pound, two ounces of Spanish red, four of Indian lake; boil them in fair water over a gentle fire; when they come to the height of tincture, dip your silks in them, and let them have good dippings, three or four times, and the colours will take very well.

To dye silk gowns red.

Let these be steeped well in allum water, then give them a gentle heat, adding in the heating, rain water, a pound and a half of green woad, heat it up and put the silk in it, but let it not seeth; then rinse in lye of wood ashes, after that in water; then put in logwood rasped or in a powder, and heat it up a second time, so dipping, and the business is accomplished.

To dye a curious yellow.

Take woad, the stalks, seeds, and leaves, and lay them to soak in wood-ash lye three hours; then seeth it, if it is sufficiently sodden, and put it into a mixture of hot water and urine, so beat it up and strain the liquid part through a sieve or strainer, adding verdigrease, and boil it up with the aforesaid lye, stirring and well mixing the liquor for three hours, and when it is very hot, dip it in three times.

To dye silk a rose red.

To every four yards and a half you intend to dye, put a pound and a half of nut-galls, boil them unbruised in water two hours; shift the water, and put in your silk or linen, letting it soak four hours, then wringing it dry, and heat it in fair water wherein allum has been dissolved; then put in half a pound of brazil powder, and a pound of green woad, so by dipping it in gentle heat, the colour will heighten.

To dye cotton a fine buff colour.

Let the twist or yarn, be boiled in pure water, to cleanse it; then ring it, run it through a dilute solution of iron in the vegetable acid, what printers call iron liquor; wring, and run it through lime water, to raise it; wring it again, and run it through a solution of starch and water; then wring it once more, and dry, wind, warp, and weave it for use. The same answers for dresses, or cotton already wove.

Black for velvets, &c.

Take half a pound of copperas, and a gallon of smith's water, two pounds of galls; ivory black, oak-bark, and shoemaker's black, each an ounce, well-ground: two gallons of fair water, mix them well, and set them in the sun or other warm place a month, often stir it, and at a moderate warmth dip your velvet, or other things designed for deep black.

Method of dyeing hats.

According to Dr. Lewis, the best proportion of ingredients for dying hats is as follows: nine pounds of log-wood, one pound of gum, and half a pound of galls, are boiled in a proper quantity of water for some hours; after which, about half a pound of verdigrease and a pound of green vitriol are added, and the liquor kept just simmering, or of a heat a little below boiling: then take ten or a dozen hats, each on its block, and keep them down by cross-bars for about an hour and a half: they are then to be taken out and aired, and the same number of others put in their room. The two sets of hats must be dipped

and aired alternately, eight times each; the liquor being refreshed each time with more of the ingredients, but in less quantity than at first. This process affords a very good black on woollen and silk stuffs as well as on hats, as we may see in the small pieces of both kinds which are sometimes dyed by the hatters.

Substitute for verdigrease in dyeing black.

Saturate two pounds of vitriol of copper with a strong alkaline of salt, (American pot-ashes, when to be procured, are recommended). The vitriol will make about an equal weight of dry ashes. Both the vitriol and the ashes are to be previously dissolved apart. When this proportion is mixed, well stirred, and suffered to stand a few hours, a precipitate will subside. Upon adding a few drops of the solution of ashes, if the mixture be saturated, the water on the top of the vessel will remain colourless; but if not, a blue colour will be produced, upon which add more ashes; there is no danger in its being a little over saturated with ashes. Take care to add the solution of ashes to that of vitriol by a little at a time, otherwise the effervescence which ensues will cause them to overflow the vessel: these four pounds of vitriol of copper and ashes will be equal to about the same weight of verdigrease, and should be added to the other liquors of the dye at different times, as is usual with verdigrease.

The black thus dyed, will be perfectly innocent to the goods, rather tending to keep them soft than corrode them, particularly hats, in which there is the greatest consumption of verdigrease.

For those who are constantly using verdigrease, it would be proper to have a vessel always at hand, containing a saturated solution of ashes, ready to mix as they are wanted; for they do not answer so well if kept long.

Substitute for galls in dyeing and making ink.

The excrescences on the roots of young oaks may be used with advantage as a substitute for galls. Oak dust has been used in this country instead of galls, to produce a black dye.

A good black water for silk or cloth.

Take one pound of lamp black, and half a pound of nut galls, bruise the latter, and put them in a bottle of water, with a handful of filings of rust of iron; beat them up, adding a quarter of a pound of copperas, seeth it till it decreases to a pound; then add half a pint of gum water, and it will not only be for present use, but keep long and be a very good black.

To dye a very fair blue.

Take any silks, stuffs, or white cloth, and soak it in water, then wring out the water very well, and add about two pounds of woad, a pound of indigo, and three ounces of allum, give a gentle heat in fair water, and so dip till you perceive the colour to take well.

Green on woollen or silk.

Boil one pound of fustic to twelve pounds of silk, four ounces of turmeric, one ounce of common allum, boil them together; when boiled, mix a little indigo, then turn in your goods, boil them well, and you will have a good green on woollen or silk. For a dark colour, use as much more indigo liquor and fustic, as you consider most proper.

French moroon on silk.

To twelve pounds of silk take one pound and a half of cudbear, boil it well, when boiled put in the silk for ten minutes, and then take it out; for a garnet colour, boil in the same liquor two pounds of common salt, put in your goods, and let them boil ten minutes, first adding four ounces of cream of tartar.

Easy method of dyeing yellow or green.

The plant called weld, or dyer's weed, affords a most beautiful dye for cotton, woollen, mohair, silk and linen, and is that which is most commonly used for that purpose, as it gives the brightest dye. Blue cloths, dipped in a decoction of it become green. The yellow colour of the paint, called Dutch pink, is got from this plant; the tinging quality resides in the stems and branches, and it is cultivated in sandy soils, because rich soils are apt to lessen its value, by making the stalk hollow.

For orange on silk or cotton.

Take one pound of silk, one ounce of arnatto, and two ounces of the best pearl-ashes, boil them well together, turn in your goods, when boiled ten minutes, take out and wash them well, and then they are finished.

For a pleasant light red.

Boil two gallons of wheat bran and an ounce of allum in four gallons of water, strain it through a fine sieve, dissolve half a pound more allum, and as much white tartar; add three pound of madder to perfect the colour, and put in your stuff, cloth, &c. at a moderate heat.

A cherry red.

To one pound of silk, take two ounces of cudbear, boil your goods therein ten minutes, then take them out, and put in two ounces of cream of tartar; and if for a deep claret put in six ounces of common salt.

To dye purple.

In this case if you dye silk, you must take to each pound of it an ounce of allum, and a gallon of water, dissolving the allum therein over a gentle fire; then put in the silk, and let it continue there about four hours; then take lake and indigo, each a quarter of a pound, and a quart of urine; then add a small handful of cochineal, beat them up into a dye, and dip your silks, fine stuffs, or cotton into it as usual.

To make red water for silks, woollen or velvet.

Take two gallons of water, brasil four ounces, and being half consumed in heating, remove it from the fire; then put in an ounce of grains, a quarter of an ounce of gum arabic, with a quarter of a pound of allum well bruised, and having stood all night, it may be used in the morning.

Blue vat colour.

