New System of Oil-Painting.

M. Libertat Hundertpfund, the historical painter at Augsburg, has published a work, entitled "The Art of Painting brought back to its Simplest and Surest Principles," in which a very valuable discovery has been applied to the practice of oil-painting, so as to render it comparitively easy, and to ground it on an intelligible theory. While he was busied with experiments to find out a better mode of imitating the transparency of the natural shadow, a glass prism fell into his hands. This was a source of great delight to him. The colors produced by it, and their operation on each other, became an engrossing subject of his thoughts; and on one occasion his fancy led him to imagine the three primitive colours,—red, blue, and yellow—springing like rays from the centre of a circle to three equidistant points in its circumference, and affecting the intermediate spaces there by producing their three derivative colors,—purple orange, and green. This was a mere play of imagination; for at the moment of its occurrence he had not any idea of the discovery up to which he was subsequently led.

Shortly after this arrangement had occurred to M. Hundertpfund, his attention was accidentally drawn to an unfinished picture by Titian; and the state of it enabled him to remark that the shades of a red object there had been produced by under-painting them with green,—that is to say, Titian had first painted all the shadows with a green color, and had afterwards painted them over with red. This mode of under-painting was not quite new to M. Hundertpfund; for he had observed that landscape painters often produced the shadows of a green object by preparing them with burnt sienne,—and this tint appeared to his eye to partake more of red than of any other color. These two facts, as they travelled about in his mind, came there into company with his previously imagined circle of colors, and caused him to remark that if the radius (which indicates the ray of red color) were produced in a straight line to the opposite extremity of the circle, it would reach just that point at which the green would be predominant: and this observation induced him to establish in his own thoughts a particular axiom, namely, that green is the opposite—the antipodes of red. Following up this train of speculation, he began to believe that the success which attended Titian's practice of preparing red shadows with green color might be referable to a natural cause; and that such a cause might be equally operative with regard to color, so as to justify the esablishment of a general rule, that all shadows ought to be prepared with the opposite to which they relate. Proof was already before him that the shadow on red could be most effectually prepared with its opposite green; and it remained to be proved whether the shadows on green could not be prepared with its opposite red—and also, whether the shadows on the other primitive colors could not be prepared with their respective opposites. M. Hundertpfund found his theory justified not only with regard to the primitive colors and their derivatives, but also with regard to those tints which occupy the intermediate spaces in the circle between the primitive and derivative colors.

The different tints produced according to this system of oil painting are divided by M. Hundertpfund into colors, whole-tones, and half-tones:—

The colors are Primitive or Generic *i. e.* red, blue, and yellow, and—Derivative or Secondary *i. e.* violet, orange, and green.

The whole-tones are produced by a mixture of any two primitive colors in unequal proportions, *e. g.* red and yellow, so as to form a red orange or an orange red—or by a mixture of derivatives when any of the primitive colors become thereby predominant.

*The half-tones are produced by an equally proportioned mixture of two derivative colors, *e. g* green and orange.

Chlorine.

Chlorine is a gas of a greenish-yellow colour. It derives its name from the Greek word, chloros, signifying greenish. Chlorine is nearly 2½ times as heavy as atmospheric air, and 36 times as heavy as hydrogen. Its combining proportion is 36, and its symbol cl.

The smell of chlorine is peculiarly disagreeable, if mixed in large proportion with atmospheric air, but if in very small proportion it is rather agreeable than otherwise, owing to the peculiar tendency of this gas to unite with and decompose most of the bad odours that are nearly always present in most apartments, and thus purifying the atmosphere; but great caution is required where large quantities of this gas are used in its pure state, for if taken into the lungs it may prove fatal; a very small quantity of the pure gas is sufficient to excite coughing and great irritation of the lungs and mucus secretion from the air passages.

