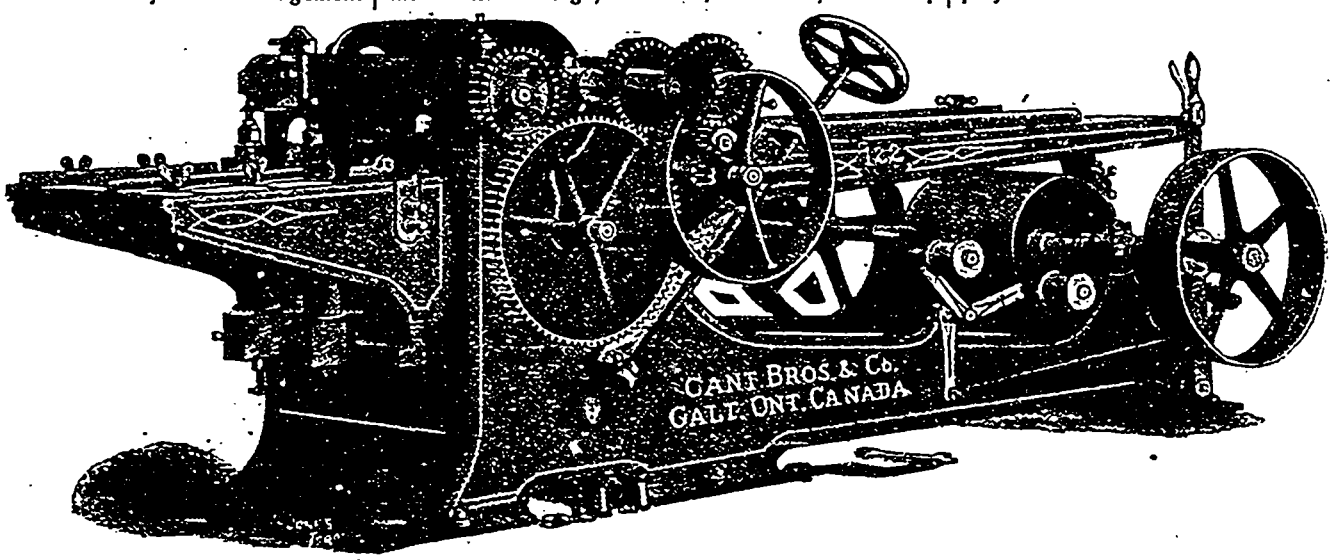
THE "DEFIANCE" PLANER, MATCHER AND MOULDER.

THE Cant Bros. Co., (Ltd.) of Galt, are the builders of the "Defiance" Planer, Matcher and Moulder shown herewith. This machine is of new and improved design, and can be used for rapid matching, surfacing or fine panel work on either hard or soft wood. The feed rolls are 4 inches in diameter, and all are driven by heavy gearing, thus ensuring a sure and reliable feed. The cylinder and side head spindles are made of the best machinery steel. "Shimer" matcher heads are supplied with this machine. It will plane 24 inches wide, and from 1-16 to 7 inches thick, and will match 12 inches wide. There is also a moulding attachment with a 7 inch brass slotted head and adjustable heads.

This company have also just brought out a new double rip and cut-off saw, which is specially designed for cutting to accurate uniform lengths all kinds of material used in furniture factories, etc. It has two tables, each four feet in length, which can be rapidly adjusted to suit any length of material from eight inches up to 6 ft. 6 in. long, after which the operator can cut off both ends of the material at one operation absolutely square. The tables, which are of iron, remain level but the arbors carrying the saws can be raised or lowered by means of a hand wheel. The machine has a sliding cross-cut guage which can be readily adjusted for different lengths, and which can be instantly removed or replaced. One table has a ripping guage which can be bevelled to varying angles. No sliding carriages are necessary as the arrangement of the guages is such that one operator can work with a ripping saw and the other can cut both ends off the material at once, any length from 22 inches to 5 feet.



"DEFIANCE" PLANER, MATCHER AND MOULDER.

FELLING FIR TREES.

AN Eastern man, who has within a few years started a saw mill in Oregon, gives the following as his way of felling fir trees: "We are on the mountains, and use cattle for logging The timber is all around us, and is very fine. Some of our tall timber will measure 6 to 12 feet in diameter, and run up to 300 feet. The way we get them down, perhaps, will be interesting to some of your readers. When a tree is too large to saw down, we bore an inch auger hole straight into the body of the tree about 2 feet from the ground 18 to 24 inches deep, then we bore another hole about 20 inches in a line above, and let the auger range down so as to strike the inner end of the first hole bored. The points where they join must be near to the centre of the trees. Then we put in some maple coals that are aglow with heat, and they fall down to the junction of the two holes. Then we blow them into a blaze with a hand-bellows, and our work is done. They will come down themselves, and once down the fire goes out. The upper hole forms a stove pipe and the lower hole forms the draft. Trees up to 6 fe in diameter we saw down. We cut a small notch, say from 8 to 10 inches deep, so it will be square; then we take a 7 foot cross-cut saw, and go to the opposite side and saw straight into the notch; we follow up with iron wedges to keep the tree from going back until we saw clear through, lacking three or four inches. Then it comes down and does not spoil your timber.

A SUNKEN FOREST.

