The Art of Dyeing—No. 17.

GREEN COLORS—In our last article we completed the description of binary colors produced by the combination of the red and blue rays. We will now proceed to describe the methods of dyeing the binary color composed of the red and yellow rays, called "green."

GREEN ON COTTON—If we prepare cotton by dyeing it blue in the indigo vat, as described on page 62, then preparing it with a mordant, and dyeing a yellow on the top of the blue, we shall obtain a green. If we wanta light green, a light blue shade is first dyed on the goods for the base, and according to the darkness of the shade wanted, so is the blue toned.

BARK GREENS—The blue vat must be in good order—clear and sharp—and great care must be observed in handling the goods in the vats; whether they be in the state of yarn or pieces. It is a nice job to put on the exact depth of shade in the blue vat to match a pattern, but the dyer must be able to do it, or he cannot be called a good tradesman. To do this, no rule can be laid down on paper; the skill of the eye is required.

When the proper blue shade is acquired, the goods receive a weak sour in dilute sulphurie acid, and are then washed. After this they are handled in a mordant of alum pyroligneous acid, at 2° Twad., for fifteen minutes, lifted up, squeezed or wrung, and are then run through a tub full of water at about 100° temperature, after which they are made ready for receiving the yellow dye. This consists of a decoction of quercitron bark, about five pounds to the ten of goods. They are handled in this for fifteen minutes, are lifted, and get a little raising of about a pint of alum liquor (2 ounces of alum dissolved for every 10 lbs. of goods.) They are entered in this, and handled for fifteen minutes longer, when, if they have acquired the proper shade, they may be lifted up, and prepared for drying in the stove room. If it is found while giving the bark, that the blue bottom is not deep enough for the pattern, the goods may be darkened by the addition of a little logwood liquor; but if much of this is used, it will make the color somewhat rusty.

FUSTIC GREEN—Instead of using quercitron bark to produce the yellow color on the top of the blue, fustic may be substituted, but it will take about twice the quantity to produce the same effect. It is a more permanent yellow, however, and for the dyeing of umbrella covers it is preferred.

A very excellent mordant for quercitron bark and fustic, for greens, may be made of alum and the acetate of lead. Dissolve about 50 lbs. of alum in a tub, and then add 2 lbs. of dissolved sugar of lead, and let the solu tion settle. Use the clear at 20° in the hy drometer. It makes no matter how strong the mother vat may be, when the working tub is kept at its proper strength.

LOGWOOD GREEN—For ten pounds of cotton take the liquor of four pounds of boiled logwood and six pounds of fustic, enter the goods, and handle for fifteen minutes longer. Lift them, and give them the liquor of one pound of sumac, and one pound of sulphate of copper (blue vitriol.) Handle in this for twenty minutes, then lift, wash, and prepare them for drying. This is a very good plan of dyeing a cheap green for rag carpets. It can be made dark or light in shade, according to the quantity of dye stuffs used. It does not stand exposure to the sun. A finer color is produced from quercitron bark when scalded than boiled (this is the case, in fact, with most of the dye woods;) hence, for light shades of green, this bark should never be boiled.

Bancroft describes a green indigo (a sample of which he had given him) which had been sent from the East Indies, and was stated to have been obtained from a tree, but substances producing a blue and yellow separately, are always used to dye a green color, which is the more remarkable, seeing that nature is so prolific with green.

CHEMIC GREEN—Light green shades are dyed on buckram, linings, and thin cotton pieces, by neutralized chemic, and fustic. The chemic is prepared by dissolving some of the sulphate of indigo in water, in a vat, then adding chalk or whiting until the acid is neutralized. The clear is then used to dye green in combination with fustic, in a tub, all together. This chemic cannot dye a deep green, but the color is very clear, if carefully dyed. It is raised with alum in the tub. Quercitron bark may be substituted for the fustic. The best mode of dyeing this color, is to prepare the pieces in a weak mordant of the sulphate of lead and alum, then give them one tub of warm water, and dye the yellow for the base. The neutralized chemic is given on the top, in a tub of clean cold water. Great care is necessary in neutralizing the acid of the chemic by the chalk.

Chrome green will be described in our next.

[Correspondence of the Scientific American.]

Carriage Painting and Varnishing Again.

On page 187, SCIENTIFIC AMERICAN, I see that J. R. G., of Ohio, has been led to spend his "time and money for nothing," trying to correct my article on painting, on page 137, and if you will allow me a little space in your valuable paper, I will make some corrections to that article, and write something more, all of which may prove useful to your correspondents.