Put two pounds of indigo, four pounds of lime, and four pounds of copperas into a cask, grind your indigo,

put the copperas into a cask of water first, then your lime and indigo, stir the whole together for an hour, and the third day dye your goods.

N. B. The quantity is about sixty-eight gallons.

To make nankeen dye.

Boil equal parts of arnetto and common potash, in water, till the whole are dissolved. This will produce the pale reddish buff so much in use, and sold under the name of Nankeen dye.

To make bran water.

This is very necessary in dying, and therefore you ought to know how to prepare it. Do it with half a peck of wheat bran to two gallons of fair water, and half a pound of good bruised allum, over a gentle fire; suffer it to stand about a week, often stirring before you use it.

To kill aquæfortis for the use of silk, cotton, or woollen.

Take one pound of aquæfortis, and half a gill of water, put your water into a bowl, put in one ounce of common salt, mix it with water, then put your aquæfortis in a little at a time; three ounces will kill a pound of aquæfortis; add a little tin, when boiled, put in half a gill of water, and cover it up with a cloth.

For Turkey red on leather.

Take a goat's skin, let it be properly scowered with pig or sheep's dung, but pig's is best, then take strong allum water, and sponge over your skin; when dry boil a strong gall liquor, as it cannot be too strong; then boil a strong brazil liquor, the stronger the better; take a sponge, dip it into your liquor, and sponge over your skin: repeat this till it comes a full red; to finish your skin take the white of eggs and a little gum dragon, mix the two together in half a gill of water, sponge over your skin, and when dry polish it with a bottle or piece of glass made for the purpose.

For yellow.

Take a pint of the strongest whiskey, four ounces of turmeric, mix the two together; when settled, sponge your skin over; finish with gum the same as the red.

For black Turkey:

Put your skin on a clean board, sponge it over with gall and shumach strong, then take a strong logwood liquor, sponge it over three or four times, then take a little copperas, mix it in the logwood liquor, sponge over your skin, and finish it the same way as the red.

The art of dying leather gloves, resembling the beautiful York tan, Limerick dye, &c.

These pleasing hues of yellow, brown, or tan colour, are readily imparted to leather gloves by the following simple process: Steep saffron in boiling hot soft water for about twelve hours; then, having slightly sewed up the tops of the gloves, to prevent the dye from staining the insides, wet them over with a sponge or soft brush dipped into the liquid. The quantity of saffron, as well as of water, will of course depend on how much dye may be wanted; and their relative proportions, on the depth of colour, required. A common tea-cup will contain sufficient in quantity for a single pair of gloves.

Solder for tin and lead.

This metal is usually made by melting together equal parts of tin and lead, but it is better if it contains rather a greater proportion of tin.

To marble the edges of books or paper.

Marbling of books or paper is performed thus:—Dissolve four ounces of gum-arabic in two quarts of fair water; then provide several colours mixed with water in pots or shells, and with pencils peculiar to each colour; sprinkle them by way of intermixture upon the gum water, which must be put in a trough, or some broad vessel; then, with a stick, curl them, or draw them out in streaks to as much variety as may be done. Having done this, hold your book, or books close together, and only dip

the edges in on the top of the water and colours very lightly; which done, take them off, and the plain impression of the colours in mixture will be upon the leaves; doing as well the ends as the front of the book in like manner, and afterwards glazing the colours.

Method of recovering the legibility of decayed writings.

The best method of restoring legibility to decayed writings is found upon experiment to be, by covering the letters with phlogisticated alkali, with the addition of a diluted mineral acid; upon the application of which, the letters will change very speedily to a deep blue colour, of great beauty and intensity. To prevent the spreading of the colour, which, by blotting the parchment, detracts greatly from the legibility, the alkali should be put on first, and the diluted acid added upon it. The method found to answer best, as been to spread the alkali thin with a feather or bit of stick cut to a blunt point. Though the alkali should occasion no change of sensible colour, yet the moment the acid comes upon it, every trace of a letter turns at once to a fine blue, which soon acquires its full intensity, and is beyond comparison stronger than the colour of the original trace had been. If then, the corner of a bit of blotting paper be carefully and dexterously applied near the letters, so as to imbibe the superfluous liquor, the staining of the parchment may be in a great measure avoided: for it is this superfluous liquor which, absorbing part of the colouring matter from the letters, becomes a dye to whatever it touches. Care must be taken not to bring the blotting paper in contact with the letters, because the colouring matter is soft, whilst wet, and may easily be rubbed off. The acid chiefly employed has been the marine, but both the vitriolic and nitrous succeed very well. They should be so far diluted as not to be in danger of corroding the parchment, after which the degree of strength does not seem to be a matter of much nicety.

To bronze plaster figures.

Lay the figure over with isinglass size till it holds out, or without any part of its surface becoming dry or spotted; then, with a brush, such as is termed by painters a sash

tool, go over the whole, observing carefully to remove any of the size (while it is yet soft) that may lodge on the delicate or sharp places, and set it aside to dry: when it has become so, take a little very thin oil gold-size, and, with as much of it as just damps the brush, go over the figure, allowing no more of this size to remain than what causes it to shine. Set it apart in a dry place, free from smoke; and after it has remained there forty-eight hours, the figure is prepared for bronzing.

The bronze, which is almost an impalpable powder, (and may be had at the colour-shops of all metallic colours) should be dabbed on with a little cotton-wool; after having touched over the whole figure, let it stand another day; then, with a soft dry brush, rub off all the loose powder, and the figure will resemble the metal it is intended to represent, and possess the quality of resisting weather.

New varnish for earthenware.

Equal parts of white glass and soda, finely pulverized, carefully sifted and mixed. This varnish is applied in the same manner as that in common use. The advantage of it is this, that it is safe, and can have none of the poisonous effects that arise from the decomposition of lead varnish.

To produce gas light on a small scale.

Take an ordinary tobacco-pipe, and nearly fill the bowl with small coals, and stop the mouth of the bowl with any suitable luting, as pipe-lay, or the mixture of sand and common clay, and place the bowl in a fire between the bars of a grate, so that the pipe may stand nearly perpendicular. In a few minutes, if the luting is good, the gas will begin to escape from the orifice of the pipe, when, if a piece of lighted paper or a candle be applied, it will take fire and burn for several minutes with an intense light. When the light goes out, a residuum of useful products will be found in the bowl.

To clean boot-tops or any tanned leather.

Boil one quart of milk, let it stand till cold: one ounce of oil of vitriol; one ounce of spirits of salts; shake

them well together: then add one ounce of red lavender. You may put half a pint of vinegar, with the white of an egg beat to froth.

Receipt for blacking.

Two ounces ivory black, one tea-spoonful oil of vitriol, one table-spoonful sweet oil, and two ounces of brown sugar: roll the same into a ball, and to dissolve it add half a pint of vinegar.

To cut glass.

Take a red-hot shank of a tobacco-pipe, lay it on the edge of your glass, (the glass being previously wet,) which will then begin to crack, then draw the shank end a little gently before, and it will follow any way you draw your hand.

To make a continual light by night.

Take one ounce of the oil of almonds, put half a drachm of phosphorus and two or three grains of the flower of sulphur into it; hold it in a gentle warmth to dissolve, then shake the bottle and draw your cork, and you will have a fine glow-worm light. If you rub a little on the nose, or any other part, it will appear all in a flame.

