

## The Art of Dyeing—No. 14.

**MADDER PURPLE ON COTTON**—The only permanent purple dyed on cotton is with an iron mordant and madder dyewood. These colors, named *purple* by Turkey red dyers, are not of the same shade, however, as *spirit* purples. The name, therefore, is calculated to mislead a stranger to the art, whether he be a silk, woolen, or fancy cotton dyer. The madder purple, so understood, approaches more nearly a black, having a reddish tinge, like the beautiful ringlets of Diana of Poitiers. It is dyed by bleaching the goods, then giving them three or four saponaceous liquors, made of olive oil, broken in a soda lye. The strength of each liquor should be about 2° Twad. The goods are padded in this, and dried, after each operation. They are rinsed in milk warm, clean water, then run through an iron mordant, then well washed, and are fit for dyeing in the madder. The mordant is made by dissolving one pound of the sulphate of iron for every ten pounds of goods, then adding two ounces of dissolved acetate of lead, stirring all up well, and allowing the liquor to settle for an hour. The clear is then run off into another vessel, and in this the goods are padded in small bunches, or they may be handled on pins, which is by far the most workmanlike and speedy mode of accomplishing the object. About 25 pounds of yarn are dyed in one copper kettle at once. The madder, of equal weight with the goods, is placed in the kettle among the cold water, and the goods entered, the liquor is brought up to boil in three-fourths of an hour, continued at the boil for about the same time, then the goods lifted out, washed, squeezed, and dried.

According to the amount of iron given to the goods, so will the color be darker or lighter in the shade. The weaker the mordant, the lighter and more reddish in shade is the color.

Madder lilac is but a light purple shade, which is produced in the same way as the above, but with a weaker mordant, and less dye stuffs. Great care must be observed in handling the goods in the iron mordant, so as to prevent them from taking on the dyewood in streaks. Calico printers make every variety of beautiful purples and lilacs, with the same mordant, by using it at different strengths.

**BEAUTIFUL REDDISH PURPLE SHADES**.—A great variety of reddish purple shades can be produced by a mordant composed of alum and the sulphate of iron. One pound of alum, and one pound of the copperas (sulphate of iron) are dissolved together, and will answer for 20 lbs. of cotton goods. They are dissolved in warm water, and the clear liquor only used. The rest of the process is the same as that described for dark madder purple.

**MADDER CHOCOLATE**—This color is dyed by giving finished Turkey red goods two or three dips in a strong blue vat. It is a beautiful and rich color, but very expensive.

**BARWOOD PURPLE**—This color is generally called "brown," but it more properly belongs to the purple class. It is dyed by *saddening down* with the nitrate of iron, or the sulphate of iron, barwood reds, in the same boiler in which they are dyed with the barwood. The amount of iron given to *sadden down* must be in proportion to the depth of the shade desired, the darker this is the more iron is required. Two or three pailsful of old sumac liquor is generally added to the barwood liquor; it possesses the quality of an *evener*; that is, the goods are not so liable to be streaked with, than without it. For the method to dye barwood red, see article on page 138. The nitrate of iron makes a more rich and lively color, than the sulphate, it is therefore the best *saddening* substance.

**DEEP PEACH-WOOD CRIMSON**—A purple on the crimson shade may be dyed by the use of the alum and iron mordant, the goods having first been steeped in sumac liquor all night. The only difference between dyeing this color and a common peach-wood or Brazil-wood red, is simply in the mordant. It is wonderful what a variety of shades of purple

may be produced by the modes we have described by simply varying the strength of the mordants.

**ALUM PURPLE**—The cheap purples dyed on coarse cotton, and carpet rags for rag carpet, is made by steeping the cotton or rags in a liquor of boiled sumac (about two pounds to the ten of cotton) for twelve hours, then in a strong solution of alum all night, after which they are washed and ready to get the dyewood, which is a strong logwood liquor, about six pounds to the ten of the goods.

