Practical Receipts.

Prepared by a German Chemist for the Scientific American.

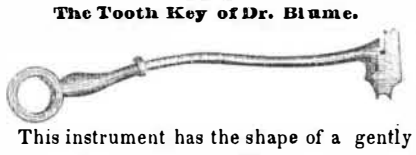
Borate of Copper a beautiful Green.

The public have been often and repeatedly cautioned against the poisonous effects of the green paints which are produced by arsenic, and the dangerous application of them for wall papers has especially been pointed out.

Dr. Elsner, in Berlin, proposed as a substitute for the arsenic colors, to make decoctions of woad and quercitron with solutions of the carbonate of soda, to precipitate the same with a solution of the sulphate of copper, and to dry the precipitate thus obtained after repeated washing by a temperature of 44 R.

The most beautiful green, which can produce a great variety of shades and can meanwhile be applied for porcelain and oil painting although it is somewhat more expensive than the previous mentioned, is the borate of copper. It is a much clearer and much more saturated green than the chromate or green ultramarine. It is produced in solutions, one of borax and the other of blue vitriol in such proportion as will correspond about with the chemical equivalents of the two substances (16 sulphate of copper and 24 borax.) The two filtred solutions are mixed together, the light green precipitate is collected on a filter and repeatedly after washed with *cold* water. It is then at first dried in common temperature and heat applied only towards the end of the process. Cold washing is required, because hot water would decompose the precipitate, extracting the boric acid from it, by which means the separated oxide of copper would cause a dirty blackened appearance; the same evil occurs if a high temperature is applied to the wet or moist precipitate. In a heated state the water deprives the copper soon of its boracic acid and dark spots are immediately produced. As soon as the precipitate is dried in the air, in which state it appears as a dark green horny, shining mass, it is pulverized in a wedgewood mortar, and heated in a Hessian crucible until it commences to get red hot, (it must not melt.) The borate of copper loses by this process the rest of its water, the small particles are deprived of their horn-like appearance and gloss, and the color will be of a deep or agreeable yellowish green, according to the longer or shorter continued application of heat. The color is then ground and prepared.

The Tooth Key of Dr. Blume.



This instrument has the shape of a gently bent or inclining key with the exception of the fulcrum, which is shaped, as represented in the above engraving, in such a way that it comes immediately in contact with the tooth, leaving the gums untouched. The fulcrum of a tooth key is generally round, and large, and often or always it has to be wrapped in cloth or leather to lessen or reduce the pressure which it causes on the gums. The fulcrum of the key here represented ends in a broad point in the same shape as the hooks to be inserted, and has to be inserted between the tooth and the gums upon the root of the tooth. Teeth are much easier extracted with this instrument. The pointed fulcrum is furrowed on both sides of its lower end and somewhat bent.

Photographic Paper.

(*Concluded from our last.*)

We give this part of preparing the Talbotype paper in the patentee's own language, which is very clear and comprehensive.

In order to fix the process thus obtained, first dip it into water then partly dry it with blotting paper, and then wash it with a solution of bromide of potassium containing one hundred grains of the salt disolved in eight or ten ounces of water, or else I fix it with a hot solution of hypo-sulphite of soda in the way described in a subsequent part of this specification. The picture is then washed with water, and then finally dried.

The picture thus obtained will have its lights and shades reversed with respect to the natural objects, vide-licet, the lights of the objects are presented by shades, and vice versa I call it a negative. But it is easy from this negative picture to obtain another which shall be positive or conformable to nature, vide-licet, a picture in which lights shall be represented by lights, and the shades by shades. It is only necessary for this purpose to take a second sheet of the same sensitive paper and place it in close contact with the first upon which the picture has been formed; a board is put beneath them and a sheet of glass above; the whole is pressed into close contact by screws. Being then placed in sunshine or daylight for a short time, an image or copy is formed upon the second sheet of paper. This image or copy is often invisible at first, but the image may be made to appear in the same way that has been already stated; but I do not recommend that the copy should be taken on this kind of sensitive paper, on the contrary, I would advise that it should be taken on common photographic paper. This paper is made by washing good writing paper first with a weak solution of common salt, and next with a solution of nitrate of silver; but since it is well known, having been freely communicated to the public by myself in the year one thousand eight hundred and thirty-nine, and that it forms no part of the present invention, I need not describe it here more particularly. Although it takes a much longer time to obtain a copy upon this paper, yet the tints of the copy are generally more harmonious and agreeable.

In order to fix such positive copies, I recommend to dip them into three separate vessels of warm water, then into a cold solution of hyposulphite of soda, and lastly to dip them once more into three separate vessels of warm water.

The following may be considered auxiliary and additional modifications of my discovery or invention. I sometimes take a sheet of iodized paper and wash it over with a solution of gallic acid in water, and then dry it.

Paper so prepared, I call Io gallic paper; it will remain good a considerable time if kept in a press portfolio. When wanted for use I wash it with a solution of nitrate of silver, which renders it sensitive to light and fit to be used in the camera.

This process differs from the Talbotype process before described by me, in not using the nitrate of silver and gallic acid in conjunction. I find it is advantageous to use them separately on many occasions because it removes the great inconvenience arising from the speedy decomposition of gall or nitrate of silver. Since the yellowish tint of some Talbotype negative pictures impedes the process of taking copies from them; in order to remedy this defect, I plunge the picture into a hot bath of hypo-sulphite of soda or any other soluble hyposulphite, dissolved in about ten times its weight of water. This solution should be heated to nearly the boiling point. The picture should remain in it about ten minutes; it is then removed, washed and dried. By this process the picture is rendered more transparent, and its lights become whiter. It is also rendered exceedingly permanent. After this process, I sometimes wax the picture, by causing melted wax to penetrate into the pores of the paper, the object of which is to give increased transparency.