Cold water absorbs about twice its volume of chlorine, therefore, in collecting this gas over water, the water should be first heated to about 100°. The solution of chlorine in water has a yellowish colour, its taste is astringent and nauseous, and when exposed to light the water is slowly decomposed, the hydrogen of the water uniting with the chlorine and the oxygen being liberated as a gas.

Chlorine may be obtained by mixing one part by weight of black oxide of manganese in powder, with two parts of common hydrochloric acid (spirits of salts) in a glass retort or flask, and applying the heat of a common spirit-lamp, the chlorine is immediately evolved and may be collected over water, by a bent tube, when a flask is used. Or the gas may be obtained from a mixture of eight parts common salt (chloride or sodium), 3 parts black oxide of manganese in powder, and 5 parts of sulphuric acid, diluted with 4 parts of water, previous to mixing with the other ingredients, and heating the ingredients as before.

To Make Cotton, or Linen Cloth Impenetrable to Water.

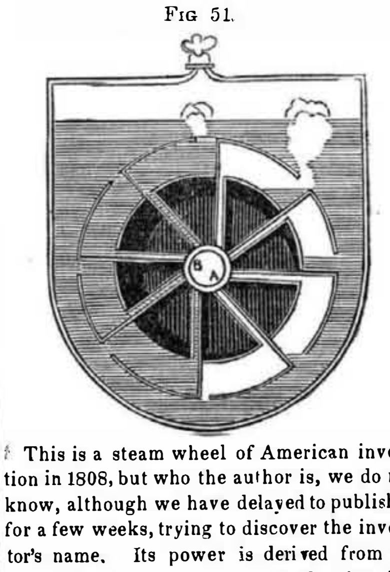
Wash the linen or cloth with hot water, then dry it and rub it between the hands till it is quite soft, when it should be spread out by nailing it on a frame or board with tacks. Next give it a coat of boiled linseed oil, mixed with calcined amber, some sugar of lead and some lampblack, about the thickness of paint. When this is dry, give it a second coat, except the sugar of lead, when in a few hours afterwards, in a warm day, it should be brushed down with a hard brush, and a third coat given, which will make the cloth a durable jet black. This is not a cheap receipt but it is a good one.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

STEAM WHEEL.

Fig 51.



This is a steam wheel of American invention in 1808, but who the author is, we do not know, although we have delayed to publish it for a few weeks, trying to discover the inventor's name. Its power is derived from the tendency of light fluids to ascend, when immersed in those of greater specific gravity.

Fig. 51 is a wheel divided into cells and placed under boiling water. Each of these cells is connected, by any appropriate means, with a steam pipe, so that each receives the steam, when at the bottom; the floating power then brings the other cells in succession to be filled with steam, and the wheel is then put into full action. Where the expansive force only is used, the steam escapes from the top of the trough. Each cubic foot of steam in water, will give about sixty pounds of power. As the steam will expand as it rises up in the buckets, no more should be allowed to enter, than will fill them, when at the top of the wheel. The whole machine may be made of wood, in the form of a common bucket water-wheel; a steam pipe is introduced through the bottom of the trough, just under the side of the wheel where the buckets are inverted, when they become filled with steam in succession.

Fig. 52.

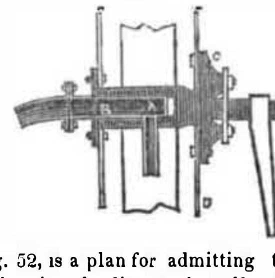


Fig. 52, is a plan for admitting the steam into the pipes leading to the cells; B is a hollow axis, communicating with the steam pipe; A is one of the eight hollow arms through which the steam passes to the cells. C is a stuffing box, and D an adjusting plate, with elastic packing. The steam tubes are of course covered up by circular plates, on each side of the wheel, to obviate the resistance in passing through the fluid.

