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THE CANADA LUMBERMAN

VOLUME XV. NUMBER 7

TORONTO, ONT., JULY, 1894

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BY THE WAY.

IT was quite fitting, that the Royal Society, which met in session in Ottawa, a few weeks ago, should invite Prof. B. F. Fernow, the talented chief of the Division of Forestry in the United States department of Agriculture, to deliver an address before that body. Nowhere in his own country, nor in Canada, could he have found more appropriate soil for the delivering of his paper, which was entitled "The Battle of the Forest." A pleasing reference was made by Prof. Fernow in opening his address to the work of Mr. Wm. Little, of Montreal, and Prof. Wm. Saunders, of Ottawa, who, he said, had furnished the momentum to the American Forestry Association. These well-known Canadian students of forestry protection had by their enthusiasm stirred up their neighbors to practical activity. Prof. Fernow spoke in very plain terms of the rapidity with which the forests of North America were being cleared out and even now, he said, over the whole stretch of territory from Ottawa to Washington, not a forest was to be seen. This ought to be a matter of grave concern, when we consider how singularly placed North America had been with forests. Nowhere else in the world were nearly so many species of woods to be found. In all 425 species of woods were known to grow on the continent and yet only 40 or 50 of these have become known to the lumberman. Prof. Fernow referred to the attempt that was being made to strengthen the forests in France and predicted Canada and the United States would yet be put to the same emergencies, if matters were not remedied within 25 years. France had expended forty billion of dollars in this direction and expected to spend four times this amount, for the same foolishness that was now going on on this continent. In Canada, he said, there was three times as much timber as in the Republic.

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One of the great drawbacks in formulating into practical shape suggestions in the line of forest preservation is the little interest that the people as a whole take in the subject. It is not, as we use the term politically, a live question. Those who study the matter, either from a national or scientific standpoint, realize what it must mean to any country that neglects the care of its forests for any great length of time. A glance at the position of France, Germany and India to-day is evidence enough in this direction; the people do not trouble themselves about the matter. Prof. Macoun, of the Canadian Geological Survey, has well said that the government had to be backed up by the people before it would do anything in the way of forest preservation from Winnipeg to Ottawa, a distance of 1400 miles. He gave it as his opinion that throughout this stretch of forest much shameful destruction had taken place, whilst bush fires had destroyed even the British Columbia forest to a great extent. In some cases these forests had been burnt even up to the mountain sides.

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The anxiety to lumbermen by forest fires has been less of late years than formerly, and yet no season goes by without serious loss being suffered from this one cause. News has reached us within the past month that Michigan has experienced some concern on this account and it is also stated that forest fires are reaching along the Northern Pacific in the West Superior district. We hear of fires in other points, but so far as information is in our hands nothing of the kind has occurred in Canada. It is well, however, even on very small suggestion, that attention should be drawn frequently to the necessity of every care being exercised to prevent forest fires and that our governments should be most vigilant in seeing that very complete protection is afforded the forests in their respective jurisdictions. A month ago Mr. W. C. Edwards, M. P., one of the largest lumbermen in the Dominion, stated in the House of Commons that he believed, after a wide experience, that 20 times as much timber had burned as was cut. Prof. Fernow, to whose address we make reference elsewhere, emphasizes in the strongest language the same matter. In truth the degree of carelessness exhibited towards our forest assets is so shameful as to be hardly pardonable. One who has recently been over the Rainy River section tells us that the destruction there of valuable timber by fire has been on a very large scale. Explorers will roam about and build fires for cooking their meals. They may not put them out when leaving and the result is forest fires destroying to our province thousands of dollars of valuable property.

A CANADIAN BANKER ON LUMBER.

MR. B. E. Walker, general manager of the Canadian Bank of Commerce, in his address at the annual meeting of this bank a week ago said of lumber: For the year ending June 30th, 1893, the value of our exports of woods in all conditions, manufactured and unmanufactured, was about $29,000,000, against $25,000,000 five years ago.

What the year just closing will show we cannot say, but one of the features which showed conclusively in what strong hands the business is generally held, was the promptitude with which the United States firms, who had contracted to take our lumber, carried out their obligations, notwithstanding the financial storm. Had it not been for this our lumbermen would hardly have known what course to pursue during the past winter. As it was, they doubtless intended, as a whole, to take out about the usual quantity, but the early mild weather broke up the winter roads, and as a consequence, some hundreds of millions of feet are left in the woods. In the Ottawa district most of the logs were got out, and despite some trouble with low water will in the main reach the mills promptly. The logs held back are mainly in the Georgian Bay and North Shore districts.

In the Ottawa district the cut of logs and the logs carried over will make the supply about the same as last year, a little over six million pieces, but the quantity of timber made is trifling.

The nature of the market will depend much on the United States tariff. The entire cut of deals has been contracted for and is being actively shipped to Great Britain, aided by low freights. The business with Great Britain in thin lumber is steadily growing, and that part of the trade is very satisfactory. On the other hand, part of the lumber paid for by United States buyers is not yet shipped, and although many good contracts for this season's sawing have been made, the actual shipments are smaller than at any time recently. While this is due partly to the very bad condition of business in the United States, the settlement of the tariff will doubtless make a market for our lumber, although perhaps with a slight concession in price from last year. Stocks in the United States are said not to be large and our supply will no doubt be required.

LET NOTHING BE WASTED.

THE age in which we live is characterized by its utilization of what has been known as waste material. Debris and refuse are being reclaimed from their supposed worthlessness, while wealth and comfort, says the Age of Steel, are now deduced from what has hitherto been without commercial value or public service. With epoch-making discoveries we are tolerably familiar, their magnitude giving them dramatic interest, and their coincidence with our own time table of life adding not a little to our conceit and boasting. While our progress, however, is a fact, and our bigheadedness a misfortune, the smaller economies of the age are of the unobserved, yet the veritable potentials of our prosperity. Everything has specific value, be it great or small, the difference being in gradation but not in essentials. The pebble is but the microcosm of the rock, and the molehill of the mountain, the difference being one of magnitude but not of substance. In the matter of our industrial waste or refuse this law has generally been neglected till science exposed the folly of waste and the stress of industrial competition compelled its utilization. Necessity has always been the mother of economies, and in this instance when the margins of profits were attenuating into consumptive decimals, applied science came to the rescue and gave commercial value to what had hitherto been a nuisance. Examples are numerous, and by way of emphasis we collate a few of the most conspicuous.

For many years the slag from iron furnaces was but useless refuse. It was dumped on waste land, in convenient ravines, and in unsightly masses wherever possible. It is now manufactured into asbestos, cement, glassware, pottery, fire-brick, fertilizers, and into the paint which now embellishes the Pullman palace car. Sawdust, so long the nuisance of saw mills, once dumped into swamps and pits, can now be made into sheeting for buildings, and when mixed with paper pulp supplies an excellent article. It is also serviceable in making aniline dyes, wood alcohol and certain acids. Cotton seed, once left to rot at the cotton gin and used for fuel, now furnishes the oil, lint, food for cattle and fertilizers; the product of the oil industry amounting to $16,000,000 per annum, with the sale of lint and hulls realizing over $1,500,000 each in the same period. The refuse of silk factories or warehouses, once a nauseating and uncleanly compound of leaves, imperfect cocoons and dead worms is now utilized, being sorted by machinery, and the short threads incorporated in valuable commercial fabrics. Coal tar was once but an olfactory nuisance, and sometimes got rid of by burning it under gas retorts, now aniline dyes are obtained from the benzole it contains. Other by-products of coal, such as sulphate of ammonia, etc., are now sources of industry and wealth. The refuse of woolen mills, once a sanitary sinner in the pollution of creeks and rivers has come in the range of chemical science, while in many large chemical works the saving of gases, since a menace to public health, have by condensation been transferred into valuable commercial articles.

