Science and Art.

Improvement in Washing.

"The wife of an American agriculturist has been experimenting in soaps, and finds that the addition of three-quarters of a pound of borax to a pound of soap melted without boiling, makes a saving of one half in the cost of soap and three-fourths in the labor of washing, improving the whiteness of the fabrics; besides the usual caustic effect is thus removed and the hands are left with a peculiar soft and silky feeling, leaving nothing more to be desired by the most ambitious washerwoman."

[The above comes to us from a cotemporary marked "all around," in order, we suppose, to direct our attention to its valuable character. The addition of borax to common soft soap will render soapsuds more gentle in their effects upon the hands in washing, but at an increased, not a diminished, expense. Borax is a salt composed of boracic acid and soda, with the latter (the alkali) predominating.

The "Washing Fluid" sold in bottles for twelve and twenty-five cents—according to their size—in stores, is superior to borax for washing purposes. A gallon of it can be manufactured for four cents. Take one pound of common sal-soda and dissolve it in half a gallon of warm soft water; then stir into a separate vessel containing half a gallon of soft water, half a pound of fresh slacked lime, and allow it to settle for fifteen minutes. Now pour off the clear lime water into the vessel containing the dissolved soda; stir all up and allow it to settle; the clear liquor so formed is the famous washing fluid. Common sal-soda contains carbonic acid; the lime has a greater affinity for it than the soda has, therefore the acid unites with the lime, forming solid, fine white chalk, which falls to the bottom, leaving a clear caustic lye, capable of uniting with grease and oil in cloth, rendering them soluble in water. This washing fluid must be used very sparingly in washing, because, if used in excess, it *eats* the skin of the hands, rendering it very thin and tender. This washing fluid forms the basis of all the labor-saving soap recipes hawked about the country for sale.

About a quart of this fluid mixed with five gallons, of rain water, is an excellent liquid in which to boil unbleached cotton cloth for two hours, prior to putting them out on the grass to bleach. The cloth should be rinsed in soft water before laying it down on the grass. This simple process, by assisting to remove the natural oil from the cloth, greatly facilitates the bleaching process.

This information will be very useful to many persons living in the country, because it is applicable to the bleaching of both home-made linen and cotton cloth.

To Render Textile Fabrics Water-Proof.

Take 1 pound of wheat bran, and 1 ounce of glue, and boil them in 3 gallons of water in a tin vessel for half an hour. Now lift the vessel from the fire, and set it aside for ten minutes; during this period the bran will fall to the bottom, leaving a clear liquor above, which is to be poured off, and the bran thrown away; one pound of bar soap cut into small pieces is now to be dissolved in it. The liquor may be put on the fire in the tin pan, and stirred until all the soap is dissolved. In another vessel one pound of alum is dissolved in half a gallon of water; this is added to the soap-bran liquor while it is boiling, and all is well stirred; this forms the water-proofing liquor. It is used while cool. The textile fabric to be rendered water-proof is immersed in it, and pressed between the hands until it is perfectly saturated. It is now wrung, to squeeze out as much of the free liquor as possible, then shaken or stretched, and hung up to to dry in a warm room, or in a dry atmosphere out-doors. When dry, the fabric or cloth so treated will repel rain and moisture, but allow the air or perspiration to pass through it.

The alum, gluten, gelatine, and soap unite together, and form an insoluble compound, which coats every fiber of the textile fabric, and when dry repels water like the natural oil in the feathers of a duck. There are various substances which are soluble in water singly, but when combined form insoluble compounds, and *vice versa*. Alum, soap, and gelatine are soluble in water singly, but form insoluble compounds when united chemically. Oil is insoluble in water singly, but combined with caustic soda or potash it forms soluble soap. Such are some of the useful curiosities of chemistry.

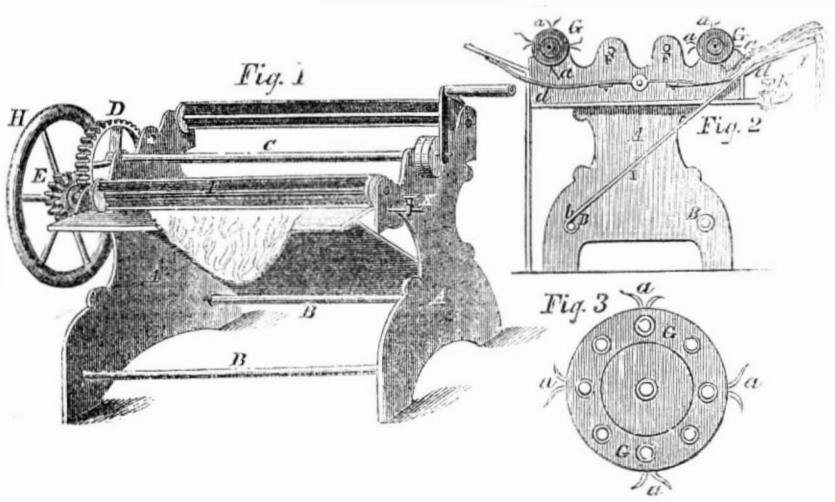
Pile Ointment.

Take 2 ounces of flowers of sulphur, 1 oz. of powdered nut galls, and 1 grain of powdered opium. Mix well together in fine lard, and keep it in a close glass vessel. This is a good ointment for one of the most common ills that flesh is heir to.

Two thousand nine hundred silk worms produce one pound of silk; but it would require 27,000 spiders, all females, to produce one pound of web. With a view to collect their webs for silk, 4,000 spiders were once obtained, but they soon killed each other.

A factory for manufacturing paraffine candles has been commenced at Los Angelos, Cal. The material from which they are made is tar obtained from the natural springs in that place.

