Science and Art.

The Art of Dyeing.—No. 24.

DRAB COLORS ON COTTON—Drab colors in great variety, can be, and are dyed, by different drugs. A good fast drab can be dyed by using three tubs, one of fustic liquor, for the middle dip, and pursuing the plan described for dyeing iron buff on page 274. Lime water reddens fustic, and thus it can be used very conveniently in dyeing this color, for it (the color) can be darkened to any shade by the addition of a little sumac liquor to the fustic—the sumac forming a black precipitate with iron.

A madder drab can be dyed on cotton by saddening down with a little copperas, a madder salmon in the same madder liquor in which it is dyed; and if it is required to render the shade more yellowish than by the use of simple madder in the bath, as described on page 274, a little quercitron bark liquor may be added—that is before the color is saddened with the copperas.

CATECHU DRAB—A great variety of shades of drab may be dyed with catechu and copperas. A little of this dye stuff is dissolved in hot water and placed in a tub, and a little copperas liquor added. According to the quantity of it used, almost any variety of drab shade may be dyed. This substance was well known and long used in the art of tanning, under the name of "Terra Japonica," before it was introduced into the art of dyeing, which was about twenty years ago; since that time, owing to its peculiar qualities, it has superseded logwood for a number of colors. There are several qualities of it, but the best is of a dark brown chocolate color, having no smell, but a very astringent taste, and is very brittle. A solution of it in water is of a very beautiful reddish brown hue. Acids brighten the color of this solution, and alkalies darken it. The skilful dyer tones his catechu drab to the proper shade, either with a weak solution of soda, or dilute muriatic acid.

The re-actions of the following substances on catechu will enable the dyer to use those proper for the shade he desires to obtain. Copperas gives olive brown solutions with it; salts of tin, yellow brown precipitates; sulphate of copper (blue vitriol,) yellowish brown; sugar of lead, a brick colored precipitate, and the bichromate of potash a reddish brown precipitate. Bearing in mind these several re-actions, the dyer, by the judicious use of the specific quantity of catechu to hit a particular shade of drab, can easily do so; a very small quantity of catechu is required for 10 lbs. of cotton.

MAHOGANY DRABS—For 10 lbs. of cotton. Boil 3 lbs. of mahogany saw dust for half an hour, and then draw off the clear liquor into a tub. Enter the goods and give five turns, then raise with a gill of the nitrate of iron, enter, and give five turns more, then lift, wash, and prepare for drying. This receipt is taken from Smith's work; he says, that drabs dyed in this way are very fast.

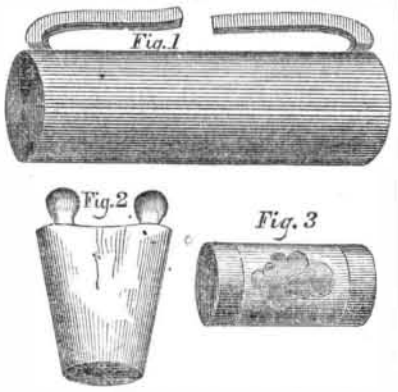
BARWOOD DRABS—Bleach ten pounds of cotton, and turn it in a tub containing half a pound of scalded sumac and the muriate of tin spirits, at about one third the strength of a spirit tub (3°) for one hour; then wash well, and wring up for the barwood. This is given in a boiler the same as dying reds, but only one tenth the amount of barwood is used, and about half a pound of quercitron bark. They are boiled in this for half an hour, then darkened with half a wine glass full of nitrate of iron.

Drab colors on cotton are very troublesome to dye, especially when sumac and copperas is used in the darkening of the shades, the color being so liable to dry uneven. The cotton should always be bleached for drabs.

Cholera Prize.

Since 1849, a prize of one hundred thousand francs has been offered by the French Academy of Science, for a prescription which would cure the Asiatic cholera in a majority of cases. At a late sitting of the Academy, it was decided that not one of the many suggestions which had been offered was worth a farthing. It has now been determined that any person who shall discover a positive indication of the causes of the disease, so that by the removal of them it will disappear, or who shall discover a sure preventive, such as vaccination is for the small-pox, shall be entitled to receive the prize.—There is likewise a standing offer of 5000 francs for a demonstration of the existence, in the terrestial atmosphere, of any matter or animalculæ operative in the propagation of epidemic diseases

Railroad Fog Signals; and Blasting Rocks.



