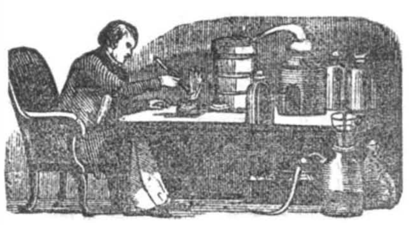

For the Scientific American.

To make Linen, Cotton and Woolen Cloth Waterproof.

This quality is given to cloth by simply passing it through a hot solution of weak glue and alum. This is what is done by paper makers to make writing paper, the very thing which constitutes the difference between it and blotting paper, only on cloth, the nap, like the fur of a beaver, will preserve the cloth from being wet through, as the rain will not adhere but trickle off as soon as it falls, and moisture will not adhere at all.

To apply it to the cloth make up a weak solution of glue and while it is hot add a piece of alum, about an ounce to two quarts, and then brush it over the surface of the cloth while it is hot, and it is afterwards dried. Cloth in pieces may be run through this solution, and then wrung out of it and dried. By adding a few pieces of soap to the glue, the cloth will feel much softer. Goods in pieces may be run through a tub of weak glue, soap and alum, and squeezed between rollers. This would be a cheap and expeditious mode of preparing it. Woolen goods are prepared by brushing them with the above mixture, first in the inside, then with the grain or nap of the cloth, after which it is dried. It is best to dry this first in the air and then in a stove room, at a low heat, but allow the cloth to remain in for a considerable time to expel the moisture completely. This kind of cloth is far better for the wearer, who may have it, than either oil cloth, or india rubber waterproof. It is well known that oil cloth and india rubber cloth, prevent the gases from escaping, which are thrown off from the body. It very often happens that persons who wear oil cloth coats get very faint and they cannot tell the reason. One reason is, that the air cannot get to their bodies and another is, that the gases cannot escape. This kind of cloth, which every person can make for himself, obviates these two evils, while it is sufficiently waterproof to keep out moisture and rain—it is quite impervious to water, but pervious to the air. Many fishermen know that by boiling their canvass pants, jackets, nets and sails in a pot with oak bark and fish skins, and afterwards drying them, they become waterproof. The composition mentioned above, is of nearly the same nature as the fish glue and oak bark, and consequently the same effects are produced. The composition is stated to be improved by adding about one fourth the quantity of the sulphate of copper to the alum. Cloth made waterproof in this manner, will resist the effects of water even if it is somewhat warm, but it loses its waterproof property, if boiled. Persons who are exposed to the inclemency of the weather will find it to their advantage, as a means of preserving health to prepare their clothes in the way we have described.

Electro Painting.

The principle of this process consists in the production of an electrotype copper cast of the drawing itself. The drawing is to be made on a perfectly smooth unburnished metal plate, the size of the drawing; German silver is well adapted to the purpose. This plate is not injured by the process, and can be used repeatedly. The pigment employed is thus formed: Two parts of tallow and one of wax are to be well mixed together in a melted state, and blackened with the finest lamp-black; a small portion of this mass must then be rubbed down with turpentine, by the aid of a palette-knife, to the consistency of oil-paint. With this paint, a drawing is to be made with an ordinary paint-brush on the German silver plate. The paint flows readily from the brush, and forms raised touches on the smooth plate; the touches intended to print the darkest being raised the highest.—Various methods of working will suggest themselves to artists. A leather pad is very useful for producing broad flat tints; and good effects may also be obtained by using a leather stump. Even the palette knife may occasionally lend its aid. The artists can judge of the effect of the print from the color of the drawing; the tints of the one corresponding very closely with the tints of the other. The highest lights are obtained either by leaving the German silver plate bare or by wiping out portions of this paint. When the drawing is finished the finest French bronze powder (the same as that used for printing gold letters) must be freely dusted over its surface with a large and soft camel's hair brush, care being afterwards taken to brush away all the bronze which does not adhere to the drawing. A drawing with a metalic surface is thus obtained; on which an electrotype copper plate, a perfect cast of the original drawing and of sufficient thickness to bear the pressure of printing, may be readily deposited. The electrotype plate, when taken off the drawing, must be carefully washed with turpentine to remove any bronze or paint which may adhere to it, the edges must be cut square, and the back of the plate filed smooth—and it is then ready for the printer.

The Use of Oxygen in Reducing Metals.

