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## AN ANCIENT WATER ELEVATOR.

IN Egypt and other countries where irrigation is practiced to a greater extent than elsewhere, the inventive mind has been alert for centuries, contriving devices of various kinds for elevating water. Some of these are so simple that they must have been obvious, while others show an amount of inventive genius worthy of our own century; in fact, as is well known, the fundamental principles of hydraulics were discovered ages since, and some of the early machines have never been materially changed or improved upon.

The Egyptian shadoof is a form of water elevator that has been in use from time immemorial, not only in Egypt, but almost all over the world. A device fully as simple as this, but not so old, is a gutter, which was made both single and double. It consisted of a trough pivoted at one end above the level of the water, the free end being alternately dipped in the water and raised, so as to cause it to discharge into a sluice leading away from the machine.

The pendulum water elevator shown in the engraving is a curious modification of the swinging gutter. A number of gutters arranged in two series are secured to opposite sides of a swinging frame, each series of gutters being arranged on a zig-zag line, and the two series of gutters are oppositely arranged with respect to each other, so that while one end of the lower gutter dips in the water, the lower gutter of the other series discharges into the next gutter above, and a flap valve retains the water while the device is swung in an opposite direction. In this manner the water is advanced step by step at each oscillation, until it is finally discharged into the sluice, which carries it away for use. Each of the gutters is provided with a valve, which retains the water as it moves forward and upward.

## ABOUT CIRCULAR SAWS.

EVERY saw-mill man knows that one of the most difficult and trying operations to which circular saws are put is that of log cutting, working up the rough timber into lumber. But not all sawyers are as familiar with the conditions which govern the operation of the circular saw as they should be.

These are the only tools used in cutting and dressing lumber that within themselves have certain inherent conditions to govern their speed, and a knowledge of this is an important part of a sawyer's ability and education.

A great deal of course, depends upon the material and manner in which the saw is made, whether it has been hammered "tight" or "slack" on the periphery. Assuming that on account of the centrifugal forces the steel is stretched from the eye of the saw towards its periphery, a great deal would depend upon the condition of the saw at the beginning. A saw that is hammered loose at its periphery can be operated at a much higher speed than one that is tight or stretched.

In explaining this, let us suppose that a saw is started up and gradually increased in speed. For a time, and up to a certain limit, according to the above conditions, the stiffness or rigidity of the blade will be increased. Above this limit it begins to diminish, and at a very high velocity the plate becomes limber and pliant as a

piece of paper, and if the speed is kept up, the periphery of the saw will assume an undulatory or wavy motion.

When in this condition it is as sensitive to pressure on its side as if it were made of a sheet of paper.

This, while it may form an interesting experiment, is also valuable in the consideration of the subject of speed for such tools. It shows beyond a doubt that there is a specific speed at which saws should be run to do work to the best advantage and within the limits of safety and economy.

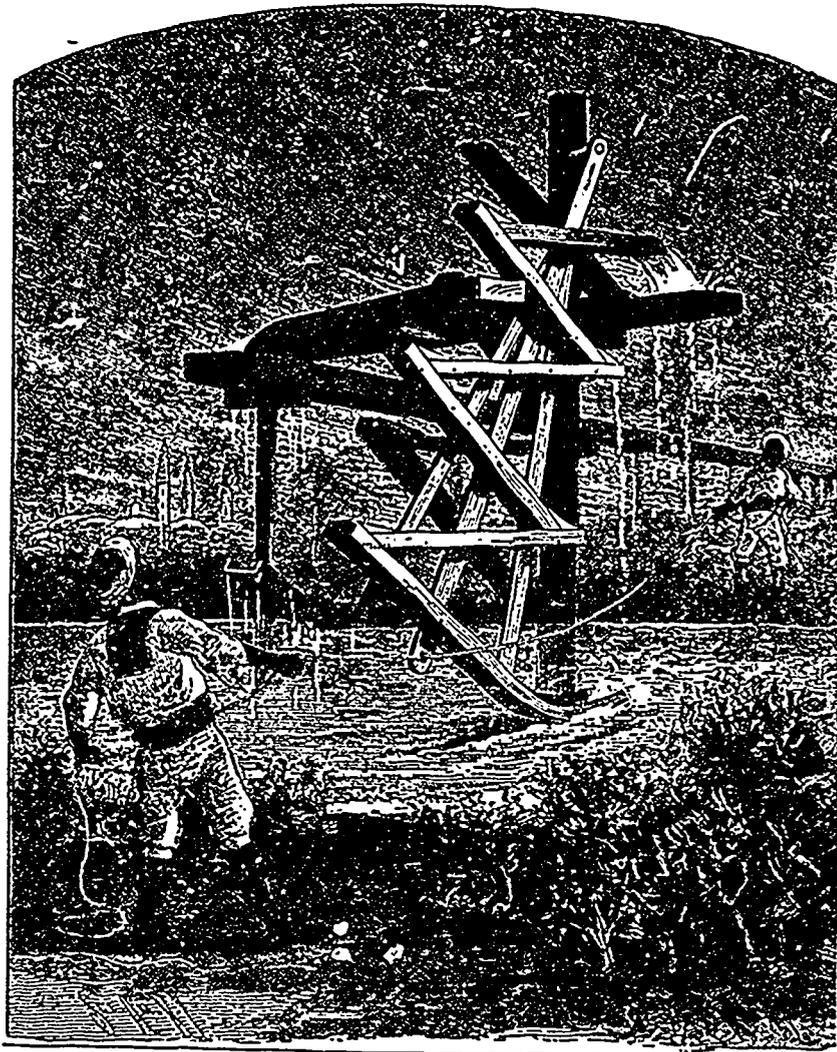
Sawmill men as a rule are not sufficiently familiar with such matters, and only consider the subject with relation to the amount of production. There is an important matter for careful study in the manipulation of saws, and a chance for the exercise of good judg-