Other examples might be quoted, but the catalogue as so far given is ample evidence of the fact that these modern economies of waste play no insignificant part in the general make-up of our industrial products and prosperity.

THEORY AND NATURE.

THERE are, says Power, a good many points where theory and nature have a falling out. The steam utilizes but a small proportion of the thermal value of the fuel it consumes, and its improvement appears to be open only in the direction of higher initial and lower rejection temperatures. The maximum efficiencies are obtained with fiercely hot furnaces, low uptake temperature, high pressures, and high grades of vacuum, giving the greatest available range in both boiler and engine. In the animal organism combustion is carried on at a moderate rate and low temperature, and there is apparently little available difference of temperature in the body, yet as a machine the mule is more efficient than the engine, and will do more work per pound of fuel consumed. The man who finds out the principle upon which this is done, and teaches us to apply it, will be a greater scientist than Faraday, a greater inventor than Watt.

TALKS WITH WOOD-WORKERS.

SOME fine results are said to be obtained in the ornamental working of wood by the use of an ingraining machine brought forward by a Pennsylvania inventor. The mechanism is described as a hollow cylinder, ten and one-half feet in circumference, to which the grain of a piece of oak of the width of the cylinder has been transferred, this grain being covered with a soft cement which sinks into the depressions, and in these about 200,000 bits of metal, like type, are set, above this being placed a small, smooth steel cylinder, adjustible to different heights; between the two cylinders both revolving, a piece of birch, poplar, bass, spruce or maple may be passed, which comes out with the grain of the oak transferred to it, after which it has passed between two other steel cylinders, one revolving in a trough containing a liquid consisting of oil, coloring matter, and another ingredient - not yet disclosed - used as a "filter." After being treated in this manner the wood is subjected to processes of polishing and varnishing, and when finished presents the appearance of choice quartered oak.

* * * *

Several references have been made in these monthly talks to various features of moulding machines. A writer in the Tradesman furnishes the following contribution on the subject, which will be appreciated, I think, by wood-workers: Manufacturers of moulding machines often make a great mistake in recommending too high speed for their machines and by this means defeat their own honest intentions. While it is safe to assume that the average modern moulder is sufficiently strong so far as weight and strength are concerned to stand any reasonable amount of speed under certain conditions, still the conditions under which the moulding machine is subjected are different from the ordinary planing machine. With the ordinary planer the knives are all of the same width and project an equal distance beyond the point of the cylinder, so that there is no good reason why they may not be kept at all times in good running balance, hence the cylinders of the planer may be run to 4,000 revolutions per minute or even more, with but little vibration. Such is not the case with the moulding machine. There is no point to speak of upon the cutting edge of a moulding knife, where the distance from the point of the cutter head to the edge of the knife is the same, consequently if two knives are used, which is generally the case with nearly all standard mouldings, the utmost care should be manifested in not only the perfect corresponding shape upon the cutting edge, but also in the exact length of the bevel and thickness; even then, when both may show exactly the same weight upon the balancing scale, a very slight imperfection in the bevel when run at high speed will cause a vibration that will plainly manifest itself upon the surface of the moulding. For this reason it is not good practice to speed a moulding machine as fast in proportion as a planer, no matter how heavy and strong it may be. In this respect the manufacturers do not seem to realize the difficulties which even the best and most experienced moulding machine operators have to contend with, especially where sectional cutters are used, which is becoming a common practice in nearly all mills, and where a number of different shapes are used to form the moulding. The difficulty in combining them so as to form a perfect running balance is greater than where two perfect shapes are used.

* * * *

The demand for maple flooring has become something enormous (that is, it was when there was a demand for anything, and probably will be again). A few years ago since planing mills turned it out to order only. Now immense factories, so far at least as our neighbors to the south are concerned, turn out little else. Special machines are used to produce it, among them those that bore it for the nails and those that tongue and groove the ends. In the words of a lumber paper: "Maple flooring has come to be regarded as the thing indispensible in most public buildings, and is largely used in private dwellings. Such an extent has the demand reached that the large dealers are obliged to make contracts for millions of feet far in advance of requirment, the same as is done with pine or any other wood of extensive sale and consumption in the building trades and manufacturing."

JAS.

SHAFTING.*

I NEED offer no apology for bringing a subject of this kind before an Association of Stationary Engineers, for wherever you find a stationary engine you will also find more or less shafting; and if any other excuse were required it will be found in the fact that questions on shafting are quite frequently found in the Question Box at our meetings.

It may be, however, that there are some present who think that as engineers they are not expected to have anything to do with shafting. They may argue something like this. "Our employers expect too much from us; they look for us to wheel in coal, fire two or three boilers, wheel out the ashes, attend our engines and a score of other jobs, as well as find tools for the whole establishment; and it would be just as well not to know anything about shafting, or we would be expected to attend to that too." In answer to such I would say, that it is not often that a man loses his situation by being too well posted, and in this world of changes one never knows when he may be called on to make use of the knowledge he possesses.

It is of the greatest importance that all shafting should be properly proportioned and correctly put up, as it not uncommonly happens that great loss of power and much annoyance results from carelessness or ignorance, and a plant that is otherwise of the best, rendered unsatisfactory.

The first question the engineer has to decide is what size or strength of shaft he requires to do a certain amount of work, and in doing so he must bear in mind that a small increase in diameter will give a large increase in strength. It is not an uncommon thing to hear a man say that such a size ought to do the work, but to be on the safe side will put in a size larger, not knowing that he is adding a much larger factor of safety than he had any idea of. The strength of a shaft varies as the cube of its diameter varies. Let us assume that 1" shaft will safely drive at a given speed four horse-power; a 2" shaft will drive as much more as the cube of its diameter in excess of the cube 1. The cube of 1" is $1 \times 1 \times 1 = 1$. The cube 2" is $2 \times 2 \times 2 = 8$. The cube of 3 is $3 \times 3 \times 3 = 27$ and the cube of 4 is $4 \times 4 \times 4 = 64$.

Now we assume that the 1" shaft drives 4 H. P., the 2" shaft drives as much more as the cube of its diameter is in excess of the cube 1; the cube of 2 is 8, therefore its power compared with the 1" shaft driving 4 H. P., is $2 \times 2 \times 2 = 8 \times 4 = 32$ H. P., and comparing the 3" shaft with the 1", the cube of 3" is 27 and the power of the 1" is 4 H.P.—$4 \times 27 = 108$ H.P. It must be borne in mind that these figures are comparative and are given to show the rapid increase of strength in a small increase of size, for if we were to use a 3" shaft instead of a 2" we would have 108 H. P. instead of 32 H. P.

