For the Scientific American.

Royal Blue.

This is a color which for beauty is unequalled. The true *modus operandi* is not known to many and in no published work can we find a proper description of the dyeing of it. It is but a few years since it was introduced into this country from England, and the receipts for dyeing it have been sold at from five to twenty five dollars. There are two ways of dyeing dark shades, first by *bottoming*, as it is technically termed, with logwood and then dyeing with the prussiate of potass, or first dyeing with the prussiate and then topping with the logwood. The latter mode is the best.

For a dark blue the goods do not require to be pertectly white, as the operation strips off old colors, while the blue is gradually becoming combined with the goods. To every pound of Circassian or merino goods, which must be perfectly washed and clean, two ounces of the prussiate of potass is put into the dye kettle along with two ounces of tartar, and nitric and sulphuric acid added until the liquor (after the tartar and prussiate is dissolved) tastes like glauber salts. The goods are then entered, if in pieces they must be well selvaged or winched, and if yarn well turned, and the liquor in the dye kettle gradually brought up to the boiling point. The goods are then taken out and a little more sulphuric acid added. After the goods are boiled for twenty minutes or half an hour, a beautiful and rich sky blue will have been imparted to them. They are then taken out of the dye kettle, washed and hung up for a few moments to drip. Another dye kettle with a small quantity of logwood liquor, (say a teacup full of strength No. 3 in the hydrometer, for every pound of goods,) should be now boiling, to which add a wine glass full of the muriate of tin, stir well and enter the goods. The kettle must be kept boiling for half an hour, when it will be found that a deep velvety richness will be imparted to the blue color, and by adding a greater quantity of logwood with a proportional quantity of spirits (muriate of tin) a deep violet color will be the result. If cochineal is used instead of logwood, a clear and beautiful crimson tinge is imparted to the goods. This color may almost be considered permanent—it at least occupies more than a middle place in the scale, between the fugitive and permanent. From its exceeding clear and rich appearance, this color on goods has received the name of *royal blue*. The stuffs that are employed to dye it are nearly colorless, but their combination forms a salt which is deposited or combined with the woolen goods by means of electricity elicited in the process, and enters minutely into all the fine pores of the goods, and the salt so formed reflects the prismatic blue color.—Electricity is the prime agent of the dyer and calico printer. For nearly three thousand years the effects of mordaunts have been well known to produce various shades with a single drug. Madder with different mordaunts will produce a bright red, or a deep black—a lilac or a purple. But no theory explanative of these chemical manipulations, that we are aware of, has ever been set forth to reconcile the art of dyeing with the Newtonian theory, only so far as it relates to prismatic reflection—the decomposition and mingling of the different rays. "That colors produced on goods in the process of dyeing, is the result of electric action—a decomposition in the first place, and a deposition in the second—whereby certain salts are deposited on certain animal or vegetable substances to reflect certain *prismatic shades*," is a theory which we are not aware of ever having seen set forth in any treatise, either by Field, Crum or Thompson, the latter the best writer on the subject in this country, and the fame of Walter Crum as a chemist and dyer, is world wide. The royal blue is a color which at once establishes this theory—the process is like a deposition of metals in their cyanides by the galvanic battery. This theory is backed up by the whole process of steam colors in calico printing, and by Bain's electric telegraph. Electricity is always developed rapidly in steam and the dye kettle is the galvanic battery of the dyer.

To those who have little interest in the abstruse part of this article, we would say that coarse goods dyed by the above receipt, may be made a very deep blue by the greater quantity of logwood used, and if the goods were first of all prepared with a small quantity of the sulphate of iron—so much the better.—The above receipt could not be purchased for less than five dollars from any dyer, and any person may dye the color perfectly by following our description. As we have advanced a theory different from any that we have ever seen, and as we have much yet to say to explain it fully and establish it, we shall do so in a separate article next week.

R. Bartholomew.

For the Scientific American.

Some Properties of Carbon.

Carbon has many properties which are already well known, but every day developes some more interesting phenomena. It makes a constant electric battery if buried with plates of zinc, and the beautiful incandescence of charcoal points is well known.

When a piece of ignited charcoal, clear and free from ash, is dipped into a solution of a metallic salt, it reduces the metallic salt and the metal is deposited with all its brilliancey upon the charcoal. The salts of tin, copper, platina, silver and gold furnish in this manner brilliant deposits. When the salts, however, are too much acidulated or concentrated, this effect is not produced. The sulphate of copper must be made very weak, and they will form upon the charcoal beautiful deposits of various colors, from the finest sky blue to that of red. Some metals choose to deposit themselves upon the points while others cover all the surface of the charcoal. Protochloride of tin appears in brilliant crystals all around the charcoal. These facts are interesting and will no doubt yet lead to more valuable discoveries. R. B.

Obtaining White Outlines from any kind of Paper.

Dissolve 20 grains of silver in pure nitric acid two parts and distilled water one part, and heat the mixture so as to induce chemical action. Hold then over the vapor a design placed on a white sheet of paper, and then expose to the light. The uncovered part will assume a dark hue and on removing the design, the latter will be found reproduced with the utmost fidelity. One may thus obtain 700 or 800 sheets. The nitrate of silver carried up by the vapor becomes attached to the uncovered portions of the paper and is afterwards colored by the sunlight. The expense is but small,

Substitute for Glass for Electrical Machines.

