

The Art of Dyeing—No. 15.

PURPLE ON SILK—This color on fine wool was the most famous in ancient times, and the city of Tyre was distinguished for dyeing it. It was a badge of power and wealth, as monarchs and rich men only could buy it. It was, however, somewhat different from what is now known by the name of *purple*, it being a deep crimson, like clotted blood, while the modern purple is a blue tinged with red. It is dyed on silk in the plum vat, just in the same manner as upon cotton, and as described on page 218. All the shades of lavender can also be done in the same manner as the plum colors on cotton. But there are other methods of dyeing purple on silk, very different from the processes of cotton dyeing.

ALUM PURPLE—This is the most simple method of dyeing purple on silk. It consists in preparing the silk in an alum tub or mordant, at about 3° Twad., for an hour, then dripping them, and washing in two tubs of clean water, after which they are handled in hot logwood liquor (about 5 lbs. of dyewood to ten of silk) for half an hour, and lifted.—Into the logwood liquor about a wine glassful of the muriate of tin is added for every ten pounds, the liquor stirred up, and the goods again entered. Five turns will finish, when they may be lifted up, washed, and made ready for drying. The redder the shade desired, the more spirits are added for *raising*. The old plan of dyeing simple logwood purple on silk, was to use spirits, cream of tartar, and logwood all together, heated up in a copper kettle to a scalding heat, and handle in this till the color was full. It is not so sure, cheap, nor quick a method as to use an alum mordant, the logwood by itself, and then raise with the spirits.

COCHINEAL PURPLE—A beautiful purple can be dyed on silk by dyeing a good cochineal red on it, as described on page 154, then bluing on the top, by a bath of cudbear and pure liquid ammonia. Dyers use urine in place of pure ammonia, for cheapness. One pound of cudbear will answer for ten pounds of goods. The ammonia must be pretty strong, and the goods handled at a good heat until the desired shade is obtained. This is a very rich color, but expensive. The goods must be well washed before they are dried.

PEACH BLOSSOM COLOR—This color is dyed on silk with cudbear and ammonia liquid, or urine. The quantity of cudbear must just be proportioned to the depth of shade desired. Four ounces will color one pound of silk a full shade.

ARCHIL SHADES—Beautiful shades, between a ruby and purple, are dyed with archil.—They are dyed at one dip, in liquor kept at a scalding heat. Neither cudbear nor archil colors are fast, although they will stand washing in cold soap suds. By exposure to the sun and air, they soon fade and become rusty.

CLARET—This color is simply a deep purple. It is dyed by preparing the silk in an alum mordant, as for simple purple, dyeing a good full red with peachwood on it, and then darkening with logwood to the desired shade. The logwood should never be added until the goods have obtained a deep red color. It has been discovered, that it takes twice as much peachwood to produce the same effect when the logwood is given before the peachwood, as afterwards.

MAROON—This is simply a peachwood red slightly darkened by adding a little logwood to the red liquor. To make a rich maroon, and a rich claret, a full red is positively necessary, as the base of the color. Brazil wood is more economical for use than common hypernic wood, although the price is higher. It yields a greater quantity of, and a superior color.

LILAC—A very simple lilac can be colored by preparing the silk in alum for about twenty minutes, then giving a very weak logwood liquor. All shades of lilac, however, can be colored with archil and cudbear. The goods must be white for all these colors, except claret.

The purples that are dyed in the plum tub may be blued deep, by running them after-

wards through a dilute solution of chemic (sulphate of indigo).

ARCHIL AND CUDBEAR—These dye drugs are made from the lichen *rocella*, a species of sea weed. The best comes from the Cape de Verd Islands, but it is found in many other countries. It is steeped for about a month in a close cask, in a solution of urine, when it ferments, after which it may be used, and in this state is called "archil." Cudbear is a powder of these lichens. Archil and cudbear colors require no mordant. Many experiments have been tried with archil in order to color cotton with it, but hitherto they have all proved abortive. If it could be dyed on cotton, and rendered permanent, it would be a grand triumph for practical chemistry.

Charcoal Furnaces.

