The Art of Dyeing—No. 16.

PURPLE ON WOOL—The process of woolen dyeing differs from the silk process in a very simple but very important point, viz., in boiling the former, whereas silk is never boiled. This is the grand and leading distinction between silk and woolen dyeing.

Common purple is dyed on woolen goods with logwood, muriate of tin, alum, and tartar—all boiled together in a clean copper kettle. About four pounds of logwood will dye ten pounds of wool; this requires six ounces of tartar, six of the muriate of tin, and three of alum. The logwood for purples should be boiled and left to settle for a few days, in a large cask before it is used. Dyers generally keep a large cask of boiled logwood always on hand. Two such casks should be kept in every dye-house, so as to fill up one and allow its contents to be settling while the other is being used. A brownish color is extracted from chip logwood, which injures the peculiar shade of purple. When the alum and tartar are dissolved in the kettle, the logwood liquor is put in, and suffered to boil for five minutes, when the goods are then entered and boiled for three-fourths of an hour, then lifted, washed and dried.

COCHINEAL PURPLE—This color is imparted to wool by dyeing it first a light red as described on page 146, then washing and bluing on the top with cudbear in a clean boiler, at a scalding heat—about two ounces of cudbear to the pound of goods. Urine or liquid ammonia is used in the boiler to extract the cudbear color, and impart it to the goods. This is a very rich and beautiful color.

Various shades of *puce* and *lavender* are dyed on wool, by dyeing the goods a cochineal red or pink, and bluing on the top with sulphate of indigo (chemic) in a clean vessel.

RUBY—This color may be dyed on wool with cudbear and ammonia. Two pounds of cudbear and a gill of aqua ammonia, will dye ten pounds of wool.

WINE COLOR, CHROME—By preparing woolen goods by boiling them in the bichromate of potash—two ounces to the pound of goods—then finishing in a clean kettle with half a pound of cudbear, and a very little logwood liquor, a good wine color will be produced.

The same process for dyeing wool will dye woolen yarn, worsted, cloth, and every fabric made of wool. Some authors on dyeing divide these kinds of goods into classes, and give different receipts (prescribing different substances.) This is all nonsense. The same stuffs will dye the same colors on all, but not with the same quantity of them, in this consists the difference. Wool requires about one-sixth more dye-stuffs than yarn, and nearly one half more than fine cloth. Coarse wool requires about one-fourth more dye stuffs than fine wool.

Purple, puce, ruby, &c., can be dyed on goods having a red *lac* base, as well as on those with a cochineal red base.

PEACHWOOD PURPLE—This color is dyed with peachwood, logwood, and alum. About half a pound of peachwood, two ounces of logwood, and one of alum, will dye a pound of wool. These are all boiled together, (goods and stuffs) for an hour. The old plan was to prepare the goods in an alum mordant first, then to dye in a clean kettle. This color can be blued down to a wine shade, with urine, in warm water.

CLARET COLOR—This is a deep purple inclining to a brownish shade. It is dyed by giving the goods about double the quantity of logwood, as the common purple, and adding one pound of peachwood for every ten pounds of goods.

CAMWOOD CLARET.—This color is dyed with camwood, by using about ten pounds of the camwood, to ten pounds of wool, and half a pound of logwood. It is darkened to the shade desired (after the goods have been boiled for an hour and lifted) with the sulphate of iron. Great care is required in the use of the iron, as the goods are liable to be spotted. To make the iron (usually called *saddening*) work level, a little sumac is added to the camwood, and the froth skimmed off the boiler, before the goods are entered. This color will stand exposure to the sun. None of the spirit clarets do this. The beautiful wine colored broadcloth which has been noticed to become of a greenish color by exposure, on the shoulders of gentleman's coats, is dyed by the process described above for *common purple*. No mordant is used for camwood claret. Every shade of claret can be dyed with redwood, logwood, and alum, at one dip. The redwood may be common hypernic or Brazil wood. It is difficult to give the exact weight of dyestuffs for a particular shade of color because there is such a difference in the quality of dye stuffs, and in the quality of goods, all of which make a great difference to the dyer. All that can be said on this head, is to tell what stuffs, and *about* the quantities that will dye a certain color, and by using less or more of these stuffs, so will the shades be lighter or darker.

Influence of Inventions on Social Life.