Another fact we must not lose sight of is, that the power a shaft will drive is in direct proportion to its speed. If a shaft drives 4 H. P. at 100 revolutions per minute, at 200 revolutions it will drive 8, and at 300 it will drive 12 H. P. The higher the speed of the shaft the smaller the diameter of the shaft to drive a given H. P. Then there is another important consideration in selecting a proper size for a shaft—as they are inclined to bend and also to twist we must take into account the weight of the pulleys and the distance they are from the bearings and whether the strain of the belts is down or the reverse. The bending of a shaft as well as the torsion contributes towards its liability to break, but the bending is the most likely to cause it. The bending also causes a considerable loss in power as well as the liability of belts running to one side of the pulleys. It follows therefore a shaft loaded with pulleys must have a greater number of bearings and the pulleys placed as near the bearings as possible.

To put up a larger line of shafting than is necessary, is objectionable for two reasons, 1st it costs more to put it up, and 2nd it costs more to run it after it is up. The extra weight of the long shaft as well as the larger circumference which has to move through a greater distance will add materially to the friction. There is one other fact I would notice before leaving this part of the subject, and that is, that the second and third lines may be smaller than the main driver. The reason of this obvious, for the first line has not only its own machinery to drive but also the second and third lines with the machinery driven from them.

To make this clear, I have prepared a diagram which I believe will make it plain to everyone. We will call it a mill or factory, and we assume that the machinery in it requires 100 H. P. to drive. The machinery on the first floor requires 45 H. P., that on the second, 30 H. P., and on the third, 25 H. P. Now the shaft A and B are practically one shaft, being coupled together by the gear; so are C and D, and E and F, but while practically one shaft, A has to transmit 100 H. P., while B only transmits 45 H. P., therefore B may be smaller than A. B having absorbed 45 H. P., it follows that C has only to transmit 55 H. P., therefore C may be smaller than A. The machinery on the first and second floors has now absorbed 75 H. P., leaving only 25 H. P. for the third floor, therefore the shaft E and F may be smaller than C.

The same argument will hold good with the shafts B, D, and F. If the machinery which they drive was equally distributed from end to end, then the ends furthest from the motive power might be smaller because they would have less power to transmit, but in practice the disadvantage would be greater than any gain that would be derived from so doing.

I will now give one or two rules to determine the size required to drive a given H. P.

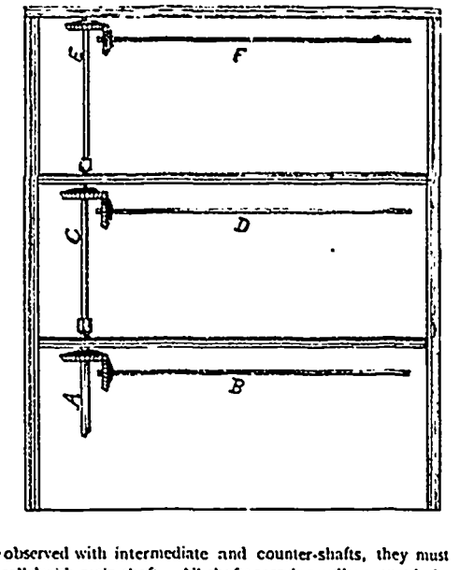
To find the power a shaft will transmit, cube the diameter and multiply by the number of revolutions per minute, and by two if it is the first line from the engine, and by three if it is the second and divide by 100

The crank shaft being the first or prime mover, what power will a 2" shaft transmit as a second mover running at 300 revolutions per minute? $2 \times 2 \times 2 = 8 \times 300 = 2400 \times 2 = 4.800 \div 100$ 48 H. P. If steel add 30 per cent. If this shaft was to be used as a second line then it would be: $2 \times 2 \times 2 = 8 \times 300 = 2400 \times 3 = 7200 \div 100 = 72$ H. P. Where the power required is known and number of revolutions is given and the size of shaft is wanted, proceed as follows: What diameter of shaft is required as a prime mover to transmit 75 H. P. at 175 revolutions? $75 \times 100 = 7.500 \div 175 = 42\ 86 \div 2 = 21.43$. The cube root of 21.43 is 2.75, (2.7776) the diameter required.

The same problem with the shaft used as a second line, would be: $75 \times 100 = 7\ 500 \div 175 = 42\ 86 \div 3 = 14\ 28$. The cube root of *14 28 is 2.42 (2.4261) the diameter required.*

Having got the size we want, the next thing is to get it put up and it is right here where many failures and mistakes are made. There is perhaps no part of the plan which should be more carefully looked after than the proper lining of the shafting because it is a never-ending source of annoyance if out of line. The rules governing the putting up of shafting are few and very simple

1st. Be sure that your shaft is exactly at right angles with the engine pulley; 2nd, see that it is dead level; and 3rd, be sure that it is as straight as a line can make it. The same rules should



be observed with intermediate and counter-shafts, they must be parallel with main shaft. All shafts carrying pulleys must be level; a shaft driven with gear from a horizontal shaft must be at right angles with it but may be run at any angle from the horizontal, and the same if driven from a perpendicular—in this case the driven shaft must be level, but may be run in any direction. If the building is likely to settle the adjustable hanger should be used but where there is no danger of settling, stationary bearings should be used, especially for dynamos and all heavy machinery which ought to be a rigid as possible.

I do not think it advisable to give any rule for the distance at which bearings should be set, as circumstances vary in almost every case, but would state that for a a 3" shaft the distance should never be more than 15 feet, and for a 2" shaft not more than 11 or 12 feet. These distances in both cases are for shafts without pulleys.

We have stated that second and third lines of shafting may be smaller than the first, but this applies only where they run at the same or at higher speed, and does not apply where the speed is reduced for the purpose of driving heavy and slow speed machinery or lifting heavy weights. Let us try to make it plain. Let us assume we have a weight of 33,000 lbs. to lift and a one H. P. engine to lift it with; we can raise the weight one foot high in one minute, but if our weight is ten times as heavy, or 330,000 lbs. it is evident that it to lift this with the same engine it can only be done by a sacrifice of time, or in other words a reduction of speed (bear in min. that to lift a weight greater than the motive power can only be done at a sacrifice of time). Now what are we going to do? Our weight is 330,000 lbs., and our engine is only 1 to the power required to lift it. It is evident we must construct a system of reducing gear. We will assume that we require three reductions—the first reduction will be from the engine to the first shaft, and so on until we reach the third or last shaft which supports the weight. Now the nearer we get to the weight the stronger must the shafting be, and the same with the gear, because as each shaft is reduced in speed it is capable of transmitting less power, and therefore must be increased in size.

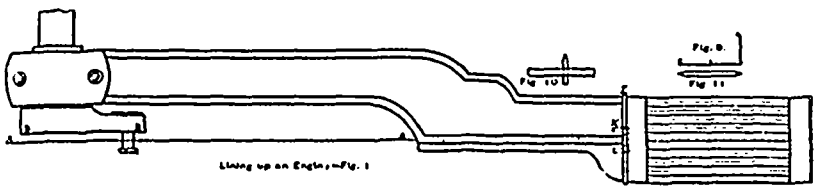
Precisely the same principle is clearly shown in the use of the lever—a man can lift a heavy weight with a lever, but it is always at a sacrifice of time or speed. It is also well understood that the end of the lever on which the man rests may be very much smaller than the end which rests on the fulcrum, because on it rests the whole weight.