were the only correct thing not long since, for costly furniture, especially for large dining tables, side-boards, pianos, etc. Then came in the era of imitations of tropical woods by tricks of staining and painting, but these soon deservedly lost caste. Quite recently a sensible revolution in favor of our native woods has taken place. Beginning with Black Walnut and going on to Cherry, Maple, Ash, White Oak, and even Chestnut, the native woods that are capable of receiving and retaining high polish are coming into favor for the finest furniture and inside finish. Even the most costly pianos that are given the best place in show windows and warerooms are now cased in native woods.

Among the more notable uses, to which Cypress wood could be profitably adapted, is that of boat building. The British Columbia cypress possesses

in a remarkable degree the qualities of lightness with extreme strength, pliability and elasticity, and the quality of keeping its form when bent to shape in planks. Its lightness surpasses that of the finest white spruce, and for tenacious strength it rivals Ontario hickory. In color the wood is a handsome straw color, very attractive in appearance. For boat building nothing better could be possibly obtained, as craft constructed of this timber would combine extreme lightness with extreme strength, the great desiderata with oarsmen. Great forests of this fine timber exist on the north coast of British Columbia about 200 miles up, and there are also large patches of it in the lower Fraser valley.

The silver maple is widely distributed in Eastern America; it is found in the north from the valley of the St. John's River in New Brunswick to southern Ontario, and extends southward to western Florida, and westward to eastern Dakota, Nebraska, Kansas and the Indian Territory. It is not found very near the Atlantic coast or in the high Appalachian Mountains. It is very common, however, west of the Mountains throughout the Mississippi valley, where it is one of the largest and most generally distributed of the river trees. The silver maple is often called the soft maple, probably to the brittleness of its slender branches. It has been cultivated in Europe since 1725, but does not flourish there so well as on the banks of its native streams, but better there than many of our American trees.



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ment in regulating their speed for the different classes of work to which they are put.

## CONCERNING VARIOUS WOODS.

ELM is likely to come to the front for many uses for which Oak has been considered the only wear. Nothing is so good for hubs, for pie plates, baskets and butter packages for retail trade. Its veneers properly finished, would be beautiful for inside work. Its rapid growth up to a certain size would make it a valuable means of utilizing much rough land.

Natural laws that demand something new will always be in force, and this is illustrated in the change in popular taste with reference to our native Hardwoods. Tropical woods—Mahogany, Rosewood and Ebony—

## WATER DIDN'T TROUBLE THEM.

TWO lumbermen, who had been engaged in various real estate deals together and for themselves individually, met in the office of another friend one day last week. After the salutations had been given one said:

"How is real estate?"

"All right. The prospects are as good as ever."

"I'm glad to hear it. Have you been out lately to look at those acres?" asked one of the man who owned the office.

"Yes, I was out the other day. They are still looking up, but we've had so much rain that they are covered with water."

"That's not the trouble with ours, is it Tom?" asked one of the partners.

"No," was the reply. "Ours is covered with mortgages."