Commencing thirty-six lines from the bottom of the first column, it should read, "but all painting cannot be done in cold weather, and the question occurs, can it be well done in warm weather? It can, by using very thin paint, &c."

The thirteenth and twelfth lines from the bottom of the same column, should read, "reduce to proper consistence with turpentine, &c."

The sentence near the close, to which J. R. G. takes exceptions, needs no correction, as every person "skilled in the art of coach painting," knows that copal varnish is "the best kind of coach varnish."

My object in writing the article on painting was to give general principles to help to an understanding of the property and qualities of the articles used by painters, which would enable them to prepare paint for any purpose they might desire; but for the benefit of J. R. G., and those not skilled in the art of coach painting, I will be a little more particular on that subject. But, first let me say, that no man can be taught by a recipe to do the best quality of coach painting, or make the various qualities of copal varnish with the facility of practiced hands, and my object will be to give such instructions as I think best suited to such as cannot obtain experienced workmen.

For filling or priming carriage or buggy bodies, grind yellow ocher with linseed oil quite stiff, add, *drier* in proportion, about half a pint to a gallon of paint; thin with turpentine, or use oil well boiled with a quarter of a pound of litharge to the gallon, and use no other drier. Put on three coats of this paint, giving time to dry hard, and sand-paper well between coats. When thoroughly dry and hard, rub down with pulverized pumice stone and water; use a piece of wool hat or thick cloth for rubbing. Then put on three coats of copal (best coach) varnish, rubbing down between the coats with a coarse linen cloth. When dry and hard, having stood several days (and the better if exposed to the sun most of the time, during the whole process,) rub again with pumice stone to a smooth even surface, then finish with a coat of flowing varnish, if you have it, or a coat of any good varnish will look well; this is rubbed down with rotten stone, in the same manner as with the pumice stone. Clean off well, and moisten a bit of silk velvet with sweet oil, and rub over until you have a gloss finish; rub off with a silk handkerchief and you will have a finer polish. No person should undertake to make copal varnish from a recipe, but I will try to assist such as do try to make it:—Use a copper kettle, put in five pounds of scraped gum copal, dissolve with a regular heat over a charcoal fire, stirring with an iron rod; when cooled a little, so as not to scorch the oil, add a quart of well-boiled linseed oil, and when cooled enough to be safe from taking fire, pour in slowly, stirring constantly, turpentine enough to make two gallons varnish. This varnish will come as near answering every purpose for carriages, chairs, and furniture, as any that can be made. But to make copal varnish of different qualities, it is necessary to know that the less oil is used the quicker and harder the varnish will dry, and the more oil, well boiled, the tougher and better calculated to stand the weather. For cheaper varnish, use an inferior quality of gum copal, and adulterate with rosin. To dissolve the rosin, put the oil and rosin in any kind of kettle together, it is easily dissolved; use oil and turpentine in same proportions as in copal varnish. It has a good gloss, and does not injure copal varnish, only in its quality to resist the action of water. Furniture varnish is much adulterated in this way, to cheapen it.

Every person should lea n the qualities and nature of all the articles used in paints and varnishes, in order to do good work.

A. W. H.

Platte City, Mo.

Southern Railroads.

A convention of the officers of the various Southern railroads was recently held in Augusta, Georgia. The lines represented were Richmond, Fredericksburg, and Potomac, the Richmond and Petersburg, the Wilmington and Raleigh, the Wilmington and Manchester, the King's Mountain, the South Carolina, the Georgia and La Grange Roads, the Waynesboro', the Central, the Macon and Western, the Southwestern, the Muscogee, and the Montgomery and West Point Road.

The existing rate of fare of $15,50 from Wilmington to New York. and $21,50 from Wilmington to Montgomery, were re-affirmed. Messrs. Pollard and Jones, of the Montgomery and West Point Road, were requested to use their best endeavors to obtain a reduction of the fares between Montgomery and New Orleans, so as to make the fare from New York to New Orleans just $50.

It was resolved unanimously, that the system of private expresses, which at present prevails on the various railroad lines, is injurious to the interests of the companies.

The convention adopted a resolution declaring itself a permanent organization, to be known as "The Southern Railroad Association," its objects being to promote the interests of Southern railroads, and its members are to consist of the presidents and superintendents of the same. The next regular meeting will be held in Augusta, the second Wednesday in December next.