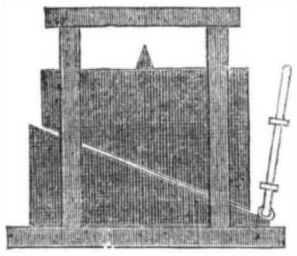
Cut strong mill pasteboard of a circular form and smoothed at the edges upon which successive layers of shellac are laid until it has become of the proper thickness—each layer being allowed to become perfectly dry before the other is applied. The shellac should be dissolved in wood naphtha or pyroligneous acid, without heat and applied with a brush. By this means a perfectly smooth surface will be obtained. Shellac being the best nonconductor of electricity, is certainly the best substance for producing it. The shocks from it are short but follow in quick succession, and give more pain to the knuckles when held to them than a glass machine. This is cheaper than glass, and fully as strong. The best plan is to have two plates on the same axle as a far greater increase of power in the same space, is thus obtained, than by the single plate.

Cream.

If cream, well wrapped in a cloth, is put into a hole in damp earth and left there for about twenty four hours, it will become clarified and turn into a substance neither butter nor cream, but which combines the qualities of both and has a very delicate and agreeable taste, provided the cream used is sweet and good.

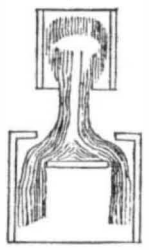
MECHANICAL MOVEMENTS.

Horizontal and Perpendicular Motion.



The above cut represents an arrangement in which the horizontal motion of the upper wedge is converted into perpendicular motion in the small triangular piece placed upon it, which must necessarily be elevated as the wedge is forced forward.

Water Pressure.



This cut represents a section of the oscillating column, for the purpose of elevating a given fall of water above the level of the reservoir or head, by means of a machine, all the parts of which are absolutely fixed. It consists of an upper or smaller tube which is constantly supplied with water, and the lower or larger tube constructed with a circular plate in the centre of the orifice, which receives the stream from the tube above. Upon allowing the water to descend it forms itself gradually into a cone on the circular plate which protudes into the smaller tube, so as to stop the flow of water downwards, and the regular supply continuing from above, the column in the upper tube rises until the cone on the circular plate gives way; this action is renewed periodically, and is regulated by the supply of water.

Bronzing Different Metals.

M. de Ruolz communicated to the Academy of Science and Art at Paris, in 1841, a process by which he bronzed several metals; that is, he deposited upon them, by the aid of the galvanic battery, layers more or less thin, of brass or bronze This process, which required the use of the alkaline double cyanides of copper and tin, was not adopted in practice, either on account of the high price of the cyanides, or from some other reason.

M. M. Brunel, Bisson and Gaugain have substituted for the cyanides a solution in water of 500 parts of carbonate of potassa; 20 do of chloride of copper; 40 do sulphate of copper; 40 do sulphate of zinc, and 250 do nitrate of ammonia. For bronze, a salt of tin is substituted for the sulphate of zinc.

By means of this solution, cast and wrought iron, steel, lead zinc, tin, and other alloys of these metals either with each other, or with bismuth or antimony, may be easily covered with brass or bronze, after a previous cleaning depending upon the nature of the metal.

The operation is performed cold: the piece to be covered is put into connection with the negative pole of a Bunsen (carbon) battery, taking for the positive decomposing pole, a plate of brass or bronze.

When it is desired to cover large surfaces, experiment has shown that the number, and not the size of the couples must be increased.

When the pieces are coated, and have been colored, as is usual in the arts, they rival the most beautiful bronzes. A very beautiful appearance may be given to the coarsest of iron castings.

Pieces thus covered do not oxidise in the house. Those which are designed to be placed out of doors must be varnished as usual.

This new process, which has been communicated to the Academy in Paris must be valuable to the Arts, and deserves attention and encouragement It will be useful in the bronzing of armor and machinery and may be applied to a thousand various productions of art, making them more beautiful and permanent.

Curious Effect of Violet Rays upon the Electric Telegraph.

It is not perhaps generally known, that if a ray of light of a violet color, enter through a window in the neighborhood of a telegraph needle, magnetism is immediately imparted. We understand that the scientific world is indebted to Mrs Somerville for discovery of the fact that a magnet may be made by the agency of a ray of violet, probably from the orbit of the fair experimenter's own blue eyes, but in reality, Mrs. Somerville has succeeded in converting a common sewing-needle, by a simple process into a magnet by the agency of a ray of violet. Professor Morse has also given attention to the subject. Finding that his telegraphic needles were frequently out of order, from the effect of particular rays of light, he placed before them, in order to neutralize it, a sheet of yellow glass, in front of the apparatus, which does not permit the violet rays to pass, and this he has found to have the desired effect.

Double Gilliflowers.

Ladies and others who cultivate flowers, are always pleased when they obtain a handsome double flowering gilliflower. We find in Hovey's Magazine for June, an extract from a European magazine, showing how M. Louis Mullet saves seeds that will always produce double flowers. Choose only those pods which are attached to the flower stem at the same height, that is to say, opposite each other or in whirls of three or four. The seeds which these opposing pods contain will produce plants bearing double flowers, while those placed alternately on the flower stem, one above the other, in the natural way, generally contain those which will bring single flowers.

Railway and Telegraph.

The Telegraph posts in England are arranged along the railway, 30 to a mile, and they calculate the speed of the train in the following manner. Multiply by two the number of telegraph posts you pass in a minute, by four those you pass in half a minute, or by eight those you pass in a quarter of a minute, and the result, in each case, will be the number of miles you are then travelling per hour.

Beautiful Gutta Percha Composition.

Gutta Percha three parts, bone dust one part and pipe clay half a part. This makes a beautiful composition for mouldings, &c.

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