* Paper read before Toronto No. 1, C. A. S. E. by Geo. Gilchrist.

LINING UP AN ENGINE.

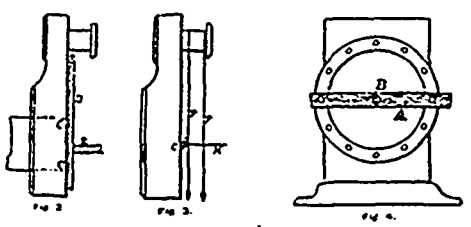
By W. E. Crane.

ENGINEERS are often bothered by the pounding of their engines, and as pounding can be heard by everyone in the neighborhood, it is very annoying. There are many things that cause pounding, so that in some engines the cure of it is quite a complex subject. Being out of line is the general cause. Either the shaft is not in line with the cylinder, or the crank pin is not put in straight, or something else of the kind is the matter. A high speed engine perfectly in line will be very



apt to pound with a light load, unless there is considerable depression, owing to the heaviest thrust coming on the end instead of the commencement of the stroke. The thrust is caused by the momentum of the moving parts. To ascertain if an engine is in line, the back cylinder head should be taken off, the piston, piston rod, and cross-head should be taken out of the way, and a line A A, Fig. 1, should be put through the cylinder and extended beyond the crank. To hold this line in the cylinder we take a strip of board, A, Fig. 4, and bore a couple of holes to fit over two of the studs at the end of the cylinder, and in the center of the board we bore a larger hole, say 1½ or 1¼ inches in diameter, and attach the cord to a little stick B, that stretches across the hole. The strain on the cord will hold this in position, and it can be readily shifted.

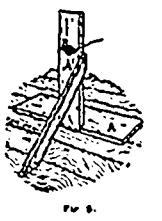
In front of the crank set up an upright, A A, Fig. 5, with a hole in it and a stick B across it. The hole should be in line with the middle of the crank pin The cord used for this purpose should be strong and small, and should be made of something that will stretch perfectly straight. A silk hair line, such as is used by fishermen for fly fishing, is the best. Some men use annealed wire, but wire gets hard and stiff, and kinks get in it which can never be perfectly straightened, and one of these kinks is very apt to come where you want a perfectly straight line. Wire is not recommended. Be sure that the stuffing box K, Fig. 1, is perfectly clean. Attach one end of the cord to the stick B, Fig. 4, and the other end to the other stick The cord should then be drawn so tight as to be perfectly straight. It can be tightened by turning the stick B over and over. To center the string cut a stick a trifle over one-half the



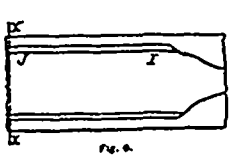
diameter of the cylinder in length, and try the cord in the end of the cylinder, cutting off the caliper stick as occasion requires, until the cord is exactly in the center of the cylinder. Then get a shorter stick and try in the stuffing box, moving the end of the cord that is beyond the crank until the cord is centered in the stuffing box. Then go to the back end of the cylinder and try that again, and so on from one to the other until the line is exactly in the center in both ends of the cylinder There is now a line to work from to bring everything straight with the cylinder.

The first thing is to find out if the guides are in line. Take a stick (Fig. 10) with one side straight. Bore a small hole in it and put in a second stick, as shown in the cut, so that it will be held snugly but will still be loose enough to be easily moved. Set this stick against the edge of the guides at I and J, Fig. 6, and move the small stick up to just touch the line. The end of this stick should be sharpened so as to bring a small surface to the line. If the guides are in line, the stick should just touch the line when tried at both ends. If they are not in line it will touch the line at only one end. If that is the case there is but one remedy, and that is to swing the cylinder around and put in strips of brass at L, Fig. 1, as this is the place that the guides are usually out. This is quite a job and requires some time and considerable patience. It is occasionally necessary to shim the cylinder up on the other side. The line will now have to be set over again until it is once more straight with the cylinder and guides. Fig. 7 is a cross section of the guides through the line XX, Fig. 6. A plumb line suspended from point P will tell if the guides are perpendicular. If not, the bed should be swung over, or around, until they are. In case this cannot be done, either the cross-head will have to be changed in the shoes, or the shoes themselves changed so as to run straight in the guides, and at the same time bring the cross-head pin level. Knowing the style of cross-head it would be easy to tell how to do this. It is a very good test for an engineer's judgment.

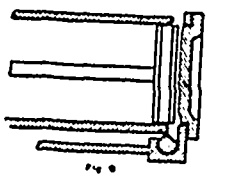
The next thing to consider is the crank. Cut a small stick that will just fit into the crank, and mark a line across the center. Bring the crank pin up under the line till it touches, and note whether the line crosses the mark on the stick, or how much of it is out; and then turn the crank around and bring the pin up under the line on the other side. Note how much it is out on that side, and if out, whether it is on the same side of the mark as before, or on the opposite. If on the same side, it shows that the center of the pin is not in line with the cylinder, and the shaft must be shoved endwise until the line crosses it at the middle. If the construction of the engine will not allow this with the means at hand, take off from the side of the crank-pin boxes the amount that the line shows that it is out. Then fit pieces of brass on the other side of the crank-pin boxes to make up what has been taken off. If the boxes can be recessed for these pieces, all the better; but if not, they can be fastened in with pins. If the line is on one side of the mark when the crank is on the center, and on the other side when on the other center, it shows that the shaft is not square with the cylinder, in which case the outer end of the shaft should be swung around to bring it straight with the line. If it should happen that the shaft could not be moved at that time, the distance that it must be moved can be calculated, and then it can be done any time afterwards.



Suppose that Fig. 8 is a shaft and crank. It is plain that as the distance from the angle to 1, in either direction, is the same, moving one of these points a certain distance will move the other one the same distance; but if we double the distance to one of them, carrying us to 2, then we should move 2 twice the distance that we should 1, so that to find the distance we should move the end of the shaft we must divide the length of the shaft up to the outer pillar block by the length of the crank (not the length of the stroke), and multiply the result by the distance that the line is out from the mark on the pin. For instance, if the mark on the pin is out 1-16, the shaft 2½ feet long, and the crank one foot long, we multiply the 1-16 by 2½, which makes 5 32 that the outside pillow must be moved. To find if the shaft is level, place the crank upright and suspend the plumb line down over the end of the pin, and then turn the crank down and note how much it is out. A similar calculation will give the amount the end of the shaft must be raised or lowered.



To determine if the crank pin is straight with the shaft would be an easy matter if the face of the crank was flat; but as a general thing, when the shaft is finished it is left uneven, as can be seen by putting on a steel straight edge. Even if the face is flat it is possible that it is not square with the shaft. To determine, then, if the pin and shaft are parallel, take two thin blocks C C, Fig. 2, and a straight edge D, and hold them in position by the stick E placed against any handy support. The blocks C C should be placed against the end of the shaft the same distance from the center. The straight-edge D will then be at right angles to the shaft, and a square placed against the face of it and against the pin will show if the pin is straight one way. To determine if it is straight the other way, place the blocks C C and the straight-edge D in a horizontal position, suspend two plumb lines, F F, over the pin, as shown in Fig. 3, and run the square H along the straight-edge to the lines, when it should touch both lines. Should the pin become loose in the hole, and it be necessary to bore out the hole before putting in another pin, the boring can be set in the same way.