SEPARATING BURRS FROM WOOL.

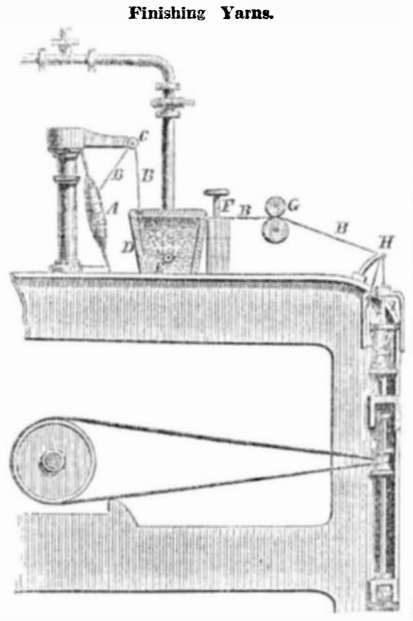


The accompanying figures are views of a machine for which a patent has been obtained in England by J. M. Baird, and which has been illustrated and described in the London *Engineer*.

The improvement consists in the employment of revolving arms, beaters, or switches, brushes, or elastic sp ings, made to act by manual or other power upon the face of the wool while being held between rollers to beat out burrs and other extraneous matters.—Hitherto it has been the practice to pick out the burrs by hand, and however dexterously the manual operation may be performed, it tears out a portion of the wool or fiber from the skin as well as the burrs, whereas, by the employment of beaters, made to give a spring-like blow or switch, little or no fiber is removed with the burrs.

Figure 1 is a perspective view of one of the machines complete; figure 2 is a vertical section, showing the boards on which the skins are placed on an incline; and fig. 3 is a view of one of the beaters or switches. The boards, instead of being inclined, may be placed horizontally. A A are the side frames of the machine, secured together by one or more girders or stretchers, B B. C is a shaft which works in bearings in the frame, A, and has keyed on one end the spur wheel, D, which gears into the pinions, E E, (only one of which is seen in the illustration.) fixed on the shafts, F F, to which the beaters are attached. G G are the beaters, which are preferred to be made circular; they have fixed on their periphery prongs or pickers, *a a*, for removing the burrs from the wool. The shaft, C, is driven by hand, steam, or any other power, which actuates the spur-wheel, D, and consequently the pinions, E E, which cause the beaters, G G, to revolve. To the pinion shaft is attached the fly-wheel, H, to regulate the motion of the machine. I is the board or table on which the skins or pelts to be operated upon are placed. This board is suspended by hinges at the end, *b*, to one of the girders or stretchers, B B, and supported at top by suitable springs, *d d*, fixed to the frame, A. The board and springs are so arranged that when the skins pass through the machine, in the event of there being any inequalities on the surface, the springs allow the board to yield and thereby prevent any part of the skin or pelt being injured. Any elastic substance is placed across the machine to make up for the thick and thin parts of the skin, and so cause the pressure to be as equal as possible in every place. Water is allowed to pass over the skins during the process, and is admitted through the perforated pipe, K, which is placed in the most convenient part of the machine. The apparatus can be made double-acting, as seen in fig. 2, where the skins are admited at either side; or single-acting. When the machine is started, the skins are placed by an attendant on the board, I, and allowed to pass up and down, or straight through the machine underneath the beaters, until the burrs or other extraneous matters have been entirely removed. Any number of beaters are employed, according to the size of the machine. The boards can be placed in any position most convenient to the operator; but the manner in which it is preferred to place them is as in the arrangement shown at fig. 2, where the washing process has the greatest advantage. The beaters can be made, if desired, with straight edges, although the form preferred is circular. When brushes are employed they may be placed in any suitable position, and worked by eccentric or rotary action. This is an improvement worthy of the attention of our wool and sheep peltry merchants.

Finishing Yarns.



This figure is a side elevation of an improved method of finishing the finer classes of cotton yarns, especially those designed for the manufacture of fine muslins. Yarns so treated produce more beautiful fabrics than has ever been done before with cotton of the same fineness. The inventor is M. Nelson, of England; the process was illustrated and described in the London *Engineer*. The yarn, when in the cop form, for example, is first steamed or boiled in water, and is then boiled in starch or any other suitable dressing material. The cops are then transferred to a frame, such as that represented in the illustration, and being placed in a row upon skewer holders, as at A, the yarn B is drawn off them, and passed over a guide rail, C, whence it descends into the box, D. This box is supplied with starch or other suitable dressing material, and is heated by means of steam, which is conveyed into it by the pipe E. The yarn, B, passes beneath this pipe, E, and being well saturated with the dressing material, leaves the box, D, and proceeds onwards between glass pillars, F, round one of which each thread may be turned, if necessary, to the rollers, G. Each thread is passed between these rollers, G, and once round the upper one, if necessary, to prevent its being drawn too rapidly off the cop. From the rollers, G, the yarn, B, passes through the guide eye, H, to the spindle and flyer at I. The yarn is wound upon the bobbin, J, by the ordinary spindle-and-flyer action. It is at this stage that a high degree of twist is given to the yarn, the starchy treatment removing the tendency to untwist, which the yarn would otherwise have. The starchy treatment also causes the loose fibers to be well incorporated with the body of the yarn, so that the finished material presents a comparatively fine and smooth appearance. The steam pipe, E, may either be carried through both ends of the box, D, or the end of the pipe may be turned up inside the box for the steam to blow out upon the surface of the starch.

A new remedy for cancer, credited to the Virginia *Medical Journal*, is going the professional rounds,—which is made of three parts of sulphate of lime to one of chloride of antimony. It may prove of great value.