To purify the muddy waters of rivers and pits.

Make a number of holes in the bottom of a deep tub; lay some clean gravel thereon, and above this some clean sand; sink this tub in the river or pit, so that only a few inches of the tub will be above the surface of the water; the river or pit water will filter through the sand, and rise clear through it to the level of the water on the outside, and will be pure and limpid.

To make parchment transparent.

Take a thin skin of parchment, and soak it in a strong lye of wood ashes, often wringing it out till you find it become transparent; then strain it on a frame and let it dry.

To varnish drawings, paintings in water colours, or any kind of paper or card work.

Take some clear parchment cuttings, boil them in water in a clean glazed pipkin till they produce a very clear size, strain it and keep it for use.

Give your work two coats of the above size, passing quickly over the work, not to disturb the colours; when dry, proceed as before directed with your varnish.

To make the liquid foil for silvering glass globes, bent mirrors, &c.

Take one ounce of clean lead, and one ounce of fine tin, melt them together in a clean iron ladle, then immediately add one ounce of bismuth, skim off the dross, remove the ladle from the fire, and before it sets add ten ounces of quicksilver; stir the whole well together carefully, observing not to breathe over it, as the evaporation of the silver is very pernicious.

Composition for restoring scorched linen.

Boil to a good consistency, in half a pint of vinegar, two ounces of fuller's earth, an ounce of hen's dung, half an ounce of cake soap, and the juice of two onions. Spread this composition over the whole of the damaged part; and if the scorching were not quite through, and the threads actually consumed, after suffering it to dry on, and letting it receive a subsequent good washing or two, the place will appear full as white and perfect as any other part of the linen.

Valuable instructions for raising potatoes to great advantage.

The earth should be dug twelve inches deep, if the soil will allow it; after this, a hole should be opened about six inches deep, and horse-dung, or long litter, should be put therein, about three inches thick; this hole should not be more than twelve inches diameter. Upon this dung or litter, a potatoe should be planted whole, upon which a little more dung should be shaken, and then the earth must be put thereon. In like manner the whole plot of ground must be planted, taking care that the potatoes be at least sixteen inches apart. When the young shoots

make their appearance they should have fresh mould drawn round them with a hoe, and if the tender shoots are covered it will prevent the frost from injuring them; they should again be earthed when the shoots make a second appearance, but not covered, as in all probability, the season will be less severe.

A plentiful supply of mould should be given them, and the person who performs this business should never tread upon the plant, or the hillock that is raised round it, as, the lighter the earth is, the more room the potatoe will have to expand.

A gentleman obtained from a single root, thus planted, very near forty pounds weight of large potatoes; and, from almost every other root upon the same plot of ground, from fifteen to twenty pounds weight; and, except the soil be stoney or gravelly, ten pounds, or half a peck, of potatoes may almost be obtained from each root, by pursuing the foregoing method.

But note—Cuttings, or small sets, will not do for this purpose.

To clean or whiten prints or engravings.

Half fill a glass bottle with a mixture composed of one part of the red oxyd of lead, or minium, and three parts of the muriatic acid; and having closed the mouth of the bottle with a glass stopper, put it in a cool place not exposed to the light. A certain heat will then be produced, which is an indication that new combinations are formed. The oxyd of the lead abandons a considerable portion of its oxygen, which remains combined with the liquor; the latter then acquires a beautiful gold colour, and assumes the odour of the oxygenated muriatic acid. It holds in solution a small portion of the lead, which does not, in the least, injure its effect. It is necessary that the bottle should be of strong glass, and the stopper be well secured, in order to prevent the elastic vapour which rises from forcing it out. When you employ the liquor thus prepared, take a large pane of glass, and raise a kind of border of white wax around its edge, about two inches in height, and every way equal. By these means you form a sort of trough, into which put the prints, and pour over

them a little fresh urine, or water mixed with a portion of ox gall. At the end of three or four days, pour off which of these liquids you have employed, and supply its place with warm water, which ought to be changed every three or four hours, until it comes off perfectly clear. When the matter, with which the prints are dirtied, is of a resinous colour, which sometimes happens, dip them in a little alcohol: afterwards suffer all the moisture to drain off, and cover the prints in the liquor of the oxygenated muriatic acid made by minium. Place on the edges of the wax another pane of glass, of the same size as that below, in order that you may not be too much incommoded by the smell of the acid; and you will plainly see the yellowish prints resume their original whiteness. One or two hours will be sufficient to produce the desired effect. Having then poured off the acid, wash the prints several times in pure water, and dry them in the sun.

Substitutes for Indian Ink.

Boil parchment slips or cuttings of glove leather, in water, till it forms a size, which when, cool, becomes of the consistence of jelly; then, having blackened an earthen plate, by holding it over the flame of a candle, mix up with a camel hair pencil, the fine lamp black thus obtained, with some of the above size, while the plate is still warm. This black requires no grinding, and produces an ink of the very colour, which works as freely with the pencil, and perfectly transparent as the best Indian ink; it possesses the advantage of furnishing artists with a substitute for that article, which may be prepared in situations where it might be difficult to obtain the ink itself.

To make the phosphoric match bottle.

These bottles may be prepared by mixing one part of flour of sulphur with eight of phosphorus. This requires caution, and should afterwards be handled with great care, lest any part of the mixture get under the finger nails, a small portion of which might occasion great inconvenience. When used to procure a light, a very minute quantity is taken out of the bottle on the point of a match, and rubbed upon cork or wood, which produces an immediate flame.

Method of draining ponds in level grounds.

certain distance below the surface of the earth

there is a stratum of loose sand, which freely admits the passage of water. This stratum is at various depths, in different elevations; but it will be generally found, that lands most subject to stagnant ponds have but a shallow stratum of clay over the sand.

All that is necessary, therefore, is to dig a pit in the bottom of the pond, till you arrive at this stratum of sand, when the water will be immediately absorbed, and the pond emptied.

A liquid blacking for shoes and boots.

Take ivory black and brown sugar candy, of each two ounces; of sweet oil a table spoonful; add gradually thereto a pint of vinegar, cold, and stir the whole gradually till incorporated.

Another.

To one pint of vinegar add half an ounce of vitriolic acid, half an ounce of copperas, two ounces of sugar candy, and two ounces and a half of ivory black; mix the whole well together.

Another.

Sweet oil, half an ounce; ivory black and treacle, of each half a pound; gum-arabic, half an ounce; vinegar, three pints; boil the vinegar, and pour it hot on the other ingredients.

To intoxicate and take fish.

Make a paste in the following manner: take coculus indicus, cummin seeds, fenugrec seeds, and coriander seeds, equal parts, reduce them to powder, and make them into a paste, with rice flour and water; reduce this paste into small balls of the size of peas, and throw it into such ponds or rivers where there are fish, which, after tasting thereof, will rise to the surface of the water almost motionless, and will allow themselves to be taken out by the hand.

Thunder powder.

Take separately, three parts of good dry saltpetre, two quarts of dry salt of tartar, and pound them well together in a mortar; then add thereto one part, or rather more, of flower of brimstone, and take care to pound and mix the whole perfectly together; put this composition into a bottle with a glass stopper, for use.

PAINTING.