Whatever may be said about this invention—its evident want of utility, and having been invented 40 years ago, we can say this much, which may be surprising to many, that a model of this very steam wheel was brought into this office about four weeks ago—a new invention of the individual who brought it. We are positive that he knew nothing about this one although it had been published in the old Mechanics Magazine. The inventor too, had come 600 miles to bring it before the public here.

Lucifer Matches.

The oxymuriate or chlorate of potass, is the principal substance used in the manufacture of our common matches. It is to be found at druggists and cannot be well prepared but in the labaratory. Other fulminating substances have been used, but the chlorate is the best. The way to make the matches is as follows:—Take 50 parts of the chlorate of potass in fine powder, 8 parts of sugar, 5 of powdered gum arabic, and enough of powdered vermillion or Prussian blue to color the mixture either blue or red. Mix these together with a knife on a clean paper and afterwards into a paste with a little water. Then add 20 parts of powdered sulphur and mix all thoroughly. Dip the ends of the matches into this mixture and allow them to dry in a proper oven or warm apartment. The gum keeps the atmosphere from injuring the fulminating mixture. These matches are ignited by drawing them over sand paper or a rough board.

Experiments with the Human Hair.

The Philadelphia Ledger says that Mr. P. A. Brown, of that city, has tried some experiments with his Trichrometer, (an instrument to test the tenacity of wool) upon the hair of Robert Hales the English giant, when it was found that his hair stretched to one half greater length before it broke. It is stated that in general the human hair does not stretch over one third its length. One single hair 1 inch long of the giant, who is 8 feet high, was loaded with 1323 grains before it parted—the average strength is only about 700. This experiment is both novel and interesting.

Recipe for White Swelling and Felons.

To cure white swellings and felons, a correspondent of the South-Western Farmer says, "take copperas, blue stone, alum, table salt, and flowers of sulphur, of each the size of a pea, put them into a four-ounce phial, and fill it with strong apple vinegar, and in twenty-four hours or less it is fit for use. It to be applied to a bone felon on the finger, the skin is to be pared with the razor, the phial being well shaken; wet lint, and apply it three times a day. It will instantly relieve pain, take out the fever, and effect a cure. If a sore leg, the sore must be washed twice a day with Castile soap,—then apply the wet lint." Most bruises and diseases of the flesh may be benefited and generally cured, it is said, by this application.

Salt and Soot.

The power of soot as a top-dressing to either wheat or pasture land, is materially increased by the admixture of one fourth of common salt. In the fourth volume, p. 270, of the Royal Agricultural Society's Journal, it is stated that fifty-four bushels of soot and six of salt produced larger crops of Altringham and white Belgian carrots than twenty-three tons of stable manure and twenty-four bushels of bones, at half the cost. It is best to hoe the land, where used as top-dressing for wheat, after the soot is spread, as that prevents the evaporation of the ammonia, which is the most essential part of the manure. To mix it with lime is the most injurious, as that alkali causes the rapid dissipation of the ammonia. Mr. Dimmery, of Stinchombe farm, in Gloucestershire, England, uses nothing but soot as a manure for potato crops, which he grows in drills, using soot at the rate of twenty-five bushels to the acre.

Time for Cutting Timber.

There are various opinions on this subject; some persons preferring one season, and others another. But nearly all are agreed in the opinion that the spring is an unfavorable season, as the tree is then full of sap. Most mechanics, who attend to wood work, prefer timber that is cut in winter, or late in fall, after the season of vegetation, as it then has less sap than in spring. If the opinion that it contains less sap in winter than in spring is not correct, it is evident that the sap contained in the timber in winter has a less tendency to decay than that of spring.

To Preserve Grapes.

Grapes can be preserved during winter by keeping them in dry saw dust in a dry cool cellar. This plan preserves them so well, that when taken out in the spring, they are well flavored as when pulled from the vine.

German Silver.

4 parts copper, 1 part nickel, one part zinc. This is a good composition. Equal parts of copper and nickel make a beautiful alloy of a fine white color and susceptible of a fine polish.