

HOW SILK IS REELED.

Our readers may be interested to know the process by which silk is obtained from the cocoon of the silk worm.

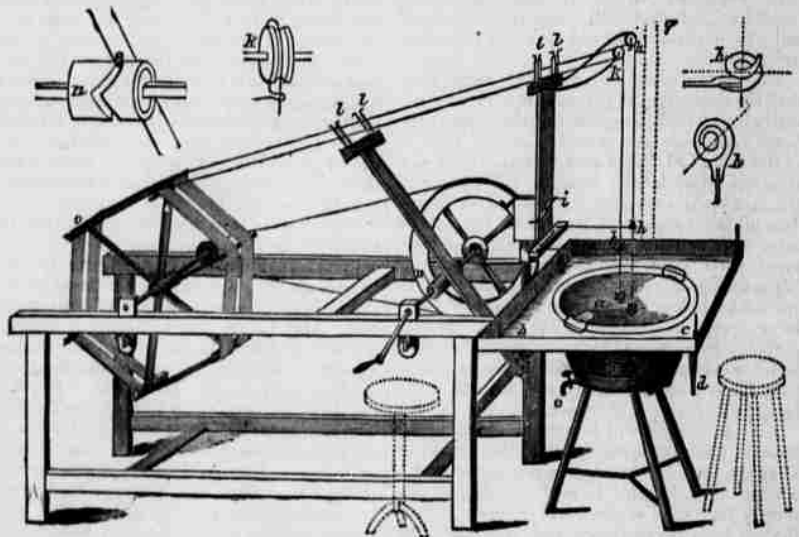
The thread of silk as it unwinds from the cocoon is valueless for manufacturing purposes, several of them combined going to make the staple of commerce. The persons employed in unwinding silk are mostly women, one standing or sitting before each basin, of which she has entire charge. The basin is made of copper, and, in the large establishments, the water in each basin is heated by steam, at the control of the operator. The cocoons are plunged into the water, when it is near the boiling point, and moved about so that the gum which fastens the threads becomes uniformly and thoroughly softened. They are then beaten with a small birchen broom, having the tips split, so that the loose threads readily fasten to them. After beating a short time, the operator gets the cocoons fastened, and, taking the bundle of threads, shakes the cocoons till each hangs but by a single one. She now takes up five or more threads, according to the quality of the silk wanted, unites them, and introduces the combined staple or strand into a little glass eye on one side of the basin. She then forms a second similar strand and introduces it into a second eye on the other side. The strands are then brought together, twisted several times, separated above the twist, and introduced into two other glass eyes or ringlets through which they are led, one to each end of the reel or *tambour*, which is kept revolving in a steady, rapid manner, and to which is also given a certain back and forth side motion. The great object in reeling is to get the threads uniform, rounded, well joined, properly freed from moisture, and so crossed on the reel that they will not stick or glaze, as it is termed. These objects are attained by the twisting and the to and fro lateral movement of the reel, as also by properly regulating the distance between reel and basin. The uniformity of the thread depends on the skill of the operator, who must supply a new thread as soon as one begins to give out.

In order to better illustrate these principles, we have introduced a figure of a reel. The following is the description of its parts: *a*. Tin basin with copper bottom for holding the water in which the cocoons are boiled, sitting tightly over the tray *b*. *b*. Square tin tray for reception of cocoons, etc. *c*. Short stick inserted in a holder, on which the ends of the cocoons are wound, so as to be ready for use. *e*. Cook to let off water from the basin. This should be done every night after use. *f*. Door of furnace lined with fire-bricks, wherein the charcoal fire is lighted to heat the water in *a*. *g*. Flue pipe to carry off fumes. *h h*. Glass eyes on wire holders, through which the threads from the cocoons pass upward to the pulleys at *k*. *i*. A former arrangement for twisting the threads one upon the other; this is now discontinued as unnecessary, since the twist given to the threads at *k* and continued downward to the point *h* effects its purpose with a minimum of friction, and produces a superior thread. This twist is effected by the very simple method of passing one thread round the other, as shown in the small drawing of the pulley *k*. *k k*. Rollers or pulleys revolving on bent-wire stands, over which the threads pass. *l l*. Porcelain tubes on wire holders, between which the threads pass to reach *e*. Glass eyes may be substituted for the first pair of these tubes with equal advantage. *n n*. A grooved arrangement by means of which the long guider working to and fro distributes the thread to the reel "in the cross." Unless the thread is thus wound "on the cross," it cannot be unwound at the mills when required to be thrown, and is, therefore, unsalable. *o*. The top of the reel on which the silk is wound. One of the arms is furnished with the screw

hinge attached, by means of which the length of the arm is diminished to take off the silk.

