The Art of Dyeing—No. 18.

Chrome Green—This color is the most common that is dyed on cotton, and great care is required in dyeing it. The goods are first bottomed in a blue vat to the depth of shade desired, the same as for bark greens. Unless the blue is evenly colored, it cannot be expected that a level color will be produced, it will certainly be streaked—light and dark. The blue vats, therefore, must be in the best working order, and it is best to give the goods at least two or more dips in vats of varying strength. When the proper depth of blue is obtained, the goods receive a weak sour, with a brittle vitriol in a tub of cold water. They are then washed well, and wrung up or squeezed, for the chrome process. For ten pounds of goods four ounces of the bichromate of potash, (chrome) on the top of the blue base, will produce a depth of yellow sufficient to make a good green color. For ten pounds of goods, therefore, four ounces of chrome are dissolved in one vessel, and twelve ounces of the acetate (sugar) of lead are dissolved in another. The lead solution is then stirred up in a tub of cold water, and the goods entered, and well handled for about ten or fifteen minutes. They are then lifted, wrung or squeezed, and entered into another tub of cold water containing the chrome solution. In this they are rapidly handled for five turns, then quickly wrung or squeezed, and entered again in the sugar of lead solution, out of which they are taken, washed and dried.

It is oftentimes necessary to give chrome greens two dips, but in every case the goods must be rapidly handled in the chrome, and suffered to be exposed to the air for a very short time before they are run through the lead solution.

Chrome greens are employed principally in the gingham manufacture. They are very liable to be brown spotted, especially when attempted to be dyed with lime in the lead. Nitrate of lead should never be used in dyeing green; the acetate alone must be employed. After the goods get the last run through the sugar of lead tub, they are rendered more permanent by running them through a weak solution of common salt, before they are dried. Some employ a weak solution of the sulphate of zinc for the same purpose. We have heard of great trouble being experienced in many factories in the coloring of chrome greens, with respect to the goods spotting brown. They are always liable to dry in brown spots in a hot stove room, especially if they have not been thoroughly handled in the last lead solution, but if well handled in this, and dried in a moderately warm room, little fear need be entertained of such spots.

Arsenic Greens—This color stands washing with soap very well, and is therefore well adapted for ginghams, but for the sake of humanity we trust it will seldom be dyed. As a matter of science, however, we must describe it. The substances employed to dye it are caustic alkali, sulphate of copper and arsenic. The goods are run through a vat of caustic alkali lye, wrung or squeezed, then run through a strong solution of arsenic and blue vitriol (sulphate of copper.) They are aired well after every dip. It takes six or seven dips—one after another—in the arsenic and copper solution, and the alkali vat, to produce but a moderate shade of green. This color is sometimes called "sage green," "sea green," and "Scheele's green." It is dangerous to health to dye this color, and more dangerous to handle the goods after they are dyed. They require to be exceedingly well washed, and yet they are found to be dusty. The arsenic and blue stone are precipitated in the pores of the cotton, in such a finely subdivided state, that it is very difficult to cleanse the goods. The dust, therefore, which may come off such goods, is a deadly poison.

Green on Silk—The universal and common green dyed on silk is with the sulphate of indigo and fustic, or with turmeric, as a substitute for fustic. The silk is prepared in an alum mordant of about 2°, so as to feel pretty sharp to the taste, then dyed a yellow with fustic in a tub. A boiler or kettle containing strong fustic liquor is raised up to nearly a scalding heat, and sulphate of indigo added to give the proper depth of blue. In this the goods are handled—at the same heat—until they acquire the proper shade. If more blue is wanted, give more sulphate of indigo; if more yellow is wanted, add more fustic, and a little alum water. This green will stand exposure to the sun.

Turmeric Green—By using turmeric and the sulphate of indigo altogether in the kettle, beautiful greens can be dyed at one dip without any mordant; but turmeric yellow fades rapidly when exposed to the sun; it however produces a beautiful color. Ebony will dye a green when used as a substitute for the fustic. The *extract* of indigo now sold by druggists is much used for dyeing green on silk, but good sulphate of indigo is better. Warm water will strip off the sulphate of indigo, and so will warm rain. Ladies who have green silk dresses, ribbons, or bonnets, should be very careful not to get them wet. Green parasols are also liable to run (the color we mean) with a shower of warm rain. Fast green on silk is dyed by giving the goods a base of blue in an ash vat, the same that is used for dyeing wool, then preparing them with alum mordant, and dyeing a fustic yellow on the top.