The improvement in charcoal furnaces for which a patent has been obtained this week by John McNeil, of this city, whose claims are on another page, relate to reburning the animal charcoal used in sugar refining. The object of the improvement is to prevent the sagging and rapid destruction of the retort tubes in the charcoal burners of sugar refiners, caused by intense heat. In the improved furnace the tubes are supported near the middle of their length by hollow or tubular beams, one end of each entering the chimney, the other end is open, and receives cold air from the exterior of the furnace. The draft of the chimney causes a constant current of cold air to pass through the beams, and thus prevent them from being burned out, and from failing to give an efficient support to the retort tubes.

Power Loom Shuttle Guard.

The improvement in power looms, for which a patent was granted (as appears in the list of this week's claims) to David S. Harris, of Coventry, R. I., consists in the connection of the shuttle guard with the belt shipper in such a manner that the shuttle guard is in its operative position only while the loom is out of gear, the guard is raised so as to be out of the way of the attendant while picking out, or drawing threads through the reed, &c. When the loom is in gear the shuttle-guard lies over the shuttle race in such a position, that the shuttle passes between it and the reed, and cannot possibly be thrown out of the loom. But when the belt is unshipped, it throws out a connecting arm and rod that raises the guard, to allow for access to the reed by the operative.

A Deep Spring.

On Lake Prairie, Iowa, there is a spring, the bottom of which no plummet has ever yet sounded. It has a false bottom about three feet from its surface, through which if a twenty foot pole be thrust, it will sink under the sand composing this crust-like layer, and in a moment after its disappearance will bound up again on the surface.

The Scientific American.

This is decidedly the very best paper of the kind that we know of, and ought to find a place in every family circle, as it contains a large amount of valuable reading that can be found in no other paper. Mr. Tilley is agent for it in this place, and we learn from him that its circulation is rapidly increasing. We believe the idea that this paper is interesting only to mechanics has been very general, but such is not the fact. We care not what may be your trade or profession, it will interest and instruct you.—[Boy's Journal, Ogdensburg, N. Y.]

A mechanic who is intelligent, temperate, industrious, and honest, it matters not of what trade, may secure the respect and confidence of the community and a competency to himself. He may have the means of happiness in his own family, and the power of communicating happiness to others.

A young man who spends his leisure time in novel reading, may think he is improving time in studying, but he will find at length, that such studies will make him a lean and barren scholar.

Improved Dredging Machine.

On the 9th of last January, Dean S. Howard, of Lyonsdale, N. Y., obtained a patent for improvements on dredging machines embracing no less than ten different claims, thus showing that his machine involves as many improvements. Of course, it is expected that its operative qualities must be of a very superior character. We have just been furnished with a tabular statement of the performance of one of his machines, by J. W. Nystrom, C. E., Philadelphia, in which we find the amount excavated in 5 hours 14 minutes to be no less than 1,075 cubic yards. This was in the South Bay, Whitehall, N. Y. This is a performance unequalled by any other dredging machine, within our knowledge. It was constructed for the United States Government, by Mr. Howard, who has built fifteen dredging machines for the United States and Canada, and has worked them all, more or less, and thus acquired great experience, as it regards their defects, and the requirements necessary to render them more perfect in every part. The improvements he has made relate to the dredging machines having a revolving chain of buckets, and best suited to the improvement of rivers and harbors, canals, &c. These improvements embrace a superior construction of the buckets, and also a superior mode of securing them to the endless chain, whereby they can be attached and detached rapidly from the chains when out of order, and replaced by others. The chain and frame of buckets can be very quickly raised when the position of the boat has to be changed, and the whole machinery is so arranged as to admit of adaptation to all locations under all conditions required for excavating under water. The machinery is self-adjusting, to admit of either a backward or forward motion of the engine under any circumstances, without disarranging any part of it. All the parts are made with a view to be easily replaced, when broken or worn out, so that if any part were to fail when in operation, (and such machines are often subject to great and unexpected strains from rocks and sunken logs) and a full quantity of hands in attendance, it can be replaced, without letting down the steam, with but a few minutes' detention. This is a grand idea. We do not know of any place that more requires an increased number of superior dredging machines than New York; those which are now employed for dredging and excavating in our muddy docks and harbor, are not very creditable to our country. The city of Albany, N. Y., has been complaining for years of the obstructions to navigation in the Hudson River, during low water, on what is called the "Overslaugh," and they have seriously entertained the idea of constructing an expensive canal to surmount the evil—they having employed the State engineer to survey the route and report on it. All they want is the constant employment, in summer, of three such dredging boats as Mr. Howard can build, and it would be well for them not to delay until the navigable channel of their river is completely filled up, in the vain hope of Uncle Sam doing the work for them.