THERE is a sunken forest of white cedar in New Jersey which has been continuously "mined" for its valuable timber for over eighty years. The curious industry of digging for the sunken logs has been carried on by the people of Dennisville, Cape May county, a village which was brought into existence solely through the wealth of the buried timber in its vicinity. Over the sunken forest, trees of large size are growing, and in many instances these are cut away in order to get at the more valuable timber, which lies only 3 or 4 feet below the surface. The exact age in which they lived is a matter of curious conjecture. It is probable that they were buried many centuries ago by the action of an earthquake.

THE CARRYING TRADE.

IT should be distinctly borne in mind in considering the carrying question that the lake rates effect charges generally, whether the freight is carried by vessel or rail. We have referred to the necessity for open free waterways of not less than 20 feet draught to keep down rates, and now proceed to consider the projected plans.

Beginning at the south-east end of lake Michigan it is proposed to cut a ship canal to Toledo from near Michigan City, a distance of 160 miles, at an estimated cost of $138,405,432. There would be 65 locks and 19 railway crossings. This immense expenditure would chiefly accommodate Chicago, as it is not likely that any of the Milwaukee ships would pass through it, as they would have slack water by way of the straits of Mackinac, and the increased distance would only be about 250 miles, and the time required to pass the canal would greatly exceed the time necessary to pass through the straits. Chicago, as well as Milwaukee, had better pass by the straits. This canal will never be constructed. It was contemplated, if the canal were completed, to run to Buffalo through lake Erie, and then to pass as now to New York or into lake Ontario. To enlarge the Erie canal to 20 feet of water, the same capacity as the projected Peninsula Canal, would cost not less than $250,000,000. A ship railroad has also been projected across the peninsula at a cost of about $40,000,000. This too would be chiefly for the Chicago trade—certainly none of the vessels in the northern part of lake Michigan bound east would go by it. Then to bring the freight into lake Ontario a canal on the United States side of the Niagara river would cost $35,000,000, or a ship railway about $11,000,000. If canals were cut the cost would be about $173,000,000. If ship railways were built the cost would be over $50,000,000, $40,000,000 of which would be of no service to any of the lake ports except Chicago. Proceeding northward the next route is that used at the present time—lake Michigan through the straits of Mackinac down lake Huron, the river and lake St. Clair, through lake Erie, and as before onward to the east. In this case the chief expense would be enlarging the Welland canal, at a cost of not less than $25,000,000, besides the constant labor and expense of keeping the channel open on the St. Clair flats. The chief objections to this route are the long distances and intricate navigation. To lessen the distance and avoid the intricate navigation there was formerly projected the Georgian Bay canal. It was to leave lake Ontario, pass up the Humber, cross the ridges to the Holland marsh, through lake Simcoe to Barrie, then to the Nottawasaga river and down it to the Georgian Bay, at a cost of about $25,000,000. It is now proposed to construct a ship railway directly from Toronto to the Georgian Bay at a cost of about $15,500,000. The road at the above cost would have a carrying capacity of not less than 8,000,000 tons during the season. Vessels of a gross weight, with their cargoes of 5,000 tons, would be lifted from the water and carried across from the mouth of the Nottawasaga river to the mouth of the Humber, 66 miles in ten hours.

The last work contemplated and still advocated is the Ottawa valley canal. Leaving the St. Lawrence at Lachine this canal would proceed up the Ottawa river to the Mattawa, up that river to Trout lake, across the water shed into lake Nippissing, and down the French river to Georgian Bay. This route was surveyed by Walter Shanly and T. C. Clarke. Both of these eminent engineers contemplated raising lake Nippissing to the level of Trout lake, 23 feet. This could not now be done on account of the towns, villages and settlements on its shores, and a new survey would be required to enable fairly approximate estimates to be made out. To make the necessary cut between Trout lake and lake Nippissing would cost for the five miles of granite rock cutting about $20,000,000. An estimate on the imperfect data available places the cost of this work at $83,000,000. It would seem then on a careful examination of the whole subject that the construction of the Huron Ontario Ship Railway would better meet all the required conditions of the carrying trade than any of the other projected schemes above referred to. It would cost much less; greatly shorten the distance; reduce by days the period of transit; carry much cheaper, and afford a connecting link between the trade of all the great lakes. We need hardly say that if this work were constructed it would give an immense impetus to the commercial and general importance of Ontario's metropolis.—*Canadian Miller.*

TO REMEDY SWAYING AND OSCILLATION.

FREQUENTLY the oscillations of the main belt in a mill come in unison with the beat of the engine, and a pretty perceptible slapping about of the belt is noticeable, says the *Artisan*. The beat of an engine will often come in sympathy with the rythmic sway of of the building, and so increase it as to be very perceptible. If this were continually going on in exact time it would become so great in time as to be dangerous; but one or the other gets ahead and mixes the movement, so that it gradually ceases until they are again in unison. If the speed of the engine is changed in either case the swaying will be kept mixed all the time instead of occasionally. On long lines of shafting this will appear also, the pull on the belt at the commencement of the stroke being in unison with the spring of the shaft, thus causing a marked oscillation. The same remedy is applied here, to mix the two movements purposely, and the trouble is partly removed, if *not entirely*.

PINE-TREE SOAP.

AN American inventor has brought out a process for making soap from the resinous matter in the needles of the pine tree. The resin is extracted by means of alkali, and the woody fibre is removed from the product, which, on condition of fat, yields an ordinary soap containing resinous and fatty acids.

—Mr. R. Crawford, of Otto Centre, has commenced the manufacture of shingles.