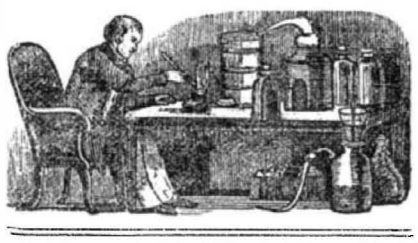


For the Scientific American.

Enamels.

WHITE OF MODERATE HARDNESS.—Fine lead 1 lb, pearlash and calx of tin ½ a lb, each ground together and melted not under too strong a heat nor too long a period, but until well incorporated. After this it may be poured out and made into mould cakes, like the Venitian enamel. This does well for enamels that are to be painted and if two ounces of borax and common salt with one ounce of arsenic be added, but using less heat a softer enamel will be the result.

A whiter enamel than the previous one is made with flint glass one pound, calx of tin half a pound, pearlash and common salt each four ounces and borax one ounce. This enamel is very white and proper for dial plates and other such uses. A softer enamel equally white will be made by adding to the above more borax and not using so much heat.

For a very white enamel and very soft, proper for painting: take of pounded flint glass one pound, of antimony calcined to perfect whiteness, or of calcined tin, half a pound, of perlash and common salt three ounces, and of borax three ounces. This must not be fused until a liquid but heated until all are perfectly incorporated with one another. This enamel is very soft and extremely white, and by adding a little arsenic it can be made softer still. It is used for the representation of white linen on enamels.

If arsenic is incorporated with common white glass, it produces a fine opaque white mixture, but care must be taken not to vitrify them, or they will become transparent and lose opacity. It is therefore difficult to use and is seldom employed.

COLORED SUBSTANCES USED FOR PAINTING ENAMEL, ALSO THE PROPER FLUXES.

PURPLE OF GOLD.—Take of a flux of lead one pound, pearlash six ounces and borax four ounces, with a little salt. Take of this flux six parts and precipitate of gold one part, mix them well together and paint with them.—This will produce a fine crimson and the more gold used the richer or deeper will be the color. If the above composition be fluxed together with a strong fire until the whole appears a transparent deep red (when it should be poured on a clean iron plate and well levigated,) it will be fit for painting, and answer in enamelling, as lake in oil painting, either for glazing or making dark shades of red. If this preparation be mixed after it has been levigated, with a sixth part more of gold precipitate and used without a second fluxing, a very fine and deep crimson is the result.

ORANGE ENAMEL.—Take 2 parts of the same flux as for the last and the red precipitate of mercury 1 part, mix them well together and paint with them. This will not do to be subject afterwards to a very great heat as it is delicate to use. If ochre be used instead of the mercury, a dull orange will also be made. Pinks are made by using the foregoing coloring substances in less quantities.

BRIGHT BLUE.—Take of fine Venitian glass 6 parts and of good ultramarine 1 part and mix them for painting, or if a very transparent blue be wanted, mix about one-eighth part ultramarine with the flux for red gold color, and fuse them together until all are vitrified and transparent, when it is poured out on clean iron, cooled and levigated for painting. More ultramarine is added for depth of color but a small portion of cobalt mixed with borax should always be used along with it for cheapness, and it will not impair the brightness of the ultramarine. It should not be forgotten that much that is sold for ultramarine, instead of being made from the *lapis laxuli*, is nothing but a preparation of Prussian blue. If any copper is used in adulterating the ultramarine, it becomes greenish on the enamel.

Cobalt is the best substance for blue enamels, it is cheap, can be used alone and makes a beautiful bright blue, deep in shade and bordering on violet. With a small quantity of the gold precipitate and borax, it makes a rich purple, and by proportioning the quantities of these three substances and using some of the calx of tin, shades of lilac, lavender, in short, from the most delicate French white to the deepest blue and violet may be produced.