## Wool Spinning.

In our list of patent claims last week there were two granted to Frederick S. Stoddard, of Litchfield, Conn., for improvements in machinery for spinning wool. The invention is particularly applicable to the spinning of wool alone, or a mixture of cotton and wool; it may, however, be applied to other fibrous materials. The improvements embrace an arrangement of front drawing rollers, with new and superior counter-twist pulleys, and a means of governing the counter-twist whereby the roving is allowed to receive very little twist near the back drawing roller, where it is full sized, but an increasing twist as it approaches the front drawing rollers and is reduced by the drawing. In laying the thread after being spun, as the conical bobbin is being built up, equal tension is very far from being maintained on the thread, which is the cause of a want of uniformity in its twist. This evil is remedied by a friction drag placed upon the ring traveler, while the thread is being wound up in such a manner as to produce a uniform tension on the thread during the whole process of building the bobbin. This tension is regulated by an adjustable screw in a lever, and the drag is produced by a series of brushes secured in a beam extending the whole length of the frame, and hinged, at proper intervals, to the back of the ring plate; one brush stands opposite each ring.

## Grain Cleaner.

The patent granted last week to George Leach, of Owego, N. Y., for an improved machine for cleaning grain, embraces the furrowing of the rubbing stones in a peculiar manner; also a peculiar device for maintaining the parallelism of the stones. The face of the bed stone has four grooves cut in it, tangential with the spindle orifice, and they extend about half way between the spindle and the periphery. At the edge of the face of the stone there are four furrows slightly curved, that extend inward, nearly half way to the spindle. The runner stone has four furrows in its face, which also curve and extend from the edge about half way to the eye. Between these furrows are others which are curved from the edge to points near the eye, and from these points to the eye they are tangential with it (the eye.) This manner of furrowing the stones, it is asserted, is a good improvement.

## Gun for Firing Chain Shot.

One patent was granted last week to Christopher Wolter, of Bridgeport, Conn., embracing five claims, for guns to fire chain shot, to which the attention of Lord Raglan was directed. The invention relates to the employment of two barrels, adjustable at different angles to one another, for the purpose of firing chain shot at various distances, to extend the chain between the two shot without the danger of breaking it. The firing of chain shot is not of recent date, neither is the use of two gun barrels set at different angles, each to receive a ball, and to have them connected together, but to accomplish this perfectly has hitherto been impracticable. For example, a chain shot fired out of a double cannon—with the barrels at a certain angle, to distend the chain—snaps the chain when the distance reached goes beyond the certain angle for which the barrels are set. This improved cannon embraces devices to regulate the angles of the barrels for any distance, so that the chain will not be distended beyond the base line of the angle when it reaches the object. It is intended to sweep down whole ranks—a perfect war mowing machine.

## Improved Railroad Track.

C. M. Eakin, of West Philadelphia, Pa., obtained a patent last week, for an improvement in rails for city railroads. The grooves of the rails now commonly used for city railroads are very liable to become filled up with dirt, which sometimes throws the cars off the track. To remedy this Mr. E. fills the grooves with india rubber or some other elastic substance, which will yield to the flanges of the wheels as they pass over it, and then spring back to the level of the face of the rails, when the cars have passed over.

## Improved Wrench.

The claim in our list of last week of a patent granted to Joseph Hyde, of this city, embraces a very clever and useful improvement in wrenches. The wrench is like others for turning square nuts, or bolts, having two jaws; it, however, has also a small tongue, in the under jaw, which lies flat with its face for square work, but when required for round work, by pressing upon a small spring with the thumb, this tongue starts out at an angle, and grips the round bolt firmly. The improvement renders the wrench perfectly adapted to screwing out or in nuts, and square and round bolts.

## Car Ventilator.

The claims of V. P. Corbett, on another page, relates to a vertical ventilating and dust deflecting fan placed directly over the top of each window of a car, and set in an opening between the ceiling and window, and made to revolve by the resistance of air, when the car is rushing through it. Each fan is so set as to exhaust the impure air from the inside, and thus cause a current of pure air to rush in to supply its place.

## Attaching Augers to Handles.

Among this week's list of claims, the one granted to Chas. W. Colton, of Shelburne Falls, Mass., embraces, placing a metal tube down the center of the auger handle, and having a taper hole made entirely through it, in which the shank of the auger is placed. A metal band is placed around the tube, and works loosely on it; the shank passes through slots in this band, the lower one being a little tapered, with edges fitting in grooves in the sides of the shank where the band is turned, by which means the auger is secured to the handle with ease, and it can be detached as conveniently, when desired.