We are gratified to be able to state that the cars on the East Tennessee and Georgia Railroad are now running to Lenoir's, six miles this side of Loudon, and the same distance on this side of the Tennessee river. The heavily andrichly freighted trains now pass in splendid array over the magnificen bridge which now spans the noble Tennessee at Loudon. This bridge, as a work of art, is pronounced by common consent, equal, if not superior to any bridge of the kind in the entire South. It is indeed a magnificent monument to Southern enterprise, energy, and utility. The Iron Horse is now within twenty-two miles of Knoxville, and in a very few months we hope to give him such a welcome at this, the grand junction of four of the principal railways of the Union, as is worthy of his importance, the realities of the occasion, and the inspiring prospects of the future, produced by his triumphant approach.—[Charleston (S. C.) Mercury.

Greatest Depths of Mines.

Wheal Abraham attained (rather more than 20 years ago) a depth of about 242 fathoms, or 1,452 feet (a fathom being 6 feet); Dolcoath Mine had reached 235 fathoms; Tresavean copper mine is gradually becoming extraordinarily deep, and it is last reported as being 2,112 feet under the surface, and about 1,700 feet below the level of the sea. The Consolidated Mines are 300 fathoms (1,800 feet) deep, and the United Mines 280 fathoms below the adit level. Let the reader realize these depths by imaginary pilings of the highest buildings, as St. Paul's and the Monument, on themselves a sufficien number of times to attain the respective amounts! Speaking of mines generally, the Eselschact Mine at Kuttenberg, in Bohemia, now inaccessible, was deeper than any other mine, being no less than 3,778 feet below the surface. Its depth is only 150 feet less than the hights of Vesuvius, and it is eight times greater than the hight of the pyramid of Cheops, or the cathedral at Strasburg. The bore of the salt works of Minden, in Prussia, is 2,231 feet deep, and 1,993 feet below the level of the sea. Mines on high ground may be very deep without extending to the sea level. That of Valenciana, near Guanaxuato in Mexico is 1,686 feet deep; yet it is 5,960 feet above the level of the sea, and the mines of the Andes must be much more. For the same reason the rich mine of Joachimsthal, in Bohemia, though 2,120 feet deep, has not yet reached the sea level. The fire-springs at Tseu-heu-tsing, in China, are 3,197 feet deep, but their relative depth to the sea level is unknown. How insignificant are the works of man compared with nature! A line 27,600 feet long did not reach the bottom of the Atlantic Ocean.—[London Mining Journal.

California Academy of Sciences.

At a recent meeting of the above named Institution (as we learn by our excellent cotemporary the *Pacific*,) held in San Francisco on the 26th of February, a species of yellow honeysickle—native to the country—was presented by D. Andrews. Dr. Wm. C. Ayres presented a specimen of a new generic type among fishes, which has been named *anarrhichthys ocellatus* Ayres. It has a very long body in proportion to its thickness, being nineteen times the length of its greatest thickness, thus resembling the eel, but in other respects it is very different. It is very rare; only two specimens of it have yet been seen.

Extinguishing Fires.

The patent granted this week to William Loughridge, of Weverton, Md., for a method of extinguishing fires, relates to a certain arrangement of pipes and other apparatus, by which water may be forced at a moment's notice from a reservoir or fountain to any part of a city, town, or district, to extinguish fires by means of a stationary steam or other engine. The same arrangement admits of the necessary supply of water for all other purposes—domestic and manufacturing—without interruption during the time it is used for the fire.

Railroad Brakes.

Mr. Loughridge, as will be seen in the list of claims, has also obtained a patent for an improvement in railroad brakes; this improvement relates to the operating of the brakes of one carriage, whereby all the brakes of a train will be operated by the train's momentum, which is made to wind a chain on a drum, so as to draw simultaneously upon all the brakes. A means is also provided to prevent the cars crowding upon one another when the brakes are applied; and the degree of force brought into action can be regulated at will.

An Inventive Editor.

Mr. S. D. Carpenter, Editor of the *Patriot*, Madison, Wis., has lately sold a small portion of the patent right for his excellent pump—illustrated in our journal last week—for the sum of forty-nine thousand dollars. He will probably realize treble that sum for his remaining interest. Patents for good and useful inventions are, after all, about as profitable a species of property as any one can get hold of.

Nova Scotia Coal.

A correspondent of the Boston *Post*, writing from Pictou, N. S., states that a great increase of the coal trade of that region is expected this year. Preparations are making to ship 150,000 chaldrons. Our coal consumption is increasing so rapidly, that it has become difficult for our Pennsylvania mines to meet the demands made upon them. Our Wilkesbarre friends must take a longer pull.