Recent Foreign Inventions.

Composition for Coating Iron and Other Ships Bottoms—Albert Robinson, of London, patentee—This invention consists in the application of a complete covering of black lead or plumbago, to the bottoms of iron or wooden ships and vessels, and other surfaces. The following is the mode of carrying out the invention:—Take 6 cwt. of mineral or Turkish asphaltum, or best purified coal pitch, melt and boil it for 6 hours, then add 30 gallons of boiled linseed oil; allow it to cool to the temperature of 240° Fah. Mix previously 6 cwt. of best purified ground plumbago, together with 60 lbs. of arsenic of copper, finely pulverized, with 80 gallons of rectified coal-tar naptha; when the plumbago, arsenite of copper, and naphtha, are well mixed, add to the melted asphaltum, at the temperature of 240°; mix the whole together, and put away in tight vessels for use. In order to apply the composition, first clean the surface to which it is to be applied thoroughly; then stir up the composition, and apply like paint; three coats will be desirable to produce a smooth polished surface. The bottoms of vessels may be rubbed with rubbers or pieces of felt, but the process is not absolutely necessary, as the friction of the water by the vessel passing through it, soon makes the blacklead surface smooth.

Extracting Copper from its Ore—R. A. Brooman, of Fleet street, London, agent of inventor—The invention consists in mixing ammonia with the ore after the same has been crushed, in agitating the mass, and in introducing a current or currents of air into the same while being agitated. No roasting of the ore is necessary in carrying out this invention.

The manner of proceeding is as follows:—In treating one tun of ore, about 15 to 20 cwts. of water are used, to which a quantity of ammonia is added. The quantity of ammonia varies with the quality of the ore, but must never exceed twenty-five per cent. of the quantity of water. The ore and liquid are then placed in a vessel fitted with an agitator, to which motion is communicated from a steam engine or other prime mover; and while the mass is in agitation, air is introduced from a fan or blower through a pipe which enters the vessel. After the agitating and blowing have been acting for from about six to eight hours, oxyd of copper will be held in the liquid. The liquid must be drawn off and evaporated, when the pure oxyd of copper will remain after the evaporation. The ammonia may be recovered, with little loss, by the processes ordinarily employed for its recovery.—[Newton's London Journal.

A Clock of Flowers—Dr. Lardner reminds us, in his *Museum of Science and Art*, that Linnæus proposed the use of, what he termed, a floral clock, which was to consist of plants which opened and closed their blossoms at particular hours of the day. Thus, the day lily opens at five in the morning, the common dandelion at six, the hawk-weed at seven, the marigold at nine, and so on; the closing of the blossoms making the corresponding hours in the afternoon.

Florida Sea Island Cotton.

Sea Island cotton is one of the grand productions of Florida. From her insular position, quality of soil and blandness of climate, this delicate and valuable crop is very successfully cultivated. It is said that this crop is produced the best where the soil is composed of clay, strongly mixed with vegetable decomposition. As a manure for cotton lands, sea-weeds and marsh-mud are found to be excellent, increasing the quantity of the crop without injuring the fineness and glossiness of the staple. The cotton seed is planted in rows, from six to eight feet apart, and the plant kept free from weed by the use of the hoe and plow. The shrub grows rapidly, and throws out a profusion of rich yellow blossoms, and at length the pods appear. These, bursting open about September, reveal their snowy treasures to the planter's gaze. The field must now be picked, as exposure to the weather injures the fine gloss of the cotton. The down is collected, exposed on a scaffold to dry, and is then passed through the gin, whose thousand fingers quickly separate it from the seed, after which it is packed in bales and is ready for the market. As the pods do not open all at a time, several pickings are necessary to clean the field. The cotton shrub grows very luxuriantly in Florida; the writer has seen a specimen produced in Marion county, which more resembled a tree than a shrub, the lower branches being sufficient to sustain the weight of a man. The cotton crop is liable to many accidents: the caterpillar sometimes destroys whole fields of it; the red-bug pierces the pod and discolors the cotton, and a heavy wind sometimes entirely destroys the pod. Good cotton lands will yield three or four hundred pounds to the acre, and it is said that one hand may cultivate about three acres. The price of the article varies according to the quality and state of the market from 15 to 20 cents per pound.