The practice of oil colours, and painting timber-work after the common method.

Common painting is the method of colouring doors, windows, posts, rails, pales, gates, border boards for gardens, or any other materials that require either beauty or preservation from the violence of the rain, or injury of weather; the progress of doing it I shall lay down as plain as I can.

Suppose then there be a set of palisadoes, or a pair of gates, or posts and rails to paint, and you would finish it in a stone colour; first look over the work, and take notice whether the joints be open in the gates, or any large cliffs in the posts, for if these are not secured, the wet will insinuate into these defects, and very soon decay the whole work; let the first business therefore be, to stop up these places smooth and even, with a putty made of whitening and linseed oil, well beaten together on a grinding stone, with a wooden mallet, to the consistence of a very stiff dough, and with this let all the crevices, cliffs and other defects, be filled up and just equal to the surface of the stuff; then proceed to the priming of the work with Spanish Brown, well ground and mixed with very thin linseed oil; with this go over the work, giving it as much of as it will drink up; this in about two days will be indifferently dry, then if you would do the work substantially, do it over again with the same priming colour; when this is thoroughly dry, then take the white lead, well ground and tempered up, not too thin, for the stiffer you work it, the better body will be laid on; and the thicker coat of colour that your timber is covered with, the longer it will last; let this colour be well rubbed on, and the whole surface of the work be so entirely covered, that there remains neither crack nor corner bare, which you may easily do by jobbing in the point of a brush; let this colouring lay, and then go over it a second time, and a third if required; the charge will be a little more, but the advantage will be much more beneficial.

This course is sufficient for any kind of timber work that requires only a plain colour, whether you thus cover the work with the stone colour, or else with timber colour in

umber and white, or lead colour in indigo and white, that being the cheapest of the three by much : nay, I have known some lay over their work only with a coat of Spanish brown, by tempering it more stiff than it was done for the two first primings, which, in some respects, is the cheapest, and preserves the timber perhaps as well as any. Now he that is able to bring the work thus far on, has proceeded to the highest pitch of common painting that aims at preservation beyond beauty, though something of beauty is necessarily included in this also ; but this is not all, for he that is arrived thus far, is in a fair way to other perfections in the art of painting ; but the panneling of wainscot with its proper shadows, and for imitating olive and walnut wood, marble and such like ; these must be attained by ocular inspection, it being impossible to deliver the manner of the operation by precept without example ; and I am bold to affirm, that a man shall gain more knowledge by one day's experience, than a hundred days spent to acquire it some other way.

I advise, therefore, all those that desire any insight into this business, to be a little curious, if opportunity offers, in observing the manner of a painter's working, not only in grinding his colours, but also in laying them on, and working them in ; in all these, observe the motion of his hand in managing any kind of tool, and by this means, with a little imitation, joined to the directions here given, I doubt not but in a short time you may arrive to great proficiency in the business of common painting.

Note.—That when you have made use of your colours, if there be occasion for a small cessation till the work is finished, cover the colours in the pot with water, for that will prevent their drying, even in the hottest time.

As for your pencils, they ought, as soon as you have done working, to be washed out clean in linseed oil, and then in warm soap suds ; for if either oil or colour be once dried in the brush or pencil, it is spoiled for ever.

It has been observed, that timber laid over with white when it has stood some time in the weather, the colour will crack and shrink up just as pitch does, if laid on any thing that stands in the sun ; the cause of this is, that the colour was not laid on with a stiff body, able to bind itself on firm and fast.

If you have at any time occasion to use either brushes that are small, or pencils, as in many cases there will be occasion, you ought then to dispose of the colours you use upon a pallet, which is a wooden instrument, and easy to be had at any colour shop, and there work and temper them about with the pencil, that it may take up more colour; and you must here take notice, that if a pencil be only dipt into a pot of colour, it brings out no more with it than what hangs on the outside, and which will go but a little way; whereas if you daub the pencil about the colour on the pallet, a good quantity of colour will be taken in the body of the pencil; and besides all this, you may work the pencil better to a point on a pallet than you can do in a pot: the point of a pencil being of the greatest use, in divers cases, especially in drawing of lines and all kinds of flourishing.

What colours are most suitable, and set off best with each other.

By setting off best, is meant to have an agreeable appearance; for two separate colours being put together, or one next the other, will add much to the beauty of each: as blue and gold, red and white, and such like colours; but green and black, or black and brown do not look well.

All yellows will set off best with blacks, blues, and reds.

All blues set off best with whites and yellows.

Greens set off well with black and whites.

White will set off with any other colour.

Reds will set off best with yellows, whites, and blacks.

Gold looks well on a white ground, especially if the work be gilt or carved.

Gold and black shews very well. So does gold and the brightest Spanish brown.

But the most beautiful of all others for gold is the vermillion red, the smalt blue, and the lake, laid on a light ground.

Of colours that arise from mixture.

Ash colour is made of white lead and lamp black; if a deep ash colour, then take the more black; if a light one, then take but little black.

A lead colour is made of indigo and white lead.

A colour resembling new oaken timber, is made of umber and white lead.

A flesh colour is compounded of lake, white lead, and a little vermillion.

For a buff colour, mix yellow ochre and white lead.

For a light willow green, mix verdigrease and white.

For a grass green, mix verdigrease and pink.

A carnation is made of a lake and pink.

Orange colour is of yellow ochre and red lead.

A light timber colour is of spruce ochre, white lead, and a little umber.

Brick colour is red lead, a little white, and yellow ochre.

For a straw colour, use white lead and a little yellow ochre.

Olive wood is imitated with ochre and a little white, and veined over with burnt umber.

Walnut trees are imitated with burnt umber, and white, veined over with the same colour, and the deepest places with black.

Pales and posts are sometimes laid over with white, and is called a stone colour.

Note—All painting intended to be white must have a quarter of an ounce of Prussian blue mixed with every two pounds of white lead; without which it will be a stone colour, and not white.

Doors and gates, if painted in pannels, then the shadows of white are umber and white, but if laid in lead colour, then the shadows are painted black.

A green paint for garden-stands, Venetian blinds, trellisses, &c.

Take mineral green, and white lead ground in turpentine, mix up a quantity to your mind, with a small quantity of turpentine varnish for the first coat; for the second you must put as much in the colour as will produce a good gloss.

N. B. By adding a small quantity of Prussian blue, you will have the colour much brighter.

Method of preparing a cheap substitute for oil paint, as durable as that prepared with oil, and free from any bad smell.

Take fresh curds, and bruise the lumps on a grinding-stone, or in an earthen pan or mortar, with a spatula. After this operation, put them into a pot with an equal quantity of lime well quenched, and become thick enough to be kneaded; stir this mixture well, without adding water, and you will soon obtain a white coloured fluid, which may be applied with as much facility as varnish, and which dries very speedily. But it must be employed the same day, as it will become too thick the day following.

Ochre, Armenian bole, and all colours which hold with lime, may be mixed with it, according to the colour which you wish to give the wood, but care must be taken that the addition of colour to the first mixture of curds and lime may contain very little water, else the painting will be less durable.