## Improved Pump.

Among the list of claims this week, on another page, is one granted to John P. Cowing, of Seneca Falls, for an improvement in pumps, the nature of which consists in making a common single acting lift pump serve, not only for the ordinary uses of a well pump, but also for a force pump, for throwing a constant stream of water to a great height or distance, so that it can be employed as a fire engine, or for washing windows, carriages, &c.

## Expedition to Central Africa.

The expedition which left England in June, 1854, under the direction of McGregor Laird, to ascend the river Niger, and penetrate by steam into the interior, has returned completely successful. Not a life was lost, and it penetrated further into Africa than any other European vessel. The party on board the *Pleiad* steamboat numbered 66; it was composed of Europeans and Africans, and some of the former had never been in Africa before. It is a most surprising thing that all maintained good health, for all African expeditions have hitherto resulted in the almost entire destruction of the parties by fever. The Europeans on board took quinine daily, made a free use of a solution of the chloride of zinc in the hold of the boat; and the spirits of all were kept up by music.—This successful expedition forms a new era in African exploration.

## Wonderful Freak of a Snake.

A great number of our cotemporaries have published a most astonishing snake story from the Albany *Transcript*, respecting a mouse which had been swallowed sixteen

times by a large snake in the State Geological Rooms in Albany, and as many times had eaten its way out of his snakeship's stomach. The last time (seventeenth) which the snake tried to swallow the mouse was too much, "the sudden twitch snapped the snake in twain," says the *Transcript*, but "it lived a week after." This is pretty good for a snake story.

## Engraving by Electro Magnetism.

The London *Journal* of the "Society of Arts" gives the following description of a machine to engrave by the power of electro-magnetism:—

"This machine is somewhat on the principle of the well known carving machine. The drawing to be copied and the plate to be engraved are placed side by side, on the movable table or lip of the machine; a pointer or feeler is so connected, by means of a horizontal bar, with a graver, that when the bar is moved, the drawing to be copied passes under the feeler, and the plate to be engraved passes in a corresponding manner under the graver. It is obvious that in this condition of things, a continuous line would be cut on the plate, and a lateral motion being given to the bed, a series of such lines would be cut parallel to and touching each other, the feeler of course passing in a corresponding manner over the drawing. If, then, a means could be devised for causing the graver to act only when the point of the feeler passes over a portion of the drawing, it is clear we should get a plate engraved line for line with the object to be copied. This is accomplished by placing the graver under the control of two electro magnets, acting alternately, the one to draw the graver from the plate, the other to press it down on it. The coil enveloping one of these magnets is in connection with the feeler, which is made of metal. The drawing is made on a metallic or conducting surface, with a rosined ink or some other non-conducting substance.—An electric current is then established, so that when the feeler rests on the metallic surface, it passes through the coils of the magnet, and causes it to lift the graver from the plate to be engraved. As soon as the feeler reaches the drawing, and passes over the non-conducting ink, the current of electricity is broken, and the magnet ceases to act, and by a self-acting mechanical arrangement, the current is at the same time diverted through the coils of the second magnet, which then acts powerfully and presses the graver down. This operation being repeated until the feeler has passed in parallel lines over the whole of the drawing, a plate is obtained, engraved to a uniform depth, with a fac-simile of the drawing. From this a type metal cast is taken, which, being a reverse in all respects of the engraved plate, is at once fitted for use as a block for surface printing. The machine is the invention of Mr. Wm. Hansen, of Gotha."

[We can easily appreciate how the above process is conducted. It is the same, exactly, as that employed in the copying telegraph of Bain and Bakewell. The reverse of the line that is to be engraved, is covered on the guide plate with some non-conducting surface, and a line is left open on the metal similar to the one to be engraved, so that this guide plate, with the design marked out with rosin, or wax ink, performs the same office as the key in the telegraph; it breaks and closes the circuit, and thus operates the magnets that control the engraving tool.

## Treatment of Boots and Shoes when Burned.

In our juvenile days we had occasion, too often, to need a cure for carelessness in burning our boots, and we used to apply, with good effect, an application we have seen recently recommended in a late exchange. Apply, very liberally, and instantly, soft-soap to the burned leather, till it is perfectly saturated. If not too badly burned, the leather will be soft and pliable as before.—[Plover Loom Anvil.

## Albany Stoves.

The Albany *Knickerbocker* states that more stoves are made in that city than any other in the world, and that the product of them this year, will amount to \$2,000,000.