Artificial Cold.

(*Continued from our last.*)

A little consideration of the processes described in this cursory sketch, of the chemical progress of the luxury, will show us that they are all reducible to the two axioms—that evaporation and liquefaction create cold. The philosophy of which fact is simply, that in the change of condition from a fluid to a vapor, and from a solid to a fluid, there is a change in the capacity for caloric. If a certain measure of water is to become vaporized or if a certain weight of salt is to become a solution, these changes cannot occur without the water and the salt receiving an additional supply of heat, which is of course abstracted from all surrounding bodies; and the abstraction of heat being an equivalent expression to the production of cold, we are brought back to the truths with which we commenced, and have seen how evaporation and liquefaction produce cold Caloric disappears in both cases, and burying itself among the particles of the new product is said to have become *latent*. There are some facts connected with the production of artificial ice which deserve mention here. The congelation of water is materially promoted by rapid motion Water has, in fact, been cooled, and yet remained quite fluid many degrees above the temperature at which it generally becomes ice; but the moment a little movement was communicated to the liquid, instantly the temperature rose to 32 degrees, and the mass became ice, needle-like crystals flying through its substance in a most curious manner. This fact was seized upon by the refrigeratists, and repeated accounts of making artificial ice are extant, in which much stress are evidently laid upon the act of stirring the fluid to be frozen rapidly round with a stick. The experience of mankind also appears to have discovered that water, after it has been boiled, freezes more rapidly than otherwise. It is a custom among many nations of warm climates either to warm the water in the sun, or to boil it, previous to attempting to reduce its temperature. Dr. Black of Edinburgh published some experiments undertaken to determine the question; and his results were, that boiled water does freeze a little more rapidly than unboiled. The act of boiling expels the air; and as in freezing, a similar expulsion takes place, a step is gained in advance of the unboiled liquid.

The means in present use for artificial refrigeration are various, and some of them very interesting. Among these, the employment of porous earthenware may receive an early place. The Moors introduced into Spain this article of luxury, in the shape of very elegant vases, wonderfully light and porous. Water kept in these became rapidly deliciously cool, and, from some peculiarity in the pocess of the manufacture of the vessels, it acquired, in addition, a very agreeable flavor. In Egypt, and in India, and in most sultry regions, this expedient is at the present time a very prevalent one. It has also for some time been extensively employed amongst ourselves—porous wine, butter, and water coolers, of many elegant designs, being now produced at our potteries But porous ware keeps water coolest where the clime is hottest, the very increment of heat being made to react in the production of cold by rapid evaporation. The Moorish name for their earthen jugs was *Alcarrazos* or *Bucarros*. The Arabs, burnt up with the eternal fire of their scorching country, make use of goat-skins for their water-vessels, which suffer a little water slowly to exude, and thus keep the remainder comparatively cool. A common method of cooling wines in India, is one which will almost appear a paradox, the bottle is wrapped in flannel, wetted with water, and placed directly in the rays of the sun, violent evaporation ensues, and the wine actually becomes very cold. It is a common plan, too, for sailors, in warm latitudes, to cover their wine with cloths, constantly wetted. Apartments are cooled on a similar principle, and an abundance of water is frequently dashed against the walls of the room with the most grateful effect. In India, also, the cold so dangerous and penetrating on a clear night, is applied in a peculiar manner for the purpose of freezing water. Near Calcutta, in an open plain, there are large shallow excavations made in the ground, and filled with straw, upon this, many rows of small, shallow, porous pans, filled with water are placed at sunset. During the night, ice forms in thin cakes, upon the surface of these pans; it is carefully removed before sunrise, and carried to a proper repository, and pounded into a mass there, and then covered over with blankets. This manufacture can only be pursued during the months of December, January, and February: and in the districts where the ice is formed in this manner, it is never produced naturally. This ingenious process must wholly disappear before the new export of Wenham Lake Ice. What a revolution has commerce effected in India, when we remember that early travellers in that country were looked upon as liars and impostors for asserting the possibility of solidifying water into ice.

(*Conclusion next week.*)

For the Scientific American.

Purple Color.

There are three ways of dyeing this beautiful color. 1st. By dyeing the woolen cloth or yarn a light red and blueing it on the top with indigo. 2. By dyeing it first red and then blueing it on the top with cudbear. 3. By dyeing it with logwood and the muriate of tin. The last plan is not only the cheapest but the richest for a full color, but the second plan is the best for a clear light color.

To dye this color, the goods must be pure white and perfectly clean. For five pounds of fine woolen cloth—such as merino twill—one pound of logwood liquor, one ounce of cream of tartar and one ounce of alum with half a wine glass of the muriate of tin, will answer. These ingredients are put into the kettle and when the liquor is boiling strongly, the goods are entered nicely loose and handled with great care and promptness so as to prevent spotting. When the goods are boiled three-fourths of an hour in this they will be found of a good color. The logwood liquor should be boiled and settled two days before it is used. In such light colors as purple, &c. it is best to give the stuffs two or more different dips — This makes a certainty of *levelness* in color, and cleanness and permanency beside. As the color is wanted to be darker more logwood liquor is added, but not when the goods are in the boiler. If wanted on the reddish shade, more muriate of tin is added. No person need be afraid of not dyeing a very good and cheap purple by following the above receipt, only beware of an iron kettle to dye it in.

CLARET COLOR.