It should be remembered that a crank-pin wears only on one side, and also that, if it has been out of line, one end may be worn more than the other. This can be ascertained by calipering, and if the pin is not straight the difference must be allowed for, according to the circumstances of the case in hand. When the brasses have been babbitted, there will be a small ring on each end of the pin that will not be worn. Pounding is sometimes caused by the piston running over the ports, as shown in Fig. 9. The piston may then be thrown to one side, or raised up from the bottom, even when the steam enters the top. When such is the case, nothing can be done except to make the piston fit the cylinder as well as possible. Fig. 11 is a caliper stick for setting the line, and can be whittled out of any handy piece of pine.

SPLIT PULLEYS.

HAS it ever occurred to you, says J. A. Allen in the Iron Trade Review, that there are some methods coming into vogue that are cheaper in the long run to use than to be without? Among these is the split pulley. It costs money, and big money, too, at times to cut a keyway in a shaft when a new pulley is to be located. Have you ever used a good split pulley? If not, do so. A short time since I fitted out a whole shop with pulleys and shafting, and used nothing but split wooden pulleys. Hold? Well, not at first. Each pulley was tightened as well as we could do the work at the start and then watched. At the first indication of a slip the wrench was put on again and that settled the matter for all time. I had those pulleys driving every conceivable kind of ironworking tool, from a light drill to a heavy hammer, and never had the slightest indication of trouble. Then, when new tools were bought and old ones had to be shifted, ten minutes sufficed to take down the pulley. But when I did that job, I didn't know as much as I do now. I allowed builders to sell me tight and loose pulleys on the counter-shafting, so that for every machine having a four-inch belt I had to buy a nine-inch split pulley. If I had the job to do again I would specify clutches. Of course the clutch would cost more than the extra paid for the double width split, and the additional loose pulley, but not so very much. And then I would save weight on my main line; and room also.

CAUSES OF EXPLOSIONS.

THE causes of explosions may be summed up in one sentence, namely, lack of strength to withstand the pressure. This want of strength may be due to faulty construction, but as a rule it is due to some acquired weakness, unknown simply because unlooked for. Weakness results from unequal heating, which produces unequal expansion, from corrosion, improper setting, scale, low water and want of circulation. It may not always be possible to avoid unequal heating, as for example, in getting up steam many boilers will be hotter in some parts than in others, but scale can be prevented by "boiler compounds," and low water by a little care. In some types of boilers no provision is made for water circulation, and unequal heating is bound to occur. A thorough inspection from time to time will inform the engineer if his boiler is weakened by it, but the best plan is to use some other type. To sum up, the engineer must understand and act upon the motto, "eternal vigilance is the price of safety."—Safety-Valve.

THE CANADA LUMBERMAN
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THE CANADA LUMBERMAN is published in the interests of the lumber trade and of allied industries throughout the Dominion, being the only representative in Canada of this foremost branch of the commerce of this country. It aims at giving full and timely information on all subjects touching these interests, discussing these topics editorially and inviting free discussion by others.

Especial pains are taken to secure the latest and most trustworthy market quotations from various points throughout the world, so as to afford to the trade in Canada information on which it can rely in its operations.

Special correspondents in localities of importance present an accurate report not only of prices and the condition of the market, but also of other matters specially interesting to our readers. But correspondence is not only welcome, but is invited from all who have any information to communicate or subjects to discuss relating to the trade or in any way affecting it. Even when we may not be able to agree with the writers we will give them a fair opportunity for free discussion as the best means of eliciting the truth. Any items of interest are particularly requested, for even if not of great importance individually they contribute to a fund of information from which general results are obtained.

Advertisers will receive careful attention and liberal treatment. We need not point out that for many the CANADA LUMBERMAN, with its special class of readers, is not only an exceptionally good medium for securing publicity, but is indispensable for those who would bring themselves before the notice of that class. Special attention is directed to "WANTED" and "FOR SALE" advertisements, which will be inserted in a conspicuous position at the uniform price of 25 cents per line for each insertion. Announcements of this character will be subject to a discount of 25 per cent. if ordered for four successive issues or longer.

Subscribers will find the small amount they pay for the CANADA LUMBERMAN quite insignificant as compared with its value to them. There is not an individual in the trade, or specially interested in it, who should not be on our list, thus obtaining the present benefit and aiding and encouraging us to render it even more complete.

THE LUMBER SITUATION.

NOTWITHSTANDING the excitement of a general election for Ontario, and the continued sittings of the House of Commons, the question of lumber has been quite to the front in discussions of the month. As our Ottawa correspondent has remarked the very fact that an election is on has given zest to lumber affairs. A letter written by Mr. John Charlton, M. P., to the Senate committee at Washington, suggesting a certain measure of retaliation on Canada regarding United States duties on lumber and manufactures thereof, provoked a stirring discussion in the Commons a week ago. The Wilson tariff bill, as it came finally before the United States Senate, made lumber practically free, with the one condition that a retaliatory duty shall have been levied upon those articles only upon which a Canadian export duty might have been imposed. The Wilson tariff, as will be noted from what we say further on, embraced a large list of free lumber items, and it appears that Mr. Charlton in his communications with Washington suggested: "Provided, that if any export duty is laid by any foreign country upon any of the articles mentioned in paragraphs 672 to 683 inclusive, that all said articles imported from said country shall be subjected to the duties existing, prior to the passing of this act." Had the bill gone through without this amendment it would have been possible for Canada to have imposed an export duty on logs and at the same time obtain free admission to the United States for a large number of forest products. It is for opening up this matter, which was perhaps an oversight on part of the United States Senators, that Mr. Charlton is to-day being so severely criticised both in and out of the House. With a people as sagacious, and shrewd, as our neighbors to the south, it might have been as well to have allowed them to figure out the tariff matter, according to their own notions, without help from Canada.

Lumber is cutting quite a figure in the Ontario campaign, the government timber policy being severely criticised by the opposition. What enters into the discussion, however, is largely politics, and not business; and outside the political leanings of lumbermen, the subject has little, if any, interest to our readers. A point that has frequently been raised before is coming to the front in this discussion, namely, that the provincial government should provide that all logs cut in the province shall be manufactured into lumber here. The government's reply to this question was made in these columns at the time the question was discussed in the House. Their contention is that any such step would lead to a serious shrinkage in the values of timber in Ontario. Mr. Bennett, member in the Commons for Simcoe, has suggested that the Ontario government might increase its stumpage dues from $1.25 per 1,000 feet to $5.25 per 1,000 feet, with a rebate of $4.00 thereon on all logs sawed in Canadian mills, and meet what is asked for in this manner.