The following is a condensed abstract of a recent lecture by James T. Brady, Esq., delivered before the Mechanics Institute, of this city, on the above subject. He began with an extract from a popular author, who complains that history has been more employed in recording the crimes of ambition and the ravages of conquerors, than preserving the remembrance of those who have improved science and the arts. He said it is melancholy to reflect that the great mechanics who constructed the mighty works which yet attest the power and taste of Egypt, Greece, and Rome, are nameless to their posterity.—Where men have improved in comfort and happiness, it has not been by the action of government, nor any peculiar capacity of race, so much as by their own struggles against unjust restraints. Yet no political change could greatly ameliorate their social condition. This improvement was reserved for mechanical genius and skill, which we should appreciate more than any other people. We are full of "notions," and especially inventive, and the consideration of this truth will prove more useful than many of our participations in the low strife of vulgar politics. Amongst the great inventions which affected man's general condition, was the invention of gunpowder, which deprived the castle tyrant of his former audaciousness of security, and equalized the conflict of peasant and prince. The grim ruins on the Rhine, and elsewhere, illustrate this fact. The poet or romancer may sigh over them, but they show where civilization made its progressive steps. That muskets still enslave even those who carry them, shows the wonderful influence of discipline and authority. But mechanism will one day enforce its deserved function, and free the millions of the Old World. Then mankind will not, as at present, in Russia, perish to settle the disputes of diplomatists, or the struggle for "balance of power."

Discovery has been the grand means of improvement. The mariner's compass led to many blessings, including the addition of this continent to the known world. Steam yielded its countless benefits. It has brought our States into close association and sympathy. Printing, "the greatest of the arts," gave society voice and tongue. It spread knowledge far and wide. The people are heard in the best of histories—the hourly record of all that is done, felt, or thought, throughout the globe. The newspaper is the library of the poorest. But invention has cheapened and multiplied books, so that the labors of the greatest minds are accessible to the millions. Thus the Scriptures reach all mankind.

The genius of mechanics has supplied the greatest wants of both rich and poor. The ancients were not acquainted with the sweet associations of the fireside, for their houses had no chimneys. The companionship of the clock cheers and guides the humblest, not as in the year 807, when the King of Persia presented one moved by water to Charlemagne, or Pope Paul sent one to King Pepin of France, in 756. The invention of clocks belongs to the Saracens, but they are not now what was said of the instrument made by Richard de Wallingford, in the fourteenth century—miracles, "not only of genius, but of excelling knowledge." All Europe responds to the tick of Yankee manufacture. The daily laborer has a more comfortable home than sovereigns could boast of old.—Beckett's splendid style of living, A. D. 1160, was described in this, that his sumptuous apartments were every day in the winter strewn with clean straw and hay.

After enunciating many additions to our comforts, resulting from inventions, and referring to the brilliant cheerfulness of the gas which illumines modern streets, he said that there was a lesser light, whose direct social benefit would make even the former luster pale. Any one who remembers his sensations when he rose in the darkness of a cold night from a cosy bed, to strike a light with the patience-exhausting combination of flint, steel, and tinder, will be grateful for the beneficent inventor of lucifers and loco focos. He should have a grand monument. But mankind do not most honor those who shed light on the world. The victor whose deeds shroud a country in gloom, receives more applause. How beautiful too, is that discovery by which the blessed sunlight has been allured by genius to perpetuate the faces of dear friends; and the genial influence of that artist of God, fertilizing what it falls upon, keeps their memory ever green in our love. But there was a nobler view of the subject he had in hand. The triumphs of inventive talent have elevated the mechanic arts, and those who practice them. The artificer is welcome and honored in the associations of science. The labor of the hands has attained much dignity, and would receive more, but for a strange aversion to it, common even with us. The mechanic often sacrifices a son to obscurity in a profession for which he may not have aptitude or inclination. The eagerness to rush into the learned professions is fortunately receiving some check. To the genius, talent, and industry, which mechanically apply the powers of nature in developing her resources, and the achievement of useful mechanical results, we may confidently look for the distinctive superiority of our people. Excellence in contributing toward this reputation should be esteemed second to none. And we should learn to think lightly of the mind or heart of him who would not cheerfully turn away from the exploits of Cæsar, Hannibal, or Napoleon, to dwell with joy and emulation over the triumphs and the fame of Fulton, Whitney, and Morse. [Thus ended the lecture amid loud applause.]

