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HISTORY OF THE SAW MILL.

How surprised I was on seeing in a museum, a long time ago, such things as scissors, seal rings, necklaces, and pairs compasses, that were taken from Egyptian tombs 3,000 years old!

But, after all, men were men 3,000 years ago, and women were women. They had the wants, the needs, the vanities of men and women, and they had brains not unlike our own to supply them.

The most boastful Yankee (not that Yankees are more boastful than other people) in some of the rooms of the British Museum is obliged to confess that the ancients originated a great many good notions which we moderns have only improved upon.

For instance, there are few tools more ancient than the saw. All the ancient nations appear to have had it; certainly the Hindoos, the Egyptians, the Greeks and the Romans. The saw may have existed even before there were any men on earth.

There is a creature called the saw fly, with two saws in its tail, which it actually uses for sawing the stems, leaves and fruits, wherein its eggs are to be deposited. There is also a saw-fish, the long snout of which is a saw. It is said also that the original inhabitants of the island of Madeira found a ready-made saw in the backbone of a fish.

The Greeks had a pretty story attributing the invention of the saw to the accidental finding of the jaw-bone of a snake by one Talus, who used to cut through a small piece of wood. Being a slave, and finding that this jaw-bone eased his labor, he made a saw of iron, and thus gave mankind a new and most valuable tool.

The ancient saws differed from ours in two ways. The teeth were so arranged that the cut was made by pulling instead of pushing, and the teeth, instead of being set one to the right and one to the left alternately, were set so that ten or a dozen in succession were slanted one way, and the same number the other way.

The ancients had several varieties of the implement. The Greeks, for example, had cross-cut saws for two men, also saws for cutting marble into slabs. And they had a kind of tubular saw for hollowing out a marble bathtub, similar in principle to the method now employed.

Among the pictures uncovered in the buried city of Herculaneum there is a representation of two genii sawing a piece of wood on a carpenter's bench very much like ours and using a saw with a wooden frame similar to those now employed. Still more strange, the frame saw tightened with a rope and stick, such as our street wood sawyers use, was probably as familiar to the Romans as it is to us.

A mill, however, by which wind, water

or steam is made to do the hardest part of the work, was not known to any ancient nation.

Sawing by hand, next to digging a stiff clay soil, is about the hardest work that men ordinarily have to do. It is therefore not surprising that our cease loving race began to experiment a good while ago with a view to applying the forces of nature to the performance of this toil.

A learned German investor who has investigated the subject very thoroughly states that the first trace of saw mill yet discovered is in the records of the German city of Augsburg, for the year 1337.

The reference is slight, and does not fix the fact with certainty. But there are two saw mills near that city which are known to have existed as far back as 1317, and they are still used.

Before that valuable invention, all boards and planks were split with wedges, and then hewn to the requisite smoothness with the axe.

The splitting of boards is still practiced in remote settlements, as I myself have seen, and it is recorded of Peter the Great, of Russia, that he had much difficulty in inducing the timber cutters of his empire to discontinue the method. At length he issued an edict forbidding the exportation of split planks. Even in Norway, covered with forests as it was, there was not one saw mill before 1530.

Nowhere in Europe, it appears, was the introduction of the saw mill so long resisted as in England. In 1866 a Hollander erected one near London; but it brought upon the poor man such an outcry and opposition that he was obliged to abandon it.

The sawing of timber by hand furnished occupation, at that time, and long after, to large numbers of strong men.

In every town there was saw pits, as they were called, for the convenience of the sawyers, one of whom stood at the bottom of the pit and the other on the log.

We can easily imagine that when every beam, plank and board, thick or thin, had to be sawed by hand, the sawyers must have been a formidable body, both from their numbers and their strength.

After the failure of the Dutchman in 1663, there was no serious attempt to start another saw mill in England for more than a hundred years.

In 1767 an English timber dealer of large capital built a saw mill to be moved by the wind. It was thought to be a great and difficult enterprise, and it attracted much public attention. Some years before an author had explained the advantages and economy of saw mills; then the society of arts gave the scheme of building one their approval, and, finally, the mill was actually built by an engineer who had

studied the saw mills of Holland and Norway.

No sooner was the mill complete than the sawyers assembled in great force and tore it to pieces. The Government compensated the owner for his loss, as was just. Some of the roters also were convicted and imprisoned.

