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USEFUL RECEIPTS.

Cures for the Bite of Snakes.

In some parts of our country, persons who are bitten with snakes are cured with whiskey, by making them intoxicated. We have read of and been informed of a number of cures by this method of alcoholic application. We have also been informed that tobacco in a moist state applied to the bite is also an effectual cure. Recent English papers give an account of a young man who was bitten a short time ago in the Zoological Gardens of London, by a cobra snake, and from the effects of which he died in a short time. A correspondent has written to the "London Expositor" on the subject, and cites a great number of cases in which a volatile caustic alkali named *Eau de Luce* was applied inside and out with complete success. The receipt for making this is not given in the "Expositor," but we have found it in another place, and as the cases cited were persons bitten by the hooded snake, the most venomous in the world, and as the said liquid is now used in the East Indies with perfect success, the receipt for making it is somewhat valuable.

"Take 4 ounces of the rectified spirit of wine, and dissolve it in 10 or 12 grains of white soap; filter this solution and dissolve it in a drachm of rectified oil of amber and filter again. Mix as much of this solution with a strong solution of the carbonate of ammonia in a glass bottle, which, when sufficiently shook, will produce a beautiful milky liquid. If any cream is formed on the surface, more of the spirit of wine must be added."

This is applied to the bite, and about 40 drops given as a drink at the same time, this is done as soon as possible and repeated in about ten minutes, when no more will be required for a half hour, and after that the cure is expected to be complete.

New Tinning Process.

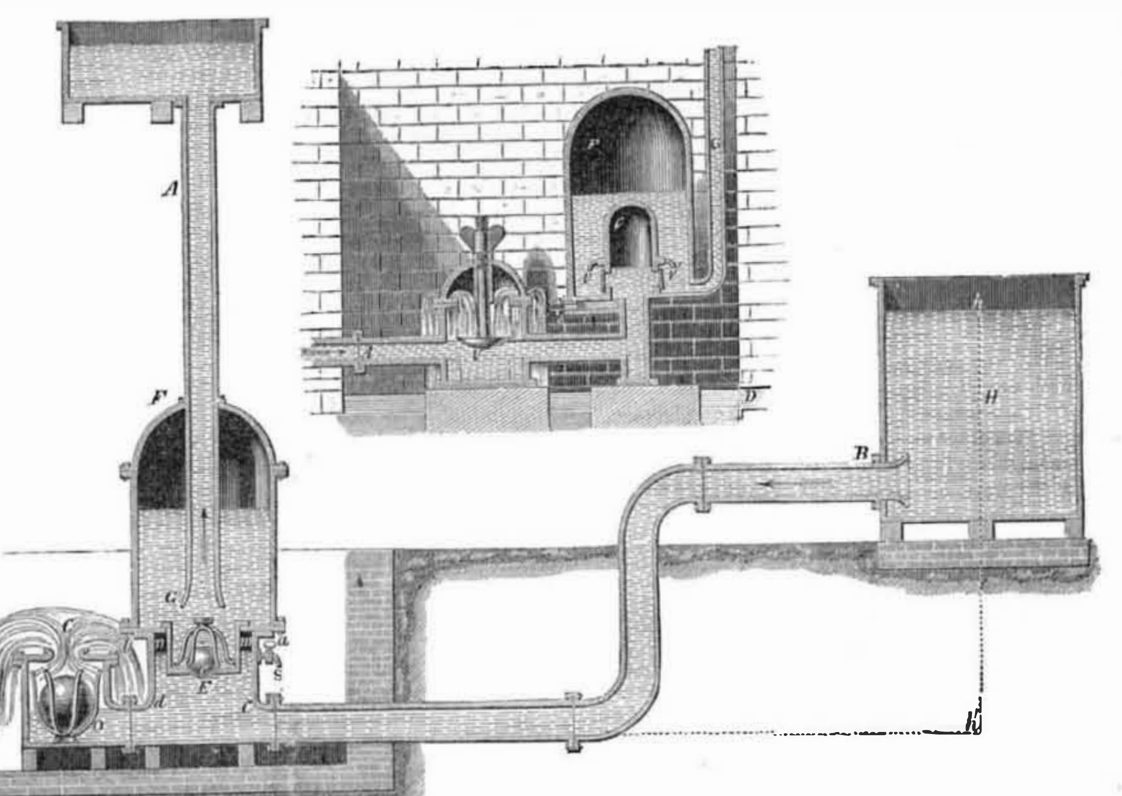
The above is the title of a new process for tinning iron articles lately patented in France, and invented by M. Mare, of Nantes. The articles to be tinned are first scoured with diluted sulphuric acid, and when quite clean are placed in warm water, arter this they are dipped in a solution of muriatic acid, copper, and zinc, and, lastly, plunged into a tin bath to which a small quantity of zinc has been added. When the tinning is finished, the articles are taken out and plunged into boiling water The operation is completed by placing them in a very warm sand bath. This last process softens the iron.

Fire Kindler.

Take a quart of tar, three pounds of rosin, melt them, bring to a cooling temperature, mix with as much saw dust, with a little charcoal added, as can be worked in; spread out while hot, upon a board; when cold, break it into lumps of the size of a large hickory nut. The composition will easily ignite from a match, and burn with a strong blaze, long enough to start any wood that is fit to burn.

THE HYDRAULIC RAM.

Figure 1. Figure 2.