MECHANICS—St. Paul was a mechanic—a maker of tents from goat's hair; and in the lecturer's opinion he was a model mechanic. He was not only a thorough workman at his trade, but was a scholar, a perfect master, not only of his native Hebrew, but of three foreign tongues, a knowledge of which he obtained by close application to study during his leisure hours, while serving his apprenticeship. It was a custom among the Jews to teach their sons some trade—a custom not confined to the poorer classes, but was also practiced by the wealthy; and it was a common proverb among them, that if a father did not teach his son a mechanical occupation, he taught him to steal. This custom was a wise one; and if the fathers of the present day would imitate their example their wrinkled cheeks would not so often blush for the helplessness, and not unfrequently criminal conduct of their offspring. Even if a father intended his son for one of the professions, it would be an incalculable benefit to that son to instruct him in some branch of mechanism. His education would not only be more complete and healthy, but he might at some future time, in case of failure in his profession, find his trade very convenient as a means of earning his bread; and he must necessarily be more competent in mechanical from his professional education. An educated mechanic was a model machine, while an uneducated mechanic was merely a mechanic working under the superintendence of another man's brain. Let the rich and the proud no longer look upon mechanism as degrading to him who adopts a branch of it as his calling. It is a noble calling—as noble as the indolence and activity of wealth is ignoble.—[Lecture by Rev. Dr. Adams.

Spare the Birds.

The swallows are the natural enemies of the swarming insects, living almost entirely upon them, taking their food upon the wing. The common martin devours great quantities of wasps, beetles, and goldsmiths. A single bird will devour five thousand butterflies in a week. The moral of this is that the husbandman should cultivate the society of swallows and martins about his land and outbuildings.

The sparrows and wrens feed upon the crawling insects which lurk within the buds, foliage, and flowers of plants. The wrens are pugnacious, and a little box in a cherry tree will soon be appropriated by them, and they will drive away other birds that feed upon the fruit, a hint that cherry growers should remember this spring and act upon.

The thrushes, blue birds, jays and crows, prey upon butterflies, grasshoppers, crickets, locusts, and the larger beetles. A single family of jays will consume 20,000 of these in a season of three months.

The woodpeckers are armed with a stout, long bill, to penetrate the wood of trees, where the borers deposit their larvæ. They live almost entirely upon these worms.

For the insects which come abroad only during the night, nature has provided a check in the nocturnal birds, of the whipporwill tribe and the little barn owl, which take their food upon the wing.

How wonderful is this provision of Providence for the restraint of the depredators that live upon the labors of man; and how careful we should be not to dispute that beneficial law of compensation by which all things are preserved in their just relations and proporions.—[American Agriculturist.

Cast-Iron Foot Pavement.

We learn by the *Journal of the Franklin Institute*, an extensive piece of cast-iron foot pavement has been laid down under the superintendence of Benj. Severson (a skillful mechanician) in Philadelphia. The pavement is made of cast-iron plates 12 feet long, 3 feet 4 inches wide, and ⅝ inch thick; 12 feet being the width of the pavement to the curb. These plates are roughened on the surface by grooves 1¼ inch apart, crossing each other at an oblique angle, so as to divide the surface into diamonds.

A cast iron half inch plate, with its two edges turned at a right angle, so as to make flanges at the top and bottom, forming a girder 11 inches deep, is bolted to the columns of the building, making a support on which the inner ends of the plates rest. The curb is of cast-iron, ½ inch thick, 11 inches deep, having a flange each side, at the bottom, and on the inside only at the top; it is made to slope slightly outward from the top to the bottom.

This curb rests upon a brick wall, forming the outside wall of the cellar, a good cement being interposed to make a water-tight joint; the pieces of curb have butt joints secured by a cast plate behind, riveted securely to both pieces, cement being interposed. From the building girder to the curb, and resting on the lower flange of each, stretch girders or joists, 12 feet long and 11 inches deep, 3 feet 4 inches apart, on which the pavement plates are laid and securely fastened by bolts or rivets, with counter-sunk heads, going through the flanges of the girder, the joists and the curb.

All the joints are carefully cemented so as to be water-tight; the transverse girders or joists are of half-inch cast-iron, strengthened on the bottom flange by wrought-iron flat bars, bolted to the cast-iron only at the two ends, and slightly expanded by heating when it is put on, so as to bring the lower part of the girder into a state of compression.

Hermetically Sealed.

We often find this expression used to indicate an air tight stuffing box; but it should never be employed except for expressing a closed joint made by melting the material of which the joint is composed, such as a glass tube being melted and then closed.