A new mill was then built, which was allowed to work without molestation, and proved so profitable that others were soon introduced.

In no part of the world, probably, has the saw been more minutely and curiously developed than in Great Britain, where they have saws so fine as to cut diamonds, and circular saws nine feet in diameter and a quarter of an inch thick.

They have also veneer saws so accurately adjusted as to cut 18 slices of veneer from a rosewood plank an inch thick.

In London they will put a log of mahogany upon the mill and cut it into slices so thin that the sawdust weighs more than the veneer.

Yankees have beaten this performance. They take a piece of mahogany or rosewood, soften it by steam, and cut it into veneers with a knife, without making a grain of sawdust.

Daniel Webster tells us that his father had a saw mill after his removal to New Hampshire, at the source of the Merrimac river.

Daniel, who was by no means fond of labor at any part of his life, liked nothing better in his boyhood than to attend this saw mill, because when he had put his log in position, and started the saw, he had 16 good minutes for rest or reading before the business required further attention.—*Journal of Progress.*

SPRUCE FOR MAKING PULP.

A very large quantity of logs, both spruce and poplar, are now coming into use for grinding up as pulp for newspaper work, cardboards and the like. When the first paper was made from wood pulp it was thought that poplar was the best and perhaps the only wood which could be used, but during the last few years it has been found that spruce wood made better and stronger pulp than poplar. Poplar will always be a much cheaper wood than spruce, because it grows very rapidly and has but few economical uses, outside of the grinding up for pulp and the making of excelsior. Poplar never grows very large but grows quite rapidly. A growth of poplar 16 to 18 inches through at the butt is considered very good growth, although some few specimens may be found of larger growth. After reaching that size in the average New England soils, it seems to lose vitality and finally die. Those who cut poplar for pulp wood cut down some very small trees, even down to few inches in diameter. It is commonly cut into four-foot lengths and sold by the cord, New Hampshire lots fetching from \$4 to \$5 per cord, probably averaging about \$4

per cord. Spruce logs cut up in four-foot lengths are selling at the same time at from \$6 to \$6.50 per cord, delivered on the cars in various parts of New Hampshire. It is claimed by some that spruce wood does not make so white pulp as poplar, and that the chemicals for bleaching are somewhat more expensive in the case of the spruce, but it is much sought for on account of the strength of its fibre and the better character of the wood. Lumbermen are quite ready to get out a certain percentage of spruce for the wood pulp grinders, because they will take some sawmy trees, where reasonably clear and of good growth. Such sawmy trees are not profitable for sawing into any kind of lumber. There is a great difference in the color of spruce, that which is very white being much more desirable for the wood pulp people. Trees of the same variety seem to differ in whiteness or color, probably owing to the soil upon which they grow. Hence some lots are really worth a dollar a cord more to manufacture into wood pulp than other lots, while both might be worth equal prices for manufacturing into ordinary lumber. The pulp business is destined to grow more rapidly in the future even than in the past, for the users of pulp and paper and cardboard are becoming multiplied every year. The inventive genius of the Yankee discovers many new applications for a product like this almost every day, and the time is rapidly drawing near when a large quantity of spruce and poplar will be required to meet the demands of wood pulp grinders.—*Manufacturers' Gazette.*

MAKING ESTIMATES.

Powis Bale, in "Saw-mills," gives for cross cutting soft and medium woods a speed of 10 000 feet per minute at the points of the teeth and says he has yet to be convinced that any speed in addition to this serves any useful purpose, or is in any way necessary or desirable. In sawing very hard woods the speed of both the saw and the feed of the wood should be reduced, the former about one quarter and the latter one half, or even less. He further says suppose a circular saw, say 30 in. diameter and 12 gauge, be put on a spindle and the speed gradually increased till it reaches at the periphery say 12,000 ft or 13,000 ft per minute, it usually will become wavy and pliant, and run untrue, it therefore follows that not only is the extra speed entirely unnecessary, but it is positively detrimental, as more power is consumed, and more heat engendered in the bearings, spindle, and saw plate, extra lubrication is required, and the belts deteriorate more rapidly.

The value of planed and finished lumber, sash, doors and blinds, sent from the United States into Manitoba, during the year ending June 30th, 1885, was but \$72,000 and the value of undressed lumber was but \$22,000.