The annexed figures represent two inventions of Capt. J. Norton, of Cork, Ireland, for the purposes specified in the above caption.

Fig. 1 is a perspective view of a railroad fog signal, and fig. 3 is its igniter. Fig. 2 is the device for blasting the stumps of large trees.

The signal, fig. 1, is placed upon a rail and secured to it with the clasps, which can be made of sheet lead or tin. The case is water-proof pasteboard varnished. The ends of it are stopped with pieces of cork glued in. It is charged with a mixture of chlorate of potas and sulphuret of antimony, equal parts. The igniter, fig. 3, made of a small transverse section of glass tubing charged with percussion powder, is placed in the center within the water-proof case, the wheel of the engine passing over the signal, crushes the igniter, and explodes the signal with a very loud and sharp report.

When the wheel of the engine passes over a tin case without firing it, the powder within is scattered around by the fracture; but if the wheel of the engine passes over this paper case, it is only flattened out, not fractured, and the second wheel passing over fires it.

Fig. 2 is a small tin case, about the size of a lady's thimble. The two ends that are sticking up at the top, are those of friction matches, the sides of the case being squeezed together to hold them firm in place, as represented. It is thus used: Bore a hole down in the stump, either inclined or vertical, and drop the igniter, fig. 2, into it to the bottom, and place some percussion powder with it. Take about a drachm of the best rifle powder, and pour this in on the top, and then insert a plug of iron to set close on the powder, but which with a smart blow, can be driven tight and snug into the hole. This plug should project about two or three inches. A smart blow then struck upon its head will ignite and explode the charge and split the stump.

Capt. Norton, in his letter to us states, "he hopes it will be very useful in America." By this method of blasting stumps, either small or large charges may be used. When a large charge is used, it would be well to carry a plank breastwork to kneel behind it for safety when the bolt is struck, to prevent any injury from splinters. This might easily be done, with entire safety, and we have no doubt but in many cases this method of blasting stumps will be found very useful.

The Pressure on the Barometer.

The last number of *Silliman's Journal of Science*, contains an article by Lieut. Maury, on the eccentricities of atmospheric pressure on the barometor in various parts of South America.

Leiut. Herndon, U. N. S., in his descent of the Andes, on his way from Lima to explore the valley of the Amazon, determined the hights of various places above the level of the sea, both by barometric pressure and by the boiling point of water.

At the eastern base of the Andes he found the pressure of the atmosphere, as measured by the temperature of boiling water, to be nearly as great as it is usually at the sea level; and after having *descended* the river for nearly a thousand miles below this place of great pressure, he found that, judging by the boiling point of water, he had *ascended* nearly 1500 feet!

The explanation of this curious anomaly is supposed to be this: The trade winds blowing against the Andes are obstructed by them, and, being thus obstructed, there is a banking up of air against these mountains, as there is of water against a rock or other impediment, over which the current of a rapid river has to force its way. In such cases there is a ridge or pile of water above the obstruction, and a depression or hollow in the water both above and below this ridge.

Further observations are necessary to determine the correctness of this theory.

Electricity and Ships Compasses.

The clipper ship *Flying Scud*, which left this city (New York) for Australia on the 28th of last September, while crossing the Gulf Stream, two days afterwards, was struck twice with electricity, which, although it did not kill any person, nor injure the vessel, because it had a lightning rod, yet it had a great effect on the compass.

When first observed, the needle revolved with great velocity, and this continued for some time; when it ceased, the compasses were found to be considerably changed, and it was afterwards discovered that they varied five points to the eastward of their true bearing, which, after a lapse of five or six days, diminished to three points. These facts were clearly proven by the position of the sun and the bearing of the north star. In consequence of this derangement of the compasses (five in number) it was necessary to lay the ship to under close-reefed topsails for eighteen hours, although the wind was perfectly fair, and the ship might have run one hundred and fifty miles at least. It would appear that the lightning struck the mizen mast, and descended by the lightning rod to the chains. The wind appeared to blow the copper wire of the rod against the chains, and hence it was conducted through the bolt into the interior of the ship, where it magnetized a large quantity of iron and steel implements which were in the hold.