The adult reeler sits on the stool in front of the cocoons, and the other stool is occupied by the child who turns the crank.

FLOATING ISLAND.—Among the many natural curiosities of Tuolumne county it is not generally known that there is a "floating island." Up in the "Siskiyou," lying like a pearl in the great mountain chain, is Squaw lake, a beautiful sheet of water now utilized by a mining company as a reservoir. For many years the lake has been a favorite and delightful resort for fishing parties, and contained nearly in its center an island, comprising about an acre of ground covered with luxuriant grass and a growth of willow and alder. It was never dreamed that the pretty little island was not terra firma, but when the bulkhead across the outlet of the lake dammed up its waters, the island rose slowly until it had been elevated fully 16 feet above its original level. It would be a question for the naturalist rather than the geologist to determine the age of this floating island, as it is evidently made up entirely of



IMPROVED LOMBARDY REEL READY FOR WORK.

decayed vegetation. Perhaps at some remote period the roots of a tree, uprooted by the mountain storm, drifting out in the lake, formed the nucleus from which the island has grown, but it seems singular that it should have remained anchored and unchangeable in its position. The locality is much frequented by pleasure seekers who will hereafter notice the increased elevation. —*Jacksonville (Cal.) Sentinel*.

A LOAD FOR A MAN.—Some interesting results have just been published of experiments made in France, in regard to this question, which are practically new. The maximum load for a moderate distance was found to be 319 pounds; but for a long distance, say a soldier marching on level ground, he could not carry more than 132 pounds, distributed over the body as knapsack, cartridge-box, musket, etc. If he carries this seven or eight miles for a day, it is equivalent to a good day's work. This is equivalent to 1,518 pounds carried a distance of 3,200 feet for a day's work. But if he ascends a ladder, like a hod-carrier, he can only carry 120 pounds continually, and will in a day carry only 1,230 pounds 3,200 feet high.

A MARYLAND genius has invented a flexible lining for kerosene lamps, which, it is claimed, greatly diminishes danger in case of breakage, and renders the lamp less liable to explosion.

THE EFFECT OF LABOR-SAVING MACHINERY.

The statement is frequently made that labor-saving machines deprive workingmen of employment. That they take the means of earning an existence from those who have to work for a living. The immense number of yards of fabrics which the cotton mills turn out annually are frequently made the basis of specious arguments to sustain the views of those who hold to that opinion. They state that if the cotton clothes were woven by hand looms, their manufacture would give employment to tens of thousands of operatives. There is no denying the fact that if the same number of yards of these goods that are now woven by steam or water power were made by muscular labor, that it would be as stated. But would the same quantity of goods be made in the latter case? Most certainly not. There could not be a supply of raw material placed in the reach of so many individuals to meet the manufacture. Or if we admit that such could be the case, the cost of production and transportation would be so great that they

would amount to prohibition of the consumption. There could not be found purchasers enough who would be able to indulge in their use. There would consequently be a rapid decrease in the demand; the production would also meet with a like effect, and thousands of producers would be thrown out of employment. Nor would the producers only be forced into idleness. All the vast array of workers in every department of labor who now aid in the accessory spheres of action, which the raising and transporting of the cotton require, would find their ranks rapidly thinned out. Commerce would be suspended; the working of metals now used in the machinery, in the means of production and transit, would cease; and there is not a branch of human industry but that would suffer. All this evil would be created upon the annihilation of even the one item of cotton manufacture by labor-saving machinery.

Look where we may, into any department of labor, and unless mechanical means are called to its aid it presents but a sorry aspect, holds but a trivial position, and counts but a very limited number of employees. But no sooner is machinery employed than its growth is rapidly extended and its ranks of workers greatly augmented. Labor-saving machinery not only increases the production, but it also opens a wider field for employment.

SIR JAMES FERGUSON has been appointed Governor of Bombay.