Lighthouses.

Since our old lighthouse system was revolutionized a few years ago, a great improvement in the character of the lights and their management, has been the result. This has been chiefly through the adoption and erection of the French lights of the celebrated Fresnel, one of whose lights was sold for old iron under the old Lighthouse Board, so badly was it managed. The same light, since then, has been erected on Cape Hatteras, we understand, and is one of the best in our country.

Light houses are of two classes. Those of the first class are designed to occupy the headlands of the coast, to aid the mariner in avoiding the dangers which he is liable to encounter when in their vicinity, and in determining his course from point to point.

The light exhibited by these lighthouses should be of the most intense description which human skill is capable of constructing. A series of lighthouses of this class, is in

course of erection on our Pacific Coast, which is anticipated will be equal to any in existence. The second class is for harbor use, and are so constructed that they cannot be mistaken for lights of the first class.

The lights still in general use in this country are formed on the plan of reflecting, by means of mirrors of different descriptions, the light of a large number of oil lamps. This plan has been found very expensive, and far from perfect. The principle of refraction is that applied to lights, under the system perfected by Mr. Fresnel, of the French Lighthouse Board. To such perfection has this plan been brought, that lamps are now in course of construction which will render the light of four one-inch burners equal to 6,600 burners, which can be seen at the distance of fifty miles!

The Fresnel lights are very economical. They do not require the same number of burners as the reflecting apparatus, and require no repair, except to the revolving machinery. The refracting lenses do not depreciate in value, like mirrors, which require constant polishing.

We therefore hope that all the reflecting lights will soon give place to the Fresnel lights in our lighthouses, for being such a great commercial nation we should have the best lighthouse system in the world.

The New Postage Law.

All letters passing through the U. S. mails are, by the new law which went into operation April 1st, *required to be pre-paid*, or they will not be forwarded. We trust that our correspondents will bear this in mind. In writing to us upon any subject they should invariably enclose a stamp for the pre-payment, if they desire or expect an answer. Pay your own postage, both ways, on your own business, is the postal maxim now a-days.

Activity among Inventors.

As an indication of the great activity which at present prevails among inventors, we would state that no less than one hundred and thirty applications for patents and caveats passed through the SCIENTIFIC AMERICAN patent agency during the single month of March. This number, however, includes foreign patents. We have never known a time when inventors were so earnestly engaged as at present. In a late interview with Commissioner Mason, he remarked that the number of applications for patents had of late astonishingly increased.

Railroads Wanted.

The leading merchants of New Orleans, in a memorial to the Legislature of Louisiana requesting that measures be taken to improve the navigation of rivers in the State, say that "from 25,000 to 30,000 bales of cotton, and 50,000 to 75,000 hogsheads of sugar, worth \$900,000 to \$1,200,000, are now due here by the streams of our State alone, and are kept from our market by the want of navigation."—[Railroad Record.]

Coffee Leaf.

Dr. Stenhouse, of London, states that coffee leaves slightly roasted, when digested with boiling water, yield a deep brown infusion, which, in taste and odor, closely resemble an infusion of a mixture of coffee and tea. On the addition of milk and sugar it forms a very tolerable beverage.

Errata—Moving a Boat Against the Wind.

In the article last week on this subject, two typographical errors were made in Mr. Stedman's letter. For *stem*, where the water wheel is placed, read *stern*; and for *longer* than the pinions, read *larger*.

Hon. Chas. Mason, Commissioner of Patents, called upon us last week on his way to Iowa, where he will remain until about the first of May. The Chief Clerk, Mr. Shugart, acts in the capacity of Commissioner in the absence of Mr. Mason, as usual.

The operatives of the cotton factories in Manchester, N. H., have ceased to work, because of a contemplated increase of the hours of labor.