When two coats of this paint has been laid on, it may be polished with a piece of woollen cloth or any other proper substance, and it will become as bright as varnish. It is certain that no kind of painting can be so cheap: but it possesses, besides, other advantages; in the same day two coats may be laid on and polished, as it dries speedily, and has no smell. If it be required to give it more durability in places exposed to moisture, do over the painting, after it has been polished, with the white of an egg. This process will render it as durable as the best oil painting.

Method of preparing linseed oil varnish.

One pound of well pulverised and sifted litharge, four ounces of finely pounded white vitriol, and one quart of linseed oil. Put these ingredients into an iron pan of such a size that it may be only half full; mix them well together, and boil them till the moisture is evaporated, which may be known by a pellicle being formed on the surface, or by the barrel of a quill bursting when thrust to the bottom of the boiling varnish. Then take it from the fire and pour off the clear liquor, taking care to keep back the thick part, which has desposited itself, at the bottom. While boiling, it must be stirred several times round, that the litharge may not fall to the bottom; but stir it constantly,

else the superfluous litharge will be dissolved, and the varnish become too thick.

The composition of amber varnish consists of half a pound of melted or roasted amber, one pound and a half of linseed oil varnish, and two pounds of turpentine oil. The amber and linseed varnish are to be mixed together in a deep cast-iron pan, of such a size as to be only one-third full, and to be kept over a slow fire till the amber is dissolved, which may be known by its swelling up: the operator, therefore, must have at hand a large copper, or iron vessel, that the varnish may be held over it in case it should rise above the sides of the pan, and to prevent the loss that would thereby be occasioned. When the varnish is dissolved, the pan must be taken from the fire; and when the mixture has boiled, the turpentine oil is to be poured into it, continually stirring it. Then let it stand some time, that the coarse undissolved particles may deposit themselves at the bottom; after which pour off the clear varnish, and, having strained it through a piece of linen, put it in bottles for use.

In boiling of varnish, care must be taken that it may not boil over or catch fire. Should this happen to be the case, it must not be extinguished by water; for this mode would occasion such a sputtering, that the operator would be in danger of having his face bespattered with the boiling varnish. The best method, therefore, is to cover the vessel in such a manner as to exclude the air, and for this purpose to have at hand a piece of wood, plate of iron, or any thing else, that may cover the vessel, and extinguish the flame.

Receipt to make turpentine varnish.

Take one gallon of spirits of turpentine, and five pounds of rosin pounded; put it in a tin can, on a stove, and let it boil half an hour; when cool it is fit for use.

To make a cement of mahogany colour.

Take two ounces of bees-wax, half an ounce of rosin, melt them together, then add half an ounce of Indian red, and a small quantity of yellow ochre to bring it to the colour you desire; keep it in a pipkin for use.

To judge of transparent colours for painting.

Transparent colours should be so clear, when mixed with abundance of water, as to communicate a strong tint without in the smallest degree plastering or concealing the paper, &c. hence their designation. The best of every kind are made from either vegetable or animal substances, minerals being extremely difficult to prepare, equally so to work with water, and many of them very subject to change.

An incomparable and durable white paint, for inside work only, which will dry and cease to smell within six hours.

Add to a gallon of spirits of turpentine, two pounds of frankincense. Let it simmer over a clear fire, till dissolved; then strain it and bottle it for use. To a gallon of bleached linsed oil, add a quart of this mixture, shake them well together, and bottle this also. Let any quantity of white lead be ground very fine with spirits of turpentine; than add to it a sufficient portion of the last mixture, till it be found fit for laying on. If, in working, it should grow thick, it must be thinned with spirits of turpentine. This is what painters call a flat or dead white, to distinguish it from common white paint, being substituted for the very best internal work, both on account of its superior delicacy and expence.

Cheap and excellent composition for preserving weather boarding, pailing, and all other works liable to be injured by the weather.

Lime, it is well known, however well burnt, will soon become slacked by exposure in the open air, or even if confined in a situation not remarkable dry, so as to crumble of itself into powder. This is called air-slacked lime, in contradiction to that which is slacked in the usually way, by being mixed with water. For the purpose of making the present useful composition to preserve all sorts of wood-work exposed to the vicissitudes of the weather, take three-parts of this air-slacked lime, two of wood-ashes, and one of fine sand: pass them through a fine sieve, and add as much linseed oil to the composition as will bring it to a proper consistence for working with a painter's brush. As particular care must be taken to mix it perfectly, it should be ground on a stone slab with a proper muller, in the same

manner as painters grind their white lead, &c. but, where these conveniences are not at hand, the ingredients may be mixed in a large pan, and well beat up with a wooden spatula. Two coats of this composition being necessary, the first may be rather thin: but the second should be as thick as it can conveniently be worked. This most excellent composition for preserving wood when exposed to the injuries of the weather, is highly preferable to the customary method of laying on tar and ochre.

Process for making lead-coloured paint to preserve iron.

Take a small quantity of common litharge, and place it over the fire in a shovel: afterwards, when sufficiently warm, scatter over it a little flour of brimstone, which will instantly convert it into a blackish colour, and which, when ground in oil, makes a good dark lead colour. It dries quick, gets remarkably hard, and resists the weather better than any other lead colour.

Method of preserving birds, &c.

When fresh killed, observe to put tow into the mouth; and upon any wound they may have received, to prevent the feathers being spoiled; and then wrap it smooth, at full length, in paper, and pack it close in a box. If it be sent from a great distance, the entrails should be extracted, and the cavity filled with tow dipt in rum or other spirit. The following mixture is proper for the preservation of animals: one pound of salt, four ounces of alum, and two ounces of pepper, powdered together.

To gild letters on vellum or paper.

Letters written on vellum or paper, are gilded in three ways; in the first, a little size is mixed with the ink, and the letters are written as usual: when they are dry, a slight degree of stickiness is produced by breathing on them, when the gold leaf is immediately applied, and by a little pressure may be made to adhere with sufficient firmness. In the second method, some white lead or chalk is ground up with strong size, and the letters are made by means of a brush; when the mixture is almost dry, the gold leaf may be laid on, and afterwards burnished. The last method is, to mix up some gold powder with size, and make the letters of this by means of a brush.

Of colouring maps, and other prints, in water colours.

Having, as yet, seen nothing published upon this subject that is authentic, I have thought fit, for the sake of those who are inclined to ingenuity, to set forth the way and manner of doing this work, it being an excellent recreation for the gentry, and others, who delight in the knowledge of prints and maps; which by being coloured, and the several divisions distinguished one from the other, by colours of different kinds, do give a better idea of the countries they describe, than they can possibly do uncoloured.

Now to perform this work after the best manner, there must be provided in the first place a lye, made with tartar and gum water.

To make the tartar lye, do thus: take two ounces of the best white tartar, which is a stony substance that sticks to the side of wine vessels, and is sold by the druggists.

Wrap it up hard and tight in half a sheet of cap paper, wet it thoroughly in water, and put it into a clear fire, either of wood or sea-coal; let it remain therein till it be hot quite through, then take it out with a pair of tongs, and put it immediately into a pint of water, and with your finger rub it well to pieces; put it into a long narrow glass, and in a day or two the black will all settle, and the lye will become pure and clear; pour off the lye into a clean glass, and keep it close stopped for use.