In reducing metals from the ores, oxygen plays a very important part. Most metals exist as oxides and sulphurets (compounds of sulphur and the metal). To separate the metal from the sulphur, the ore is submitted to what is termed the roasting process; this consists in exposing the ore in powder to a heat sufficient to melt the sulphur, but not to fuse the ore—passing over the ore at the same time a current of air. By this means one part of the oxygen unites with the sulphur to form sulphurous acid, which passes off as a gas—another part unites with the metal to form an oxide. The oxide of the metal thus separated from sulphur is smelted in a furnace at an intense heat. Great care is required in this part of the process, in nicely regulating the quantity of oxygen admitted into the furnace; for it is necessary that so much should be allowed to enter as is sufficient to maintain the high heat required to fuse the metal, but not so much as would suffice for the perfect combustion of the fuel.—To explain the necessity for the above precautions let us suppose three cases;—first, that the air enters in the proper proportion; secondly, that just sufficient air enters for the perfect combustion of the fuel; and, thirdly, the more air enters than is necessary for that purpose. In the first case, the air acts merely as a means of maintaining the high temperature at which the carbon and hydrogen of the fuel have a greater affinity for oxygen than the metal has; thus, that part of the fuel which does not receive from the air entering the furnace, sufficient oxygen for its perfect combustion, will take the oxygen from the metal. The metal thus reduced to its metallic state flows to the bottom of the furnace, and is there withdrawn. But in the second case, as the air entering supplies the fuel with sufficient oxygen for its perfect combustion the oxide of the metal will remain in the furnace undecomposed; simply because its oxygen is not required by the fuel. In the third case, where an excess of air is supposed to enter the furnace, not only is the oxide not reduced, as in the second case; but, moreover, should there be any of the metal already reduced in the furnace, this, on admitting the excess of oxygen, will be again converted into oxide; thus, perhaps, destroying the work of hours. From what has been said above, we may easily perceive the advantages attendant upon the use of what is termed the hot blast in smelting operations. This consists in heating the air, by passing it through pipes laid in a furnace so that it enters the smelting furnace at about 600° Fah. In this manner the temperature of the smelting furnace can be maintained sufficiently high by the admission of much less air than when the air enters cold: thus leaving a much larger portion of the fuel to act on the oxide.

People should be careful not to make rhubarb pies too strong, especially of the buds.—This is a plant that contains a great deal of oxalic acid, and therefore care should be taken to cook it well, and not take too much of it.

Jewellery.

The jewellers are in the habit of performing many operations, in the formation of their delicate and beautiful works, in a manner which is highly deserving of adoption in other branches of manufacture.

In soldering with silver solder, the thinly laminated solder is scraped perfectly clean, and then cut with hand shears into very small square bits, by first dividing the sheet into narrow slips lengthwise, and then cutting them again across. The lump of borax, which is employed as a flux, is rubbed with water, to a thick consistence, upon a flat piece of black slate, scored all over crosswise, to cause it to act upon, or abrade, the lump of borax the more readily. When the pieces to be joined are ready for soldering with a small camels' hair pencil, having a slender ivory handle, flattened at its point, they take up some of the prepared borax, and apply it by means of the pencil, to the parts to be united; they next mix, upon the thumb-nail of the left hand, some of the small square bits, or pellets, of solder, taken up on the hair pencil, with borax, so as to cover them perfectly therewith; these pellets are then carefully applied, by the help of the point of the ivory handle, to the parts to be soldered; and they are then laid upon charcoal ashes contained in a small crucible, and are submitted to the action of the flame of a lamp, urged by the blow pipe; carefully, however, avoiding to heat them too suddenly, or before the borax has ceased bubbling, during the driving off its water of crystalization (which, however, in this mode of employing it, is considerably less than in the ordinary practice,) lest the pellets should be displaced. When the solder has flowed, they very carefully avoid heating the article, more, lest it might melt.

In case they wish to prevent the solder from spreading over surrounding parts, they previously coat them with a layer of Indian ink, applied with another camels' hair pencil.

In the soldering of filagree-work, the process is different. The gold or silver solders are previously reduced, by filing to a state of minute division, and are then put into proper small cylindrical metal boxes, with lids closely fitted to them, and having near their bottoms slender pipes, to allow a little only of the powdered solder to escape at a time, by the action of the finger nail, rubbed upon a serrated piece of metal, affixed upon the pipe.

The articles to be soldered require to be treated according to their nature and forms—If, for instance, a number of similar twisted wire rings are to be united in a flat circular form, they are to be laid upon a piece of charcoal sawn and rubbed flat, and are arranged and kept in the required form, by the application of a thick solution of gum tragacanth, brushed over them and the surface of the charcoal; they are then either laid by, to afford the gum time to dry leisurely; or if haste prevents that, they must be exposed to a very gentle heat. When dry, the thick mixture, of borax before mentioned, must be brushed over them, and the solder be sprinkled upon them in the manner just described: they are then exposed to the flame of the lamp, whilst lying upon the surface of the charcoal;—great care and address, however, is requisite in the management of this very delicate operation, as the least excess of heat would inevitably fuse the whole into a solid mass.