A deep and transparent blue is made by using a flux of one pound of ground flint or white glass, six ounces of the calx of tin and the same amount of borax with two ounces of common salt, mixing and fusing them until the mass is perfectly transparent or use enough of borax along with it to vitrify sufficiently, eight ounces of cobalt. When it is fully vitrified, it is cooled and ground in a muller for painting. This makes a fine transparent blue. Any quantity can be made up in the above proportions. If a fine cobalt be used in the proportion of four times the weight of cobalt to that of calcined borax or fine pearl ashes, a fine composition for a deep blue is the result. Light blues are made by using a small proportion of cobalt or ultramarine along with the white enamel before given.

Improvement in Aquatinta Engraving.

The London Mechanic's Magazine gives the following improved process in this art:—

"After the intended figure is outlined, by etching or otherwise, the plate is all covered over with a ground of rosin, Burgundy pitch, or mastic dissolved in rectified spirits of wine. This is done by holding the plate in an inclined position and pouring the above composition over it. The spirit of wine almost immediately evaporates and leaves the resinous substance in a granulated state, especially dissolved over every part. The granulations thus produced, if examined through a magnifying glass, will be found extremely regular and beautiful. When the particles are extremely minute, and near to each other, the impression from the plate appears to the naked eye exactly like the wash of Indian ink; but when they are larger, the granulations appear more distinct. The powder, or granulation, is called the aquatinta train. The plate is next heated to make the powder adhere; and in those parts where a very strong shade is wanted, it is scraped away; but where strong lights are wanted a varnish is applied. The aquafortis, properly diluted with water is then put on with a piece of wax, as in common etching or engraving; and by repeated application of this process, scraping where darker shades are required, and covering the lights with varnish, the final effect is produced.

Engraving by aquatinta was invented by Le Prince, a French artist, by whom the process was long kept a secret. It is even said that for a long time he sold his prints, (which are still reckoned excellent specimens,) for drawings."

Preservation of Books and Manuscripts.

It is not perhaps so generally known as it deserves to be, that a few drops of any kind of perfumed oil will secure books and MSS. from the deteriorating effects of mould and damp. The species of leather so extensively used by book-binders owes its power of withstanding the effects of these destructive agents to the tar of the birch tree (*betula alba.*)—The art of preserving books—written on papyrus and parchment, by means of perfumed oils, was known to the ancients. The Romans made use, for this purpose, of the oil of cedar; hence, undoubtedly, the expression of Horace, "*Digna Cedra*,"—meaning any work deserving of being anointed with this oil. It is frequently the case that valuable collections of books are greatly damaged by the effects of damp, and MSS. to which great importance attaches, are often wholly spoiled. The hint may be worthy of attention.

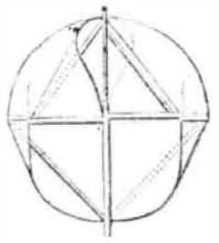
Camphor is perhaps the best preservative from the ravages of the moth, of any thing known and it will frighten red ants from cupboards and pantries.

Mr. S. Weller, of Brinkleyville, N. C. made 2000 gallons of Scuppernong wine from an acre of vines, last season, and had a clear gain of $1500, only $500 being expended in producing this great yield.

Count Rumford, by holding a cannon within water, so heated it by the friction that he made it boil and actually boiled a piece of beef in it.

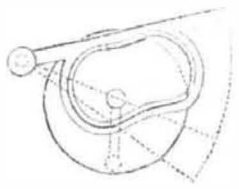
MECHANICAL MOVEMENTS.

Universal Wind Engine.



This is a representation of Latour's windmill, which answered for a toy to amuse, not an engine to propel. The principle of its construction was the power to change its face every where by the peculiar shape of its sails, which are not easy to describe in a single figure. The principle was that at the point to the left the arrangement of the stays was altered and the sails were drawn or reefed close. As the spindle revolved and the weather point came exactly where the wind struck against it, the sails were reefed on that side until they came to where the wind acted to operate the shaft, when they were unfurled and exposed to the wind. The arrangement of the stays and sails were so complex and difficult to manage for any practical uses, that it never was used.

Transverse from Circular Motion.