In the above described process, I claim as my own invention and discovery—

First,—the preparation of iodized paper as above described, which is not self sensitive to light but serves as the basis of all the subsequent operations.

Secondly,—the employment of gallic acid, in conjunction with iodine, and the salts of silver to render paper extremely sensitive to light, the gallic acid not having been used in Photography previously to my discovery.

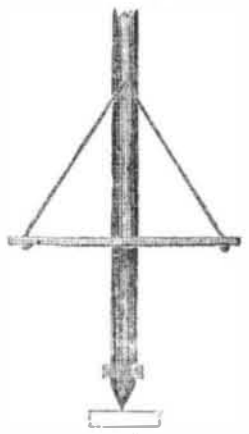
Thirdly,—it was not known previously to my discovery thereof, that paper could be impressed with a latent or potographic image. I claim this paper as my own discovery, and likewise the means rendering the image visible at pleasure, viz. by washing the paper in the manner before described with gallo-nitrate of silver or with any other chemical liquids which act upon those parts of the paper only which have been previously acted upon by light.

Fourthly,—the using hot or boiling solutions of the hypo-sulphites in order to give increased whiteness to Talbotype photographic pictures, and at the same time, make them exceedingly permanent.

Fifthly,—the waxing Talbotype negative pictures, in order to make them transparent, and thus to facilitate the obtaining positive copies therefrom, the said pictures having been previously whitened by immersion in the hot solution of hyposulphite, as last mentioned.

MECHANICAL MOVEMENTS.

The Drill.



This is a representation of a Drill which is moved by pressing on the horizontal piece which is connected to the drill by bands. The drill is moved by turning the horizontal piece and when once set in motion it is alternately revolved by the action of the hand. It is just a modification of the bow drill.

Vibratory and Rectilinear Motion.

This cut represents an arrangement for giving motion to a seive by moving it backwards and forwards in the guides seen on each side at the same time that they are moved in a cross direction by the pendulum. By motion of the pendulum the box receives a kind of side to side shaking motion, while the spring on the pendulum attached to the box, gives it a longitudinal motion on the frame, thus securing two motions by the action of the pendulum.

For the Scientific American.

Bronzing.

When bronze is exposed for some time to the atmosphere, it becomes a peculiar looking greenish color. To make this artificially 2 parts verdigris and 1 part sal ammoniac are dissolved in vinegar, boiled, filtered and much diluted, and articles to be bronzed are immersed in this solution till they acquire the peculiar color, when they are carefully washed.—Different tints may be given to bronze from a reddish to a light yellow, by muriatic acid, or by a mixture of saltpetre, common salt and sulphuric acid. Bronze powders are made from Dutch foil, gold leaf, mosaic gold, or powdered tin. or precipitated copper. Precipitated copper is made by putting clean iron plates in a solution of nitrate of copper—the sulphuric acid leaves the copper and attacks the iron. These powders are generally mixed with dry pulverized bone dust. A mixture of these powders with mucillage of gum arabic is used to give paper or wood a bronze appearance. All the bronze powders are made from mixtures of tin foil and brass and copper finely triturated. Copper will appear nearly red when dipped in a solution of nitric acid diluted with water. The copper must be quickly washed from the acid and dried in hot saw dust.

To Dye Silk a Gold Color.

Take any quantity of nitro-muriate of gold, and evaporate by exposing it to a gentle heat in a glass tumbler or phial; the gold will form itself in crystals on the bottom and sides of the vessel; collect these crystals and dissolve them in ten times their weight of pure water. Then put a gill of water into a common flask, and add one ounce of granulated zinc, and one fourth of an ounce of sulphuric acid. —Hydrogen gas will be evolved, and rise through the neck of the flask, which must not be stopped. Immerse a piece of white silk in the above mentioned aqueous solution of gold, and expose it, while wet, to the current of gas as it rises from the flask; the gold will soon be revived, and the silk will become beautifully and permanently gilt. Any letters or flowers may be drawn on the silk with a camel-hair pencil dipped in the solution, and on being exposed to the action of the gas, will be revived and shine with metalic brilliance. The silk must be kept moist with water till the gold is revived.

This is a mere ornamental operation, but nitric acid itself diluted with water and kept near the boiling point, will dye silk a beautiful, cheap and permanent salmon color. This is a simple process and a practical method.—Good colors are dyed upon silk in manufactories, by first dyeing the silk a light orange in a solution of annatto dissolved in soda, then washing the silk and running it through a strong bath of quercitron bark liquor and muriate of tin kept near the boiling point for some time. This process of dyeing gold and amber colors on silk is practical and makes a most brilliant metallic color.

Gutta Percha.

Gutta Percha may be readily dissolved, says the Pharmaceutal Journal, " in bisulphate of carbon in all proportions, and without the aid of heat. When a few drops of this solution are placed on the surface of any object, the carburet of sulphur evaporates with great rapidity, and leaves a thin layer of gutta percha, which acts as a preservative against the influence of air. On account of this, M. Vogel has employed this solution to cover wounds caused by a cutting instrument.

The carburet of sulphur, in evaporating, produces a sensation of cold in the skin, which acts as an antiphlogistic, and a reunion of the margins of the wound is readily effected.

We would observe that pure gutta percha is not fit to be used in any place where the temperature is above 60°. It then becomes soft.

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