

months the engineer of the Manchester Boiler Inspection Association has spoken favorably of the use of sediment vessels at the surface, with blow-off pipes. There have been in Germany some successful trials, which we have reported, of an apparatus to prevent the entrance of impurities into the body of the boiler; the water is sprayed into the steam in a separate vessel connected by a pipe; and in this vessel the impurities are separated, falling to the bottom, while the purified water goes from the top into the boiler, and occasionally the purifying vessel is opened, and an accumulation of soapy mud is removed. And not only does this prevent the formation of scale, but a foul boiler in a few weeks becomes clean; thus showing that pure water will in time remove scale. We do not feel satisfied with this report; it should have been said how much blowing-out was required; but the evidence, added to that of the English, and some of our own, show that there is reason to labor for the purification of boilers.—*American Artisan*.

#### Soap.

Soaps intended for toilet use ought not to contain any free alkali, seeing that free alkali exercises a corrosive action upon the skin. Soaps, however, which are perfectly neutral, containing no alkali which is not combined with the stearic or other fatty acid employed, are not nearly such powerful detergents as soaps containing an excess of alkali, and are not nearly so capable of dissolving the substances which it is the office of soap, when applied to the body, to remove from the skin. Singular to say, M. Bonnamy, a manufacturing chemist, residing at Saint-Germain, has found that if that very neutral substance, pure alumina, be added to a completely neutral soap, the soap becomes even more powerfully detergent than the most highly alkaline soap, while remaining entirely free from corrosive properties. The alumina may be introduced into the soap in various ways, the most advantageous, perhaps, being the use, in the process of manufacturing the soap, of an alkaline salt of alumina—as aluminate of potash or soda—instead of free alkali. An equally good result is however obtained by mixing free alumina, in dry powder, with melted soap which has been manufactured in the ordinary way. M. Bonnamy proposes to use alumina also in various cosmetics, and especially in cold-cream; and he moreover regards it as affording an admirable base for tooth-powders, by reason of its complete neutrality, and the ease with which it can be tinted by means of perfectly innocent colouring matter.—*Mechanics' Magazine*.

#### Tanning.

Mons. Picard has a new process of tanning, which consists in using oil of turpentine or resin mixed with the vegetable extracts or mineral matters that are used instead of bark for tanning, combined with a movement of the skins in a revolving cylinder, or other method of stirring them. After they come out of the water, the skins, for stout leather, instead of being put into trenches, are put into a revolving cylinder which contains a

light decoction of alum if the skins are to remain white; or of catechu, sumac, or other colouring matter if they are to be coloured. The cylinder is then closed, and revolved for several hours, to cause the alum or colouring matter to penetrate the pores of the skins, and prepare them to receive the turpentine. The cylinder is then stopped and uncovered, and the turpentine is put in; the cover is replaced and the revolving continued. During this agitation the turpentine penetrates the pores of the skins, already impregnated with the astringent substance, and has the effect of a tannin so active, that in twenty-four hours the skins are completely tanned. They are then taken out, and cleansed from the adhering turpentine, and curried and finished in the usual way. For small skins, such as goats and calves, that are to be tanned, the process is the same, except that salt is added to the decoction of alum or colouring matter. The proportions of alum, turpentine, and colouring matter mixed with the vegetable or mineral tanning liquid, can be varied according to the nature of the skins and the degree of tanning and colouring required; but the following proportions do well:—100 lbs. skins: 6 lbs. alum and  $3\frac{1}{2}$  lbs. turpentine. For coloured skins, instead of the alum, 20 lbs. to 25 lbs. of catechu, sumac, or other colouring matter may be used.—*Translated from L'Invention*.

[How would petroleum do instead of turpentine? It makes good brandy, good salad oil, and good Mexican mustard liniment, and is death on bugs; why should it not do for tanning?—Eds. *American Artizan*]

#### Screw Soled Shoes.

We were shown a few days since a new style for making shoes, a rival to the copper nail shoe—and which we are informed, can be made equally cheap. The improvement consists of a brass screw inserted by machinery and cut off smoothly upon the outer sole. We see no reason why a pair of shoes screwed together would not be more durable than a pair nailed.—*Shoe and Leather Reporter*.

#### A Pump which Cattle can work themselves.

Mr. Cousins, of London, has invented a pump by which cattle can water themselves without human aid. The water is forced up by the weight of the animal operating on a platform, which sinks down a certain distance by its weight, causing the water to rise in the pump and to flow out to the extent of three pailsful. As soon as one has slaked its thirst, another takes its place on the platform, which brings up another supply, and so on until all the flock are watered. This is a labour-saving affair, certainly.—*Canada Farmer*.

#### Improved Petroleum Still.

Messrs. Bilby & Lapham, of Brooklyn, N. Y., have obtained a patent for an improvement in stills for petroleum, &c., one object of which is to keep the upper part of the still heated in such a manner as to prevent, as far as practicable, the condensation therein of the heavier vapours evolved by the heat in the lower part of the still. Another