By the eccentric which is connected with the wheel, it will readily be observed that as the wheel revolves the shaft will work transversely. In regard to the observance of mechanical movements, it should never be forgotten that to trace them correctly the first movement must be kept in mind, and then observe the connection with and trace the motion of it, as the first mover revolves, or traverses, or whatever motion it may be. This is what is called, "reading mechanical movements" This exercise is interesting for the young, to whose attention these articles are principally directed, and we always wish them to have some little to study. This is better exercise for our subscribers' sons than useless and vain conundrums.

Weights and Measures.

As all families are not provided with scales and measures referring to ingredients in general use by every housewife, Dr. Browne gives the following list:

WEIGHT AND MEASURE.

Wheat flour 1 pound is 1 quart.
Indian meal, 1 pound 2 ounces is one quart.
Butter, when soft, 1 pound 1 ounce is 1 quart.
Loaf sugar, broken, 1 pound is 1 quart.
White sugar, powdered, 1 pound 1 oz. is one quart.
Best brown sugar, 1 pound 2 ounces is 1 quart.
Eggs, average size, 10 eggs are 1 pound.

LIQUID MEASURE.

Sixteen large tablespoonsful are 1-2 a pint,
Eight tablespoonsfull are 1 gill.
Four large table-spoonsful are half a gill.
A common sized tumbler holds 1-2 a pint.
A common sized wine-glass holds 1-2 a gill.

Concrete Shoal Blown Up.

A shoal of hard concrete was lately blown up in the River Thames, England, by the following most simple process. A pole was sunk in the concrete bed and a canister of thirty-five pounds of powder was gently slid down on the pole and rested upon the bed close to the same. A copper wire was connected with the powder and one of Smee's galvanic batteries used in a boat at a safe distance. At the appointed signal the electric spark was transmitted to the powder and about nine feet deep and thirty feet in circumference around the canister of powder was completely raised up and fit to be lifted by the dredging machine. Although the canister of powder but rested on the concrete yet the water above acted as a fulcrum for the powder to produce the effect on the concrete bed below.

The Missouri Wooden Dog.

In our daily rounds says the N. O. Delta, in search of "items," we happened to stroll into the clothing store of Messrs. John Southwell & Co, No. 21 Canal street. Our attention was there directed to an extraordinary natural curiosity, formed by the growth of the limbs of a tree. The history of this ferocious looking "critter," as given to us, is as follows:—About the year 1807, a French naturalist was making a botanical and mineralogical excursion in the northern part of Missouri. He took up his abode at a Shawnee village for a few days, and in the wigwam of one of the Indian chiefs of the tribe, he found the curiosity in question. He purchased it, put it on the back of a mule and carried it to Canada, and finally brought it to New York, where it has been kept until purchased by Mr. Southwell. The body, the four legs and the tail, which, by the by, is the worst part of it, are all formed of one solid piece of wood. It is certainly one of the most singular freaks of nature that we have ever seen.

To Destroy Cockroaches.

Take a sixpenny loaf of bread—the staler the better—reduce it to a crumb, (of course after paring off the crust,) then in a pint of water put two spoonfulls of cayenne pepper, one of pulverised orris seed, half a drachm of saltpetre, the same quantity of white lead. and a wine glass full of extract of hops. Now throw in your crumbs of bread, digest for six hours in a moderate heat; strain through a cloth, add to the liquor 30 drops of the tincture of quassia, and let it stand till next day; then bottle it and keep it in a pantry. Some dozen lumps of sugar saturated with this mixture, and strewed about the kitchen will remove the pest in a few days."

The above can be easily tried, all we can say regarding it is that it appeared in one of our exchanges and it appears to be worthy of a trial.

New Coat.

A double coat has been invented in England so arranged as to form a dress coat one side out, and a weather proof travelling coat the other side.—*Ex.*

Truly, a two-sided habiliment.

By taking two wafers and sticking them on a wall about 12 inches apart, and then stepping back a few feet with one eye shut, one of the wafers will disappear.