To prove that these were the seat of attraction, the captain took a compass and tried it in various parts of the ship, when it was found to vary greatly. On the top-gallant forecastle the compass seemed somewhat to return to its proper bearing; abaft the main part of the ship it was most potent.

Placed upon the cabin floor, the compass still revolved with considerable velocity. On a board placed ten feet out upon the larboard side of the ship, the compass was found to be nearly correct; by this means the true course of the ship was found. The influence mentioned prevailed during the passage, until the 7th of December, in lat. 43° 45′ S. and lon. 110° 15′ E., where the compass seemed to be more correct, being found to vary but three-fourths of a point to the eastward. In this region several claps of thunder and lightning were observed, and these were followed by thick, foggy weather, which precluded the possibility of any observation for four days. When this was obtained, the ship was found to be 150 miles to the southward of her true course in consequence of steering by the compass, supposing it to possess the same variation which has just been mentioned; but when observation was obtained the compass was found to have returned to its true bearing, and thus was the course of the ship deranged and her voyage protracted.

Important to Mariners.

The Washington (D. C.) *Star* says, that the survey of the Florida coast this season, has established the fact that the charts most in use, and confided in by mariners, locate Cape Florida—one of the most important points on our Atlantic coast—six miles distant from its true geographical position.

Wind Measurer.

Vice Admirable Kreuger, of the Swedish Navy, has invented an instrument by which the force of the winds can be measured with the greatest exactitude; and by order of the King of Sweden, it is to be exhibited in the Universal Exhibition of Paris.—[Ex.

[An instrument for such a purpose, is not new, but this one may be an improvement over the old one.

New Steam Fire Engine.

A new Steam fire engine named "Young America," and built by Abel Shawk, of Cincinnati, has been tested with great success in Philadelphia. What has become of the Boston one?

Some wooden wheels made of kiln dried red cedar, with cast iron hubs and steel tires, have been in use on the Camden and Amboy Railroad, N. J., for six years.

LITERARY NOTICES.

BLACKWOOD'S MAGAZINE—Old Blackwood for this month contains an excellent scientific article on "The Length of Human Life;" "Zaidee, a Romance;" is continued, so is the excellent "Story of the Campaign," written by an officer in the army before Sebastopol. The other articles are good. It is a "tip-top" number. Leonard Scott & Co., publishers, No. 54 Gold st., this city.

PUTNAM'S MONTHLY—The June number of this sterling magazine commences a new volume. Under its new publishers it maintains its high character. Besides editorial notices, it contains fifteen original articles, the leading one on "American Travelers," is full of vigor, and displays keen powers of criticisms. Dix & Edwards, No. 10 Park Place, publishers.

HOUSEHOLD WORDS—Messrs. Dix & Edwards are also the American publishers of Dickens' Household Words, a periodical which is really well named. It is devoted to light literature of the very first quality. The June number contains a great and pleasing variety of stories and essays, one of the latter with a queer name, ("Fencing with Humanity,") being worth the whole price of the book to our manufacturers and operatives in cotton and woolen mills.

SOUTHERN QUARTERLY REVIEW—This able Review for this quarter opens with a sharp review of Senator Benton's work on the working of the American Government for thirty years. It contains a very able article on Louis XIV. of France, and nine others equally as good, on different subjects,—one being devoted to the Principles of Art. The Southern Review is quite a respectable volume. Published in Charleston, S. C., by C. Mortimer. 1

THE KNICKERBOCKER, for June, contains some capital things, but then it always does—among which and highest is the leader, on "Heroes and Heroism." It contains some noble and sweet poetical effusions; and the Editor's Table is "young, fresh and blooming as the morn." Published by S. Hueston, 348 Broadway.