With free lumber, as now reported by the United States Senate, and likely to become law, many contentions of politicians, both in the Dominion House and the Provincial Legislature, will be removed. It has been generally accepted by lumbermen, holding different opinions on the question of an export duty, that entire free trade in lumber would meet the case of Canada quite completely. The new tariff places upon the free list the following articles of lumber or lumber manufacture: Firewood, handle bolts, heading bolts, stave bolts and shingle bolts, hop poles, fence posts, railroad ties, ship timber and shingle bolts, not specially provided for in this act; timber, hewn and sawed, and timber used for spars and in building walls, timber, squared or sided, sawed boards, plank deals, and other lumber; pine clap-boards, spruce clap-boards, hubs for wheels, posts, last blocks, heading, and all like blocks or sticks, rough hewn or sawed only; laths, pickets and palings, shingles, staves of wood of all kinds, wood manufactured. The one rider to this proposition is that contained in the paragraph we have quoted above, relative to an export duty, suggested by Mr. Charlton. What will be the effect of this tariff change on Canadian lumber interests? This is the vital question. Under a reduction in duty on lumber to $1.00 a thousand a large increase took place in the export of Canadian lumber to the United States. With lumber entirely free it is reasonable to expect a further increase in our exports to that country. Logs are already going in free, so there is not any incentive to further enlargement in that respect, and this is perhaps not desirable. An important question is this: Will the removal of the $1.00 duty on manufactured lumber prove an influence in causing United States lumbermen to establish mills on this side of the line and manufacture their logs into lumber here. It looks somewhat as if this would be the outcome of the present change. Geo. W. Stevens, of the Cranberry Lumber Co., Duluth, Minn., who was in Washington during the passing of the free lumber bill, and who, by the way, does not believe in free lumber, is of the opinion that the effect of striking down the tariff of $1.00 a thousand on lumber will be to cause Americans who own Canadian timber to establish mills in Canada. He is reported to have said: "I know one Michigan firm which owns 500,000,000 feet in Canada, who are planning to erect mills and saw over there instead of rafting and sawing their logs here." One of the leading operators in Bay City says: "The removal of the duty on dressed lumber will render it impossible to bring Canadian logs over here and manufacture them at a profit. It means that every box establishment will either have to go to Canada or shut up shop, and this will throw hundreds of men in this valley out of work. The blow is a serious one and it will be disastrous." Another firm operating a large planing mill and box factory at the same place is said to have resolved at once to remove their box factory to Canada as soon as the bill becomes law. A little time will, of course, show just what will be the outcome, but it seems quite certain that free lumber will not be a bad thing for Canada; and the fact that after so much discussion, and when other articles were given a go-by, it may be assumed that free lumber, in the opinion at least of the American Congress and Senate, will be a good thing for our neighbors across the line.

EDITORIAL NOTES.

IT is not alone in certain parts of our own country that a depreciation in property is being felt because of the exhaustion of timber near to the place where mills had operated. Figures are given by the Michigan correspondent of a lumber contemporary, showing that in that country a serious shrinkage in values is taking place on this acount, certain property on the rolls footing up only $485,000, or about one fourth of the assessment of four years ago.

AN answer frequently made, when criticism is levelled at the large export of Canadian logs to the American side, is that much money is expended in labor before the logs are in shape to be rafted and that Americans who are cutting in our woods are paying a higher average wage to shantymen than had hitherto been paid. This is a statement of the case that does not square with the views expressed by Mr. B. H. Turner, of Little Current, on the Eli page, who says that American companies now bring in Poles and Hungarians to work for $12 to $18 a month, where the local standard of wages had formerly stood at $26 a month.

THE present financial troubles of the Nicaragua Canal Company must be a source of regret not alone to the lumbermen of British Columbia, but also to the lumber interests of the United Kingdom. The Timber Trades Journal, of London, Eng., commenting on this matter says, that the only drawback to the use of larger quantities of coast timbers is the long voyage over several months and the consequent heavy freights. Once let the canal in question be constructed and all these obstacles would disappear, and the splendid timber of those regions would reach our market in a few years, at a lower freight cost than is now paid from the pitch pine ports."

THOSE who have had occasion to study commercial conditions in Russia have been made aware of the large figure that the country of the Czar plays in fixing the prices of wheat. More and more development is being made along those lines. But, if information that comes to us through a Mr. Nicholas Nesteroff, who is at present in America at the instance of the Russian Government, to investigate forestry, is correct, his country will before long, become quite a factor in the world of lumber and saw milling. He is largely interested in the study of band mills, and it is not unlikely that the modern method of milling will be introduced into Russia. It is claimed that Russia has almost no limit to its lumber supplies; the figures given by Mr. Nesteroff are 600,000,000 acres. The government will be the great capitalist in this case and may erect as many as 200 saw mills. No high price is placed on timber in Russia, fir trees selling at what in currency would be equivalent to 12c. and 18c. each.

KIND words, evidently well deserved, are being given to the W. C. T. U., by our lumber contemporaries in the Western States, for the excellent work that this organization has been permitted to do in the lumber camps of Wisconsin, Minnesota and other points. The life of shantymen during the winter now closed has been made much more agreeable, and doubtless profitable, through the amount of attractive and entertaining literature that has been steadily supplied them. The suggestion is made by the Mississippi Valley Lumberman that a great work would be done if some steps could be taken "towards removing the temptation from the boys when they come down from the woods in the spring of the year." All interested in lumber know how much there is in this remark, for it is just at this time that the most serious breaks are made by the "boys." On another occasion we have referred to the excellent work on similar lines, that is done for the Ottawa and Georgian Bay lumbermen by the Canadian W. C. T. U. workers. As a leading official of that order in a letter to the writer some time since remarked, perhaps the only drawback to a further extension of work is the want of sufficient funds.

The mill of the British Columbia Mills Timber & Trading Co., New Westminster, B. C., was partially destroyed by fire recently. Loss, $30,000. Rebuilding has been commenced.

MR. H. B. Turner, of Little Current, Ont., when in the city a week ago, told of the effect of the free export of logs, upon that particular section of the Province. He said. "When that duty was in force we had three large saw mills at the Current running on full time. Now one of these, with a capacity of 100,000 feet, daily, is lying idle and another is only half stocked. Before the change in policy 125 men were employed in our own town on the mills and in loading lumber, and an American company were negotiating for the purchase of Goat island as a site for another mill that would have added largely to the number of employees. But this latter deal is off now and companies that would otherwise give work for from one to two hundred men in the town employ only six or seven. The innovation has also reduced the price of labor in the woods. American companies now bring in Poles and Hungarians who work for $12 to $18 a month, and this has brought down the local standard of wages that formerly stood at $26 a month. This is a matter that effects Toronto as well as the Manitoulin Island and the North Shore. The transfer of the work of manufacturing lumber from mills at Little Current, Midland, Parry Sound, Serpent and Spanish River, to those at Bay City and Saginaw, has enormously reduced the sales formerly made by Toronto wholesalers in our country. There is no division of feeling in the lumber towns of the north. They are all for a restoration of the duty on logs and we feel, in view of the facts I have just stated, that Toronto ought to help us in this."