The above figures illustrate no new invention, but as many of our readers have solicited more information respecting hydraulic rams than has yet been given through our columns, we present this beautiful engraving to the exclusion of illustrating some new invention on our first page, according to our usual custom. At any other period when we deem the same course profitable to our readers, we will pursue it in reference to any other machine or apparatus; nothing common, however, or unimportant, need ever be expected. To the ingenious Montgolfiers of France, the invention of the hydraulic ram is justly, we believe, attributed, and the two sectional figures represent the ram as invented and improved by father and son.

In figure 1, H is a head of water discharging itself into a pipe, B, along which it flows with a velocity depending on the height of the fall, and it escapes to waste unless prevented at the orifice, C, which admits of being opened or shut by a valve. F is a vessel of air, which is connected with the conduit tube, B D, by a small cylinder, *a b c d*. In the bottom of F is a circular orifice, to which a small cylindrical support is adapted, of which the extremity, E, is furnished with a valve. F is supplied with air by a valve, *s*, and there is also a space, *m n*, full of air. G A is an ascent tube, rising into a cistern at the top of the house, or to any considerable elevation where a supply of water is required. The pipe, B D, through which the water runs, is called the body of the ram; the pipe, G A, the tube of ascension; C is the stoppage valve; and E is the ascension valve. These valves are hollow globes weighing about double the weight of water which they displace, and over each is a metal bridle to prevent it from rising too high.—The extremity of the body C, and the cylinder, E, form what is called the head of the ram.

The action of the ram is as follows:—The water escaping through C, with a velocity due to the height of the fall, forces the ball at D, out of its muzzle, and raises it to the orifice, C, which it immediately stops. The water thus suddenly arrested in its passage, would, by its momentum, burst the tube, were it not for the another valve, which is lifted up, and allows the water to escape into the chamber, F, whereby the air is compressed, and by its spring, forces water up the tube, A, just as water is forced out of the jet by the elasticity of the air in the air-chamber of a fire-engine.—The ball, *e*, soon loses the velocity imparted to it by the stopping of the orifice, C, and descends by its own weight, as does also the ball at D, into their first positions; the water then runs off again at C, until its velocity is sufficient to raise the ball, D, when the orifice is again closed, and E again opened by the re-action, and thus the effects are constantly repeated, in times which are sensibly equal, in the same ram, and with the same current.

In the action of this machine, four distinct periods may be traced:—1, the water escapes through the orifice, C, with a velocity due to the fall, and that orifice is closed; 2, the air in the space, *m n*, is compressed; 3, the ascension-valve is opened, the air in the reservoir compressed, the water rises in the ascension-tube, G, the ascension-valve, *e* is shut, as is also the valve D; 4, the air compressed in the second interval re-acts, the valve, D, descends from the orifice, and the water, again acquiring its velocity, again produces the like effects.

It will be seen from these details, that a very insignificant pressing column, *h h'* is capable of raising a very high ascending column, G A, so that a sufficient fall of water may be obtained in any running brook by damming up its upper end to produce the reservoir, H, and carrying the pipes, B D, down the channel of the stream until a sufficient fall is obtained.—A considerable length of descending pipe is desirable to ensure the action of the machine, otherwise the water, instead of entering the air-vessel, may be thrown back into the reservoir. Air is admitted from time to time into the annular space, *m n*, whence it finds its way into F.

To estimate the value of this or, indeed, of any hydraulic engine, its produce must be ascertained, the expense of its erection, and that of keeping it in repair. In every hydraulic engine, the force expended is the product of the water as it comes from its source, multiplied by the height through which it falls before it acts on the machine; the produce being the quantity of water raised in the same time, multiplied by the height to which it is elevated.

In a ram placed by Montgolfier in his garden, the fall, which was procured artificially, was 7½ feet. The height to which the water was raised, 50 feet; the diameter of the tube 2 inches; the water expended in 4 minutes, was 315 litres, that elevated 30 litres; hence the expense of force employed is $7\frac{1}{2} \times 315 = 2,362$; the useful force $50 \times 30 = 1,500$, which give the ratio of 100 to 64 as the expense to the produce. It appears, however, from the mean of a number ot experiments, that the expense will be to the produce as 100 : 57, so that a hydraulic ram executed with care; and placed in not unfavorable circumstances, employs usefully, at least, half its force.

The younger Montgolfier so far improved upon this machine, as to make the work performed amount to about 60 per cent. The alterations introduced by him, are shown in figure 2, in which A is the feed-pipe or body of the ram; V the stoppage-valve suspended by a stem to a sort of stirrup; F is the air reservoir, enclosing a smaller reservoir, C, called the air-mattrass; *v v'* are the flap ascension-valves, and G the tube of ascension. The action is as follows:—The water in A, flowing in the direction of the arrow, soon acquires sufficient velocity to close the valve, V, and to open the valves, *v v'*, whereby a certain quantity of water enters F, and passes up G. This impulse or momentum being expended, the valve, V, descends, the water overflows on every side, and falling down outside, is carried off below by a pipe, D, a part of which only is shown, after which the same phenomena are repeated. Now it will be seen, that as soon as the water rises above the valves, *v v'*, air is imprisoned in the mattrass, C, and when the force of the water after shutting V, comes to expend itself upon the air vessel, F, the violence of the shock, which is considerable in the arrangement shown in the first figure, is in this case greatly lessened by the interposition of C, which acts as a sort of air-cushion;