To make gum water, take three ounces of the best and clearest gum arabic, which is sold at the druggist's, and beat it as small as you can bruise it; then put it into a pint of fair spring water, and let it dissolve therein, which will be much hastened by shaking the bottle two or three times a day very well, that the gum that is dissolved may mix the better with the water that is above it; and when it is all dissolved, if there appear any foulness in it, strain it through a rag into a clean earthen dish, and put it into a glass, and stop it for use. Remember, that too much of this ought not to be made at a time; for if the gum be kept too long dissolved in the water, it will rot and be of no use; you must therefore always observe to make it fresh once in two months, or three at the farthest.

In the next place, you must prepare or make your

colours for use, and the best for this work are those that follow ; namely,

Copper green, and that is made thus : take a pound of bright French verdigris, made at Montpellier, this being the best, for the verdigris made at any other place will fade ; to this add three ounces of cream of tartar ; beat them both into a fine powder, and take care while the verdigris is in the pounding, to stop your nose, and hold a bunch of fine linen in your mouth to breathe through, else the subtle powder of the verdigris will be apt to offend : and when this is done, mix both the powders into two quarts of water, and boil it in an earthen pipkin till it boil away a quart, then strain it out when cold, and put the liquor into a glass, stop it up, and let it stand to settle till the liquor be very clear, so you will have a delicate green ; but sometimes the verdigris not being always of a goodness, the colour may not be deep enough for some uses. In this case, put some of it into a broad earthen dish, and set it over a chafing-dish of coals, and by a gentle heat diminish so much of the liquor, till by trying on a paper, and letting it dry, the colour please you ; and here you are to note, that if it shine too much when dry, it is not right ; for it is not rightly made, except it just shine, and if you cannot make the colour deep enough by evaporating by heat the abounding liquid, without making it shine too much, it were better to add some more verdigris, and boil it up again till it become a deep transparent green. If you would make but a pint of this, you must take but half the quantity of each ; and you are also to take notice, that this is a colour that will keep many years without decaying, if the glass that contains it be close stopped.

The next colour needful to be made is a stone colour, or a liquid of myrrh, which is thus done : take a pint of your tartar lye, and add to it one ounce of the best myrrh in powder, which you can get at the druggist's, and boil it till the myrrh is dissolved, which will be done in a little time : let it settle, and pour off the lye clear for use, which you must close stop up ; this is also a tincture that will never decay, and may be made fainter or deeper, by boiling more of the liquor away, to make it deeper, or by adding water to make it fainter.

And in the last place, there is required a crimson colour,

which is speedily made thus :—Buy at the druggist's some good cochineal, about half an ounce will go a great way; take thirty or forty grains, bruise them in a gallipot to fine powder, then put to them as many drops of the tartar lye as will just wet it, and make it give forth its colour; and immediately add to it half a spoonful, or more if the colour be yet too deep, and you will have a delicate purple liquor or tincture. Then take a bit of alum, and with a knife scrape very finely a very little of it into the tincture, and this will take away the purple colour and make it a delicate crimson. Strain it through a fine cloth into a clean gallipot, and use it as soon as you can, for this is a colour that always looks most noble when soon made use of, as it will decay if it be kept too long.

Indigo is another colour used in colouring of maps and prints.

This is bought at the shops that sell paint, and it must be ground very fine on a stone, as you do oil colours, with a little tartar lye to make it give its colours, and look the brighter; when it is ground perfectly fine like a thick syrup, add gum water to it till it be thin enough for your purpose, and keep it in a glass close stopped up; but it will settle so, that when you use it you must stir it up exceeding well from the bottom.

For a yellow, gamboge is the best; it is sold at the druggist's in lumps, and the way to make it fit for use, is to make a little hole with a knife in a lump, and put some water into the hole, stir it well with a pencil till the water be either a deeper or fainter yellow, as your occasion requires, then pour it into a gallipot, and temper up more, till you have enough for your purpose.

Red lead is also a colour much used in this work, and so is orpiment: both of which you may buy at the colour shops very well ground, so that they need only be tempered with gum water, to be fit for use.

Blue bice is also often used, which needs only to be tempered with gum water; and when men design to be curious, they may use instead thereof ultramarine, which is the best and most glorious of all blues, yet extremely dear; though small papers of it, at about two shillings price, may be bought at some colour-shops, which, if carefully used, will go a great way: it need only be tempered in a very

small gallipot, with some gum-water, till it lie on the paper with a fine and almost transparent colour.

There is likewise an exceeding glorious red or crimson colour, namely carmine, which is exceeding dear; yet about half a crown's worth will go a great way in the uses to which it is put: it is tempered with gum-water, and gives several degrees of colour, according as it is thick or thin tempered.

Vermillion is also used in some cases. This is a glorious scarlet, that needs only to be tempered with gum water; for it may be bought very finely ground to powder at the colour shops: only it is to be noted, that this colour shews much brighter when dry, if glazed over with some thick gum-water, which is made by putting two ounces of gum arabic to half a pint of water, or less.

And for some uses burnt umber, ground very fine with water as thick as possible, and then tempered with gum-water to a due thickness, and then it makes a good transparent colour.

There is another colour needful in this work, which is a most pleasant grass green, and that is made thus: take a lump of gamboge, and make a hole in it, then put therein some copper green, stir it about with a pencil, and from a willow you will see it turn to a grass green, which you may make deeper or lighter, as you stir it about a longer or shorter time.

To colour maps and prints.

The colours being prepared as before directed, the only way to colour maps with prints well, is by a pattern done by some good workman: three or four such maps and prints coloured by a good artist, are sufficient to guide a man in the right doing of his work; but if he cannot obtain this, he may, by a few trials, grow a good artist in a short time; for this is only attained by practice; and if a man should spoil half a score of maps or prints, in order to get the knack of colouring a map and print well at last, there is no man that is ingenious will grumble at it.

The art of colouring right may be attained by practice, as was said; but the hardest thing is to know rightly how to make and prepare the colours properly, without suf-

fering them to sink into it: all that are here mentioned will lie fair and pleasant to the eye, and it is the fairness of the colour is the art of map and print painting; but if the paper be not good and strong, no art can make the colours lie well; therefore in buying maps and prints, choose those on the thickest and strongest paper.

To make portable glue, (commonly sold by the name of Bank-note cement.)

Take half a pound of the best glue, boil and strain it very clear; boil two ounces of isinglass, put it in a double glue pot, with a quarter of a pound of fine brown sugar, and boil it pretty thick, then pour it out into plates or moulds; when cold you may cut and dry them in small pieces for the pocket.

To gild leather for listing doors, folding screens, &c.

Take two or three clear brown sheep-skins, damp them with a sponge and water, then strain them tight with tacks on a board, sufficiently large; when dry size them with a clear double size; then take the whites of fresh eggs, beat them to a foam, and let them stand to settle; then take books of leaf silver, and blow out the silver on a gilder's cushion; pass over the leather carefully with the egg size, and lay on the silver, closing any blister with a bit of cotton; when dry varnish them over with yellow lacker till they are of a fine gold-colour; your skins being thus gilt, you may afterwards cut them out as you please, and join them with paste to any length.

You must perform the foregoing operation in the height of summer, when the air is clear, dry, and warm, that the skins may dry well before you size them: that the size may have the desired effect upon the outer pores, and no farther; and that the silver may not tarnish before you lacker it.

A cement to join broken glass.