* * * *

It is no easy matter to down a lumberman. Physically they will hold their own with most men, as the case which I am going to recite is evidence. They have a faculty of "getting there," to employ an expression of Sam Jones. When they run for parliament they are usually successful. When they aspire to office and honors in other directions the occasion is a rare one when they are beaten. Mentally there is a robust vigor about them that commands attention, whether in asserting a business proposition or in any other work of life. Perhaps the active training, many have had in fighting their way through the bush, and in levelling, after persistent blows, the hardy giants of the forests, is an exercise that has developed muscle and mind. They seem, all through life to have drunk in the ozone of success. Now to illustrate. The story comes from the Lower Provinces, and tells of the forcible resistance acountered by a couple of officers of the provincial police in their efforts to execute a warrant upon a citizen of New Brunswick and the incident has adventure enough in it to recall to mind the story of Morrison, the Lake Megantic out-law. The present case arises out of a timber dispute, Mr. Connor, a rich timber merchant in a small town called after him, at the terminus of the Temiscouata railway, being the party for whom the officers of the law were sent to the sister province. A client of Mr. C. E. Pouliot, ex-M. P. P., and a resident of Temiscouata, took a seizure upon some logs he had sold to a Mr. Chisholm but that the latter had not paid for. Mr. Connors made a claim upon the logs, too, and finally a seizure was made upon them in his hands. This Mr. Connors entirely disregarded, and also resisted arrest at the hands of a bailiff sent to capture him, knocking down the officer of the law. Then Detective Patry and Sergt. Burke, of the Provincial Police, of Quebec, were sent for by telegraph. They succeeded after some time in discovering their man, who is described as a perfect Hercules, is also a millionaire, and was found hiding behind a barrel in his shop. He was brought out by them, despite the desperate resistance he offered, but immediately shouted to his employes, who were in the vicinity, to come to his assistance, and in less than five minutes 250 of them were crowding around the officers, and naturally succeeded in freeing Connors, although the police gallantly stuck to their man until forced to the last extremity and compelled to leave him and return to Quebec.

* * * *

Mr. Geo. Bertram, who has a very complete knowledge of lumber matters, from the fact of being largely interested in Canadian timber limits and saw milling, as well as being in the way of supplying mills with much of their equipment, is of the opinion, that the passing of the Wilson free lumber bill will be the means of stimulating saw milling in Canada in a very marked degree. Speaking, as he says, out of his own experience and knowledge, he refers to a saw mill at Midland, which has been lying idle for some time. It is owned by a Michigan firm, and just as soon as dressed lumber is admitted into the States free, that mill, he says, will be started running. At Parry Sound a large mill there is lying idle. To-day it is only a matter of negotiation, who will take the active management of it, and with free lumber, sawing will commence there. The same conditions apply in other places, that might be named; and what is more, Mr. Bertram is quite convinced that United States lumber concerns will, in a very short time, commence the erection of mills in Canada and send there stuff forward manufactured. It is just like this, argues Mr. Bertram, To day much lumber is being sent to Michigan in the shape of logs. There it has to be sawed into lumber and distributed from that point. With mills sawing on this side of the line, in many cases manufactured lumber can be sent direct from here to the point of destination without stopping midway and then being reshipped. It may be remarked here that this view is voiced very plainly by lumbermen from Bay City and other Michigan points. Some of these views are given elsewhere, I understand, in this month's LUMBERMAN.

* * * *

A conversation I had the other day with Mr. F. N. Tennant, lumberman, confirms the reports reaching the east of the unsettled condition of the shingle market in British Columbia. Mr. Tennant has been handling red cedar shingles in considerable quantities and had anticipated a solid growth of trade in this province. A combination of the shingle men of British Columbia was perfected in the early spring season with the idea of helping in that direction. "It is just like this," said Mr. Tennant, "the combination is still in existence, but prices have not been maintained, though there is no cutting as yet, as far as I know, among the manufacturers themselves. Prices are uniform. The prices of cedar shingles had been fixed at $2.75. This figure has now been dropped to $2.60, for the reason that some manufacturers had taken orders, perhaps up to the amount of 200 cars, at a lower rate than that fixed by the combination, before this organization had been formed, and these men and their customers in Ontario have insisted that in so far as they are concerned the lower price must hold good. The result is that red cedar shingles to-day are being sold in many hands throughout the province at a reduced figure, which does not give any inducement at present to push things. Of course when the supply at the lower figure is exhausted, the expectation is that prices will go up again, but 200 cars of shingles reaches close to the estimated consumption of the province for one season. Possibly 50 cars additional would be sold, but not any more. There is no money to the British Columbia manufacturers in this change. In fact, to quote the words of one of my correspondents, 'If they manage to get themselves out of the hole even this season, they will be satisfied.'" I asked Mr. Tennant if he anticipated that free lumber would have any effect upon shingle manufacturing on the Pacific coast. His reply was that, "He feared our people there would find strong competition from Puget Sound manufacturers. When the Dominion government announced that the duty was taken off shingles, we, along with other dealers, no doubt, in the province, received circulars quoting shingles from the Sound at $2.35. Of course pressure was brought upon the government, and they returned the duty until such a time as free lumber would become a certainty. It looks as though this time had about arrived, the Senate having passed that clause in the Wilson bill. So soon as this regulation comes into effect, I fancy, we are likely to hear more from the Puget Sound shingle men. They will be able to drop thirty cents, the present duty, and freight rates are in their favor, the United States roads carrying freight at a less rate than the Canadian roads." Mr. Tennant says that the lumber business generally throughout the province is very quiet, there not appearing to be any activity in building operations in the rural sections. He looks upon free lumber as a step that will help to revive trade and that will probably lead to a very considerable increase in saw milling in Canada, as he thinks United States lumbermen will find it will pay to cut their lumber here, when it can be exported free of any duty, rather than ship the logs and then have them cut up and re-shipped again to the trade. Being reminded of a statement that I had heard made, namely, that nearly all the oak and birch used for manufacturing furniture in Canada was brought in from the States, and the reason given that our mills could not cut these timbers in a manner to make up into furniture, I asked Mr. Tennant if he could give any explanation of this strange condition. He said the statement was perfectly correct, and putting his hand on a handsome desk at which he was sitting, he said it was not possible, or at least it was not being done by our hardwood saw mill men, to cut oak so as to make up into stock of that kind. He had frequently spoken to hardwood men about the matter and their only reply was that it paid them better to go on as they were going, cutting the timber more in the rough.

* * * *

How true it is, that, as a people, we know little of the beauties and riches of our country. Fashion compels us to go abroad for recreation and sight-seeing but the greater beauties are at our own door, within the limits of our own beautiful Dominion. It is not the first time that reference has been made in these columns to that very interesting portion of country known as the Lake of the Woods. It delights everyone, who has had an opportunity to visit it. To lumbermen it has not alone the attractiveness of picturesque beauty, but it has been learned, that in this country there are wonderful riches of timber, that will yet prove most valuable to our people. One who has recently been there says of the Rainy River: "The river without doubt is one of the most beautiful on the American continent, if not in the world. The banks of the Rainy river on both sides, along its entire length, are clear cut and well defined, and are from 20 to 30 feet past high water mark. The well-tilled fields and comfortable homes, many of them of pleasing, attractive exterior, the large barns, the sleek horses, cattle, sheep and hogs, all along the Canadian side of the river, bear ample witness of the richness and productiveness of the soil." Norway pine is the principle wood of the Rainy lake country. Some of this is of quite an inferior quality, but large quantities of valuable logs have nevertheless been cut there, floated down to Rat Portage and cut up into lumber. There are timber limits of Norway pine with a sprinkle of white pine of considerable dimensions tributary to these waters. On the American side an agitation is going on for a railway into this country. The statement is that hundreds of millions of feet of pine are still standing unsurveyed on that part of Minnesota. Another writer who has travelled over the ground expresses the opinion that one of the best opportunities on this continent for lumber mills is now opening out in the vicinity of Rainy river, either on American or Canadian soil. I like in these monthly chats to keep readers posted in regard to lumber affairs in all parts of our province and it is especially interesting to hear from men of a particular section of country, which they have been able to observe with their own eyes.