To every hundred pounds of cotton produced, there are about ten bushels of seed, weighing forty pounds to the bushel. Experiments have been made in turning the seed to account, by extracting oil from it; and we believe the result has proved that about half a gallon of crude oil may be obtained from a bushel. The oil cake may be also used for cattle and horses. It is thought by some, that the seed used in this way would pay one half of the labor required for the cultivation of the crop.—[Florida News.

The Use of Chloroform.

The London *Lancet* comes to the conclusion that the use of chloroform must be measuredly abandoned. There is no doubt, says the *Lancet*, that the novelty of the practice, the remarkable effects produced, and the freedom from risk, too unhesitatingly asserted, have led to very grave abuses. Had chloroform never been inhaled save when its use was necessary, lives would not have been sacrificed to the removal of a tooth, a toe nail, or a little finger, in tapping a hydrocele, or touching a sore with caustic. Its use should be reserved for those cases only in which the intensity or duration of the pain in an operation constitute serious complications, or where insensibility is essential to the proceedings of the surgeon.

On the Occurrence of Fossil Bones in the Auriferous Alluvium of Australia.

Fossil bones of extinct mammalia have been found throughout a range of eleven degrees of latitude, and at hights varying from 100 feet below, to 1600 feet and upwards above, the sea level. Such bones occur in the gold drift in the Ural, and in California; and in the latter country, as in Australia, this drift is frequently overspread with the products of volcanic outbursts, or with the debris of volcanic rocks. It would appear that a great part of the now dry land of these countries was under the water when these osseous remains were buried; and probably the destruction of the mammalia at last was connected with the final outbreak of igneous forces, which changed the horizon of considerable tracts, and introduced a state of things incompatible with the existence of these, for the most part, gigantic animals, now extinct.

Gas Regulator.

In the list of patent claims published in the last No. Scientific American, was one granted to S. P. Parham, of Trenton, N. J., relating to a subject which has engaged, and is still engaging much attention, viz: the perfect regulation of gas during its consumption. The regulator of Mr. Parham consists of a chamber into which the gas enters through a nipple at the bottom, and from which it passes to the burner through an opening above. This chamber contains an inverted cup to cover the nipple, and a conical valve to fit the opening at the top, the valve and nipple being attached to the same stem. The cup is larger than the nipple, and the top of the latter is serrated, so that the gas can always escape freely into the cup and down its sides to enter the chamber. The entrance to the passage which forms the seat of the valve is made slightly elliptical, so that it never can be perfectly closed by the valve. The cup, the valve, and the stem are all made of such thin metal as to be light enough for the gas as it is passing through the chamber to the burner to suspend them. The flow or consumption of gas is regulated by the position of the valve, which will be so controlled by the relative pressures in the chamber below and the burner above, that the area of the opening between the valve and its seat will always be proportional in the inverse ratio to the pressure of the gas in the pipes. An increased pressure of the gas in the pipes and chamber raises the valves and contracts the opening, a diminished pressure caused the valve to drop and the opening to be enlarged.

Improved Boring Machine.

The patent obtained last week by C. N. White, of Concord, N. C., relates to the drill for boring in the earth for mining and other purposes. The improvement consists in the combination of a revolving frame and weight with inclined movable rods attached to it in such a manner as to rotate the drill a certain distance to make it strike a new place every stroke, in a different manner from any such machine in common use.

Wallis' Patent Paddle Wheel.

A small steamboat fitted up with this novel improvement was lately tried in the harbor of New York with remarkable success. The vessel had previously been propelled by the common paddle wheels. With Wallis' improvement attached, the boat went one-third faster than before—engine and steam pressure being the same. We have delayed remarks upon this invention, owing to the pendency of foreign patents. We are now preparing engravings for publication, shortly to appear, when we shall explain the principles and give some other interesting particulars relating to the improvement.

Ships Windlasses.

The nature of the invention of James Emerson, whose claim will be found on another page, consists in the employment of geared sectors, with pawls attached to them, and halfpinions, levers, and pulleys, arranged and combined so as to increase or lessen the speed of the main barrel, on which the cable is wound, so that the speed will be slow when great power is required, thus affording ease to the operators, at an expense of time, and it will be quick, when there is small strain upon the cable, so as to be quickly operated, to save time, thus economizing the power applied to work it.

This windlass can be operated with more ease and convenience than the kind in common use.