Take one ounce of isinglass, steep it in half a pint of spirits of wine for twenty-eight hours, then let it dissolve over a slow fire, keeping it close covered, or the spirits will evaporate, then take six cloves of garlic, bruise them well in a mortar, put them in a linen cloth, and squeeze the

juice into the isinglass; mix it well together, and keep it for use, it being excellent to join glass ornaments, &c.

To stain box-wood brown.

Hold your work to the fire that it may receive a gentle warmth, then take aquafortis, and with a feather rub over the wood, till you find it change to a fine brown, always keeping it near the fire, then oil and polish it.

A fine black.

Having a copper fixed, or an iron pot, into which put six pounds of chip logwood, and as much wood or veneers as it will conveniently hold without pressing tight; then fill with water, and let it boil slowly for about three hours; then add a quarter of a pound of powdered verdigris, a quarter of a pound of copperas, and two ounces of bruised nut-galls, filling the copper up with vinegar as the water evaporates; let it gently boil two hours a day till you find the wood to be dyed through, which, according to the kind, will be in more or less time.

For a fine blue dye.

Take a clean glass bottle, into which put one pound of oil of vitriol, then take four ounces of the best indigo, pounded in a mortar into small lumps; put them into the vitriol, take care to set the bottle in a bason or glazed earthen pan, as it will ferment; after it is quite dissolved, provide an earthen vessel, so constructed that it will conveniently hold the wood you mean to dye; fill it one-third with water, into which pour as much of the vitriol and indigo, stirring it about, till you find the whole to be a fine blue dye, by trying it with a piece of white paper or wool: put in your wool or veneers, and let them remain till the dye has struck through.

To dye yellow.

Take two pounds of the root of barberry, reduce it by sawing to dust, which put in a copper or brass trough, add two ounces of turpentine, to which put two gallons of water, then put in as many veneers as the colour will cover, boil them for three hours, often turning them; when cool, add two ounces of aquafortis, and you will find the dye strike though much stronger.

N. B. White holly is the best wood for this colour.

For a bright red.

To two pounds of good brazil-dust, put seventeen quarts of water, put in nearly as many veneers as the liquor will cover, boil them for three hours, and let them cool; then add two ounces and half of alum, and two ounces of aquafortis, and keep it lukewarm until it has struck through.

To dye a bright green.

Proceed as before to dye a yellow; but instead of aquafortis, put as much of the vitriolated indigo as will produce the desired colour.

To dye a fine purple.

Take two pounds of chip logwood, half a pound of Brazil-dust, add four gallons of water, put in your veneers and boil them well, then add six ounces of pearl-ash and alum, let them boil two or three hours every day till you find the liquor has struck through.

To dye the silver grey.

Take a cast-iron pot of six or eight gallons, and from time to time collect old iron, nails, hoops, &c. &c. expose them to the weather in it until they are covered with rust, add one gallon of vinegar, and two of water, boil all well for an hour, then have your veneers ready, which must be of fair-wood, not too dry, put them in the copper you use to dye black, and pour the iron liquor over them; add one pound of chip logwood, two ounces of bruised nut-galls, then boil up another pot of the iron liquor to supply the copper with, keeping the veneers covered, and boil two hours a day.

N. B. The wood mostly used to dye black is pear-tree, holly, and beech, all of which take a beautiful black; it should at the same time be observed not to take wood which has been long cut, but as fresh as possible. I have likewise found, that after the veneers have had an hour's boiling, and taken out cool, that the colour has struck much stronger. It should likewise be observed that after the veneers are dyed they should be dried in the air, and not by the fire, or in a kiln of any kind, as it tends to destroy the colour.

In order to dye blue, green, and other colours, take

clear holly, put the veneers first in the box, or trough, with clear water, and let them remain four or five days, changing the water once or twice as you find occasion, the water acting as a purgative on the wood will bring forth abundance of slime, &c. letting them dry about twelve hours before they are put in the dye; by observing this you will find the colours strike quicker, and be of a brighter hue.

A good black for immediate use.

Boil half a pound of chip logwood in two quarts of water, then add one ounce of pearl-ash, and apply it hot to the work with a brush: then take half a pound of logwood and boil it as before in two quarts of water, adding half an ounce of verdigris and half an ounce of copperas; strain it off, and put in about half a pound of rusty steel filings, and apply as before.

Receipt to make the gold lacker for brass.

Take of rectified spirits of wine two quarts, and three pounds of seed lac, picked particularly clean, and clear of all black and brown specks and pieces, as upon that depends the entire beauty of the lacker: add them together, keep them warm, and shake them often; when the lac is dissolved it is fit for use.

The signs of rain by creatures, &c.

When the hern or bittern flies low, the air is gross and thickening into showers.

Cattle leaving off to feed, and hastening to shelter under hedges, bushes, trees, out-houses, &c. shows sudden showers of rain are coming.

When kine view the sky, stretching up their heads, and snuffing the air, moist vapours are engendering: and the cause of their doing so is, their sensibleness of the air's sudden alteration from dry to wet; and sudden rain will ensue, though at that time the sun may shine out.

The chattering of swallows, and their flying low about pounds and lakes, denotes rain.

The frogs much croaking in the ditches and pools, &c. in the evening, foretells rain in a little time to follow; also the sweating of stone pillars, or tombs, denotes rain.

TO DESTROY VERMIN.

To destroy snails.

Snails are great enemies to wall fruit; and in a dewy morning you may easily find where they most delight to breed; but the best way to find out their haunts is in a hard winter, and then destroy them; they lie in holes of walls, under thorns, behind old trees, or old and close hedges. If you pluck not the fruit they have began to devour, but let it alone, they will finish their repast on this before they begin another.

To find out the nests of moles.

Moles breed but once a year, and that is in spring, therefore from March view your ground to find out any new cast hills, at the middle thereof, pretty low, they make their nest, not unlike that of a field-mouse, so that you must observe, that about St. Mark's day you may possibly take all their young in their nests, and by watching the trench, you will catch the dams coming to seek their young.

To take moles in pots set in the earth.

Set your pots in the tracks you have lately observed moles to go in, and so place them that the tops of the pots may be even with the ground in the trench, covering the pots about half over; then put a live Mole into each pot; for in the gendering time, which is in the spring, the bucks will run after the does, and those in the pots will cry, and the others hearing them, will follow them even into the pots; and they cannot get out again, they will there cry and fight till they have almost killed one another.

To destroy moles.

Strike down with a mole spear where you see them heaving, or lay traps in their paths under ground, in which they will fasten themselves so that they cannot get out if you are any thing quick.—Or put brimstone, rosin, and turpentine into a jug with a narrow neck, and some tow in it, to fire it; then put the neck into their holes, and it will stifle them:—Or make a paste with hellebore roots, wheat flour, and beaten glass; scatter it in their holes, or near them, and it will kill them.

To destroy ants.

Ants are destroyed by opening the nest and putting in quick lime, and throwing water on it.

To destroy bugs and worms in wood.

An eminent physician has discovered that by rubbing wood with a solution of vitriol, insects and bugs are prevented from harbouring therein. When the strength of this remedy is required to be increased, there need only be boiled some coloquintida apples in water, in which, afterwards, vitriol is dissolved, and the bedstead, with the wood about, and the wainscoting, being anointed with the liquor, will be ever after clear of worms or bugs. The wall may be likewise rubbed with the composition, and some of it may be dropped into the holes where these insects are suspected to be harboured. As to the walls, they require only to be washed over with the vitriol water.