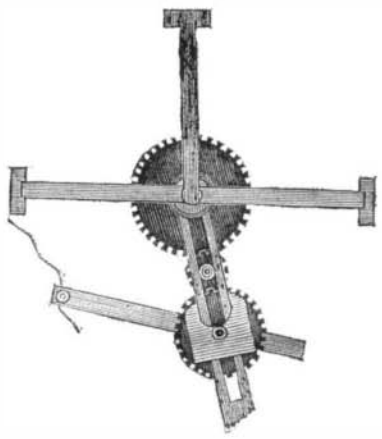
This color is dyed exactly as the purple, only double or three times more stuff is employed to dye it, and the goods do not need to be pure white—an old garment grey, or red, or yellow, can be made claret.

Claret can also be dyed with camwood—a plan which we prefer for woolen cloth, as it is much more permanent and stands the *sun*, as it is commonly termed, better. About 3 pounds of camwood is boiled along with about 10 pounds of cloth for about one hour, when the goods are taken out and the liquor of about half a pound of scalded sumac added and half a pound of the sulphate of iron. This is suffered to boil for a short time and the kettle skimmed of its froth, when the goods should be entered quickly and boiled for half an hour. This is called saddening—or darkening. This makes an excellent claret, and if boiled afterwards in a kettle with clear fustic liquor, a good and clear brown is the result.

If hypernic, or peachwood, is put upon the top of a purple, a good maroon is the result. This is done by using considerable alum in the purple dye, and boiling the goods afterwards in the peachwood liquor Two pounds of peachwood to ten of goods answers very well, but there is such a difference in dye stuffs and in the qualities of goods, that no dyer can be conscious of integrity, who says dogmatically such and such a weight of dye stuffs will always dye such a shade certain—but by these receipts and a little practice, any person can dye them correctly.

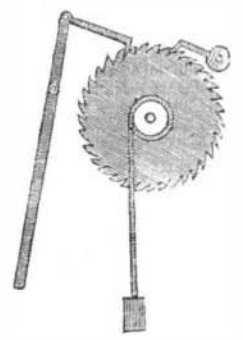
MECHANICAL MOVEMENTS.

Copying Drawings.



This engraving represents a plan of an arrangement for producing curved lines round the centre of the larger wheel. The curves may be varied by varying the proportions of the first and third wheel. The plan is to draw from a design, and the T squares are as guides for the draughtsman, so that by finding certain points by the freedom of working them through the slots in the lower rule in connection with the connecting cord to the left, ovals and circles, together with linear delineations, may be made with great rapidity to facilitate the copying process. Tracing paper, especially the very fine French kind, has now entirely superseded this instrument.

Vibrating Lever and Catch.



This is an arrangement for drawing a rope by means of a vibrating lever connected with a catch which gathers a tooth of the ratchet wheel at every vibration, thereby revolving the shaft on which the rope is coiled. This arrangement is the same as that of the capstan, with the exception of the one in the above cut being intermittent while the capstan is continued. The above arrangement is an exhibition of all mechanical arrangements for intermittent motion, making the cam as the general exception.

Curious Icelandic Custom.

The Icelanders have a curious custom, and a most efficient one of preventing horses from straying, which we believe is peculiar to that island. Two gentlemen, for instance, are riding together, without attendance, and wishing to alight for the purpose of visiting some object at a distance from the road, they tie the head of one horse to the tail of another, and the head of this to the tail of the former. In this state, it is utterly impossible that they can move on, either backwards or forwards, one pulling one way and the other another, and therefore, if disposed to move at all, it will be only in a circle, and even then, there must be an agreement to turn their heads the same way.

Soap Plant.

In California there grows a plant which is used by the people there for washing every description of clothing in cold running water. In using them as soap, the women cut off the roots from the bulbs, and rub them on the clothes, and a rich and strong lather is formed which cleanses most thoroughly. To propagate the plant, the bulbs are set in a rich moist soil, and grow most luxuriantly in the soft bottoms of valleys or bordering running streams.

To Petrify Wood, &c

Take equal quantities of gem-salt, rock-alum, white vinegar, chalk, and pebbles powder. Mix all these ingredients together; there will happen an ebulition. If, after it is over, you throw in this liquor any porous matter, and leave it there soaking for four or five days, they will positively turn into petrifactions.

An Oil to Prevent Pictures from Blackening.

It may serve also, to make cloth to carry in the pocket against wet weather.

Put nut or linseed oil into a phial, and set it in the sun to purify it When it has deposited its dregs at the bottom, decant it gently into another clean phial, and set it again in the sun as before. Continue so doing till it drops no more faces at all. And with that oil you make the above described compositions.

To Dye Wood Red.

Take chopped Brazil wood, and boil it well in water, strain it through a cloth. Then give your wood two or three coats, till it is the shade wanted. If wanted a deep red boil the wood in water impregnated with alumn and quick-lime. When the last coat is dry, burnish it with the burnisher, and then varnish.

To Gild on Calf and Sheep Skin.

Wet the leather with the white of eggs, when dry, rub it with your hand, and a little olive oil, then put the gold leaf, and apply the warm iron to it. Whatever the warm iron shall not have touched will go off by brushing

To Restore Wine that has become Sour or Sharp.

Fill a bag with leek-seed or of leaves or twisters of vine, and put either of them to infuse in the cask.

To Whiten Bones.

Put a handful of bran and quick-lime together, in a new pipkin, with a sufficient quantity of water, and boil it. In this put the bones, and boil them also till perfectly freed from greasy particles.

Take a tub or a large kettle, fill it within six inches of the top with water, cover it with chaff or bran, and place it at night where the rats resort. By this method, thirty-six rats have been taken in one night.

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