When such an arrangement has been thus formed, and other parts are to be soldered to it, a solder of a more fusible nature must be employed; and the parts are either to be arranged upon charcoal, in the manner above described, or they may be held and supported upon the branched extremities of a congeries of jewellers' twisted fine iron binding-wire, formed as follows:—Several similar lengths of wire are first twisted together, three at a time, leaving a portion of each untwisted: these are again united together at one end, in three or more sets of three each, leaving their exterior ends at liberty, and, lastly, these combined sets all are united by twisting them together. The mass forms an exceedingly convenient support for the infinite variety of different articles of jewellery, which require to be soldered together; and their union is effected, as before described, by the application of the borax and solder, and exposure to the flame of the lamp.

Brown Hard Spirit Varnish.

Put into a bottle three pounds of gum sandarac, two pounds of shellac, and two gallons of spirits of wine, 60 over proof; proceed as directed for the white hard varnish, and agitating it when cold, which requires about four hours time, without any danger of fire; whereas, making spirit varnish by heat is always dangerous. No spirit varnish should be made either by candle light or by fire. When strained add one quart of turpentine varnish, mix it well; next day it will be fit for use.

Gold Lacquer.

Put into a clean four gallon tin one pound of ground turmeric, one and a half ounces of gamboge, three and a half ounces of powdered gum sandarac, three quarters of a pound of shellac, and two gallons of spirits of wine.—When shaken, dissolved, and strained, add one pint of turpentine varnish, well mixed.

Red Spirit Lacquer.

Made exactly as the gold lacquer, with these ingredients,—two gallons of spirits of wine, one pound of dragoon's blood, three pounds of Spanish annatto, three and a quarter pounds of gum sandarac, and two pints of turpentine.

Pale Brass Lacquer.

Two gallons of spirits of wine, one pound of fine pale shellac, three ounces of Cape aloes, cut small; one ounce of gamboge, cut small; no turpentine varnish. Those who make lacquers often require, some paler, some darker, and sometimes inclining to the tint of some particular ingredient; it would be well to have prepared a four-ounce phial of strong solution of each ingredient, thus a lacquer of any tint can be produced at any time.

LITERARY NOTICES.

The Inveterate,

Is the title of a new independent literary and mirth provoking journal edited by "the inveterate" wag and punster James Horn, Esq. and our friend Capt. Donnavan, a capital fellow, well known as a vigorous writer. With such a combination of talent the lovers of good reading will find this paper a valuable addition to their weekly list. We bespeak for them an encouraging support. Terms $2 per year. George Dexter & Bro., Agents, Ann st. New York.

The Yankee Blade, published in Boston, is one of the most spicy journals in this country. We regret very much that Brother Mathews did not visit our sanctum when here. We should have been pleased to have examined the mechanical qualities of his Yankee Axe.

THE BEST

Mechanical Paper

IN THE WORLD!

FOURTH YEAR OF THE

SCIENTIFIC AMERICAN!

416 Pages of most valuable information, illustrate with upwards of

500 MECHANICAL ENGRAVINGS!

☞ The Scientific American differs entirely from the magazines and papers which flood the country, as it is a Weekly Journal of Art, Science and Mechanics, having for its object the advancement of the INTERESTS OF MECHANICS, MANUFACTURERS and INVENTORS. Each number is illustrated with from five to TEN original ENGRAVINGS OF NEW MECHANICAL INVENTIONS, nearly all of the best inventions which are patented at Washington being illustrated in the Scientific American. It also contains a Weekly List of American Patents notices of the progress of all Mechanical and Scientific Improvements; practical directions on the construction, management and use of all kinds of MACHINERY, TOOLS, &c. &c.

It is printed with clear type on beautiful paper, and being adapted to binding, the subscriber is possessed, at the end of the year, of a large volume of 416 pages, illustrated with upwards of 500 mechanical engravings.

TERMS: Single subscription, $2 a year in advance; $1 for six months. Those who wish to subscribe have only to enclose the amount in a letter, directed to MUNN & CO.

Publishers of the Scientific American,
128 Fulton street, New York.

All Letters must be Post Paid.

INDUCEMENTS FOR CLUBBING.

5	copies for	6	months	$4 00
5	"	12	"	$8 00
10	"	6	"	$7 50
10	"	12	"	$15 00
20	"	6	"	$15 00
20	"	12	"	$30 00

Southern and Western Money taken at par for subscriptions. Post Office Stamps taken at their full value.

MUNN & CO., Scientific American Office, N. Y.

© 1849 SCIENTIFIC AMERICAN, INC