Remedies against fleas.

Fumigation with brimstone, or the fresh leaves of pennyroyal sewed in a bag, and laid in the bed, will have the desired effect.

To destroy vermin in children's heads.

Take one ounce of vinegar, one ounce of Staves acre, well powdered, half an ounce of honey, half an ounce of sulphur, and two ounces of sweet oil; mix the whole together into a liniment, and rub the head repeatedly with a little thereof.

Method to destroy or drive away earth worms; and other insects hurtful to fields and gardens.

Three parts of quick-lime, newly made, and two parts of soap-boilers' lye or potash dissolved in water, will produce a somewhat milky liquor sufficiently caustic, and highly hostile and poisonous to earth worms and other small animals; for, as soon as it touches any part of their bodies, it occasions in them violent symptoms of great uneasiness. If this liquor be poured into those holes, in which the earth worms reside under ground, they immediately throw themselves out as if driven by some force, and, after various contortions, languish and die. If the leaves of plants or fruit trees, frequented by the voracious caterpillars, which are so destructive to them, be sprinkled

over with this liquor, these insects suddenly contract their bodies and drop to the ground.

To destroy bugs.

1. Take oil of turpentine, and with a brush wash over the bedstead and the nail holes, chinks, &c. it will kill both bugs and knits.

2. Rub the bedstead with verdigrease ground in linseed and turpentine oil, and the bugs will not harbour.

3. Take common oil and water, in which boil wormwood and rue till the water is consumed, then strain it and mix it with a good quantity of grease, of which making an ointment, rub the chinks and joints of the bedstead with it.

Sure method of destroying rats or mice.

Mix flour of malt with some butter, and add thereto a drop or two of oil of anniseed; make it up into balls, and bait your trap therewith. If you have thousands, by this means you may take them all. The round trap with several holes is best, and it should be set in such places the vermin most frequent. But if you would take them without a trap, make up small balls of the above-mentioned composition, and add to every four ounces a quarter of an ounce of corrosive sublimate.

To destroy vermin on animals.

Oil of turpentine, when applied to animals, which are covered with insects, destroy the insects without hurting the animal.

To destroy insects on fruit trees.

Winter is the proper season to apply the following solution. The juices are then determined to the root:—

Soft soap, two pounds; leaf or roll tobacco, one pound; nox vomica, two ounces; and turpentine, half an English gill; boil them in eight English gallons of soft or river water, to six. And use it milk warm.

Unnail, or untie, all the branches from the wall or trellis, brush every part of the tree clean with a soft brush, such as is used for painting; then with a sponge carefully

anoint every branch, root, and bud; and be sure to rub it well into every joint, hole, and angle, as it is there the eggs or ova of the insects are chiefly lodged. The rails, spars, &c. of the espalier or trellis, should also be anointed as above.

This operation should be repeated every winter, sometime between the fall of the leaf and the 1st of February, as may be most convenient. The solution is effectually destructive to all kinds of insects, their eggs or ova.

To destroy caterpillars, or flies hurtful to turnips.

Take one stone of flour of sulphur, two bushels of sawdust, or fine sand, and sow the same on an acre as you do corn.

Another.

Take a small branch of elder, put it into a tub of water for two days; then water your bed of turnips with the same, as the vermin begin to appear.

N. B. This will prevent caterpillars, or any insect, from touching cabbages or other vegetables.

To kill reptiles.

Take twelve ounces of quicklime in powder, two ounces of Scotch snuff, two ounces of basket salt, two ounces of sulphur vivum, dissolve in ten gallons of water, and throw on the insects, either in the liquid or powder, will destroy them.

To destroy worms in gravel walks, &c.

Pour into the holes a ley, made of wood ashes and lime: this will also destroy insects, if trees are sprinkled with it. Salt and water will do as well.

Innocent method of destroying rats.

Lay bird lime in their haunts, for though they are nasty enough in other respects, yet being very curious of their fur, if it is but daubed with this stuff, it is so troublesome to them that they will even scratch their skins from off their own backs to get it off, and will never abide in the place where they have suffered in this manner.

To destroy moles by a cur dog.

You may destroy moles in your grounds by training up a young cur to go along with you when you go catching them. When you take one, rub it gently and softly about his nose, bob it too and fro at his mouth, and then lay it down and let him mouth it himself; thus by playing with him and letting him play with the mole, he will come to find them out and kill them himself; and when he grows up and gets a thorough scent of them, he will find them out and destroy three to your one.

Thus they may be destroyed in all grounds, if you will take pains.

To destroy weazles.

Take crude mercury, sal ammoniac, and wheat flour, make them up in a paste with honey, and strew it in little balls where their haunts are, when by greedily devouring it they will soon die.

To drive away serpents, adders, &c.

Burn centaury and walwort, and the smoke will make them quit the place; also scatter rue and ash leaves in their haunts, and this will remove them.

To destroy pismires, &c.

Take the flour of brimstone half a pound, salt of tartar four ounces; set them over the fire in an iron or earthen pan, that will endure heat, till they be red hot; cool them in fair water, and afterwards dry and beat them into powder, and infuse a little of this powder into water, and wherever you sprinkle it the pismires will die, or quit the place.

To prevent flies troubling cattle.

Boil bay-berries in oil, and anoint them with it, and they will never settle on the Cattle;—Or wet the hair of horses with the juice of the leaves of the gourd at midsummer, and they will not molest them.

To kill ticks, lice, or fleas in dogs.

Take of beaten lime with as much hellebore, and mix them together with water, and wash your dogs with it; or with the juice of cucumbers, if the above cannot be had; also anoint them all over with the lees or dregs of oil olive.—Or

take water wherein lime has been slacked, and boil in it some wormwood, with which wash the dog, and afterwards anoint him with goose grease and soap.

To take a fox by a drag hook.

Get a strong hook, such as used at sea, let it hang by a small cord to a bough in a yard, field, or warren, or in an out house to a beam; bait the hook with raw flesh, or a young chicken, and let it hang above his reach, when being hungry he will greedily leap at it, and be taken by the hook sticking in his jaws.

To take a polecat.

Get a flat, thick, square piece of timber, about an hundred weight, broad on the upper side; just in the middle set it on a hooked crook; fasten four forked stakes in the ground, and lay on them two stakes across, on which lay a long staff that may hold up the dead fall by the crook; and under that crook you must have a short stick with a line made fast to it, which must reach to the bridge below, that is five or six inches broad, and place boards of pails on each side the fall, which will direct the polecat to the trap, and the passage being no wider than the breadth of the trap, she will not miss to be taken in attempting the bait, which you must scatter under it just in the middle.

To take the heron.

Take a gudgeon, roach, or dace, and run a small wire under the skin by the side of the rib bone, and let it come out at his gills, and there let a fish hook be fastened to the wire, and the wire at one end staked to the ground, or fastened to a large stone, so far in the depth of the water, that the heron may wade, for it does not swim; when seeing the fish move about, she will swallow it with the hook, which will hold her till you may take her: And thus you may take coots, or other destroyers of fish, &c.

FINIS.