DROWNED AT FRENCH RIVER.

THE death by drowning at French River, on Thursday, June 21, of Mr. John E. Waldie, second son of Mr. John Waldie, of this city, president of the Victoria Harbor Lumber Co., and who has for years been one of the most esteemed and representative members of the lumber trade in the Province, was a sad shock to the many friends of the deceased. The younger Waldie was 25 years of age, and had the management of his father's affairs at French River. The accident happened through the capsizing of a canoe which the young man had been paddling. Deceased leaves to mourn his loss, besides his parents, a number of brothers and sisters, to all of whom the LUMBERMAN extends its warmest sympathy.

OTTAWA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

FROM the fact that a general election is near by in Ontario, and the time cannot be far distant, before there will be an election for the entire Dominion, is no doubt a partial explanation of the attention that is given to lumber matters in the House of Commons. To an outsider not conversant with the whole situation this may seem difficult to explain, but when we remember that the timber resources of Ontario are among its largest assets and that criticism is being leveled at the timber policy of the Ontario government, we can understand how opponents at Ottawa will endeavor to make circumstances turn to the disadvantage of the Government at Toronto. When members of the Commons, therefore, rise to talk on export duty and other phases of the lumber question, it is sometimes the case, particularly when these gentlemen are representatives of Ontario constituencies, that they are not talking to the House of Commons, but making a stump speech for or against the local government in this province.

One of the liveliest debates the House has had on the question of lumber was that of a few days ago, when Mr. John Charlton was called to account for tendering his advice to Washington how to overcome opposition that existed in Canada against free lumber. I am not going to express an opinion on the merits of the debate, but to say the least, it does appear to have been an impolitic move for the member for Norfolk to have, seemingly at least, been so solicitous of American lumber interests. But I expect we may safely leave a settlement of that matter to Mr. Charlton's own constituents and the votes of Norfolk.

INDIFFERENT LENGTHS.

Senator Clemon has withdrawn his bill with reference to the sawdust pollution of the Ottawa river. An estimate puts the sawdust and mill refuse thrown daily in the river from the Chaudiere equal to about 150,000 feet of boards, say 12 car loads.

A prominent lumberman has said that a million and a quarter feet would be the full amount of this year's square timber drives down the Ottawa, where 4 years ago almost five million feet went down and 6 years ago there was almost eight million.

An official of the Canada Atlantic railway is authority for the statement that the shipments of lumber over that line are falling short of last year, owing to the continued depression in the American market.

W. C. Edwards & Co. are the purchasers of a large tract of timber from McKay & Hough on the Black and Colounge rivers, and over 4,000 logs of last winter's cut. The Klock timber limit of Bear creek, north of the Ottawa river, has been sold to Gillies' Bros., of Braeside. The limit measures 52½ sq. miles and the price obtained was about $310,000.

A valuable lecture on forestry was delivered here about a week ago before the Royal Society by Prof Fernow of the Divison of Forestry in the United States Dpt. of Agriculture.

A grand reception to members of the House of Commons and Senate and others was given by Mr. W. C. Edwards at his Rockland farm on the 2nd inst. It is needless to say that a jolly time all round was spent, and every one admired the prettily situated and growing town which clusters around Mr. Edward's mills. The cut of these mills is over 300,000 feet per day.

W. C. Edwards & Co. are shipping large quantities of lumber from the New Edinburgh piling grounds. The firm's saw mill at that point is cutting a large amount of green lumber. It is not anticipated, however, that there will be any night work.

OTTAWA, Can., June 22, 1894.

TRENTON LETTER.

[Regular correspondence CANADA LUMBERMAN.]

THE effect of the recent coal strike was distinctly felt by some of the local manufacturing and railway companies here, and a great deal of alarm was occasioned by the prolongation of the dullness, consequent upon the refusal of the Grand Trunk to move freights of a certain class. The Central Ontario Railway ran short of soft coal, and were obliged to purchase a car load or so from Messrs. Gilmour & Co., in order to tide them over the strike. Freights are moving now, however, and business in this locality is beginning to assume a brighter color.

The Rathbun Co.'s logs are now passing through the corporation boom here, on their way to the Deseronto mills. A large gang of men is employed in the work.

Lumber prices continue about the same throughout this county, but dealers are looking forward hopefully to a change for the better.

American buyers are making fair purchases, and a boom in the right direction is shortly expected. Messrs. Gilmour & Co. have made large shipments to the other side this spring, in addition to their extensive local sales.

During the past few years the logs passing through the Government Works in the Newcastle district have been subject to a toll, the amount of which, although not much per piece, is considerabe at the end of a season's driving. The lumbermen in this district are petitioning the Government to abolish these tolls, claiming that the works were made for the benefit of steamboats etc., and that the driving of logs and timber is not facilitated by the presence of these works. A large number of timber and lumber dealers are interested in the matter, and will meet the Hon. Mr. Haggart at an early date, and place the facts before him with a view to having the tolls removed.

Over fifty thousand logs have already been run over the Gilmour log-way at Dorset, and a drive has now started from Raven lake for the Trent waters, the alligators being used for this purpose.

Mr. David Clark, General Supt., has just returned from the new limits and reports everything progressing favorably; so that in all probability the logs will be in Trenton this fall.

TRENTON, Ont., June 24, 1894.

BRITISH COLUMBIA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

IN a letter to the press, Mr. H. H. Spicer, the extensive shingle manufacturer of Vancouver, takes a rather gloomy view of the shingle situation. He figures up the markets in Canada for red cedar shingles not to exceed 200,000,000 per year. A moderate estimate of the capacity of the shingle mills of the province he places at 300,000,000 per year, and which can be increased by the present mills to 400,000,000. This is not a healthful condition for shingles, and it is feared that the inevitable result will be that "most of the mills will have to close down for lack of orders. Under conditions of this kind the temptation, of course, is to cut prices, and this has been done too much in the past. The association of British Columbia shingle manufacturers, recently formed, will, it is hoped, be helpful in preventing anything of this kind. In answer to the criticism that the combine among shingle manufacturers will result in an unfair advance in prices, Mr. Spicer says, that "manufacturers in our association are not making 10c. per thousand profit on their shingles, when they reckon $1.30 per thousand as the cost of production." With shingle manufacturers occupying so important a position in the lumber economy of the province it is to be hoped that matters will shape rather better than Mr. Spicer anticipates.

COAST CHIPS.

W. L. Johnson & Co. are making considerable shipments of shingles. 500,000 went forward a few days ago for Ontario.

The Royal City mills are shipping several car loads of lumber to the East.

It is estimated that the Royal City planing mills of New Westminster will have lost $60,000 by their recent fire. The machinery was nearly new and of the most modern description. Insurance covered only one-third of the loss. Warehouses and mills are now being rebuilt.

The Burrard Inlet Red Cedar Co.'s saw mill at Port Moody is cutting considerable quantities of all grades of cedar, fir lumber and shingles. A specialty is being made of the bevel cedar siding, which has become so popular in all the fashionable class dwellings in the Sound and eastern cities.

NEW WESTMINSTER, B. C., June 16, 1893.

NEW BRUNSWICK LETTER.

[Regular correspondence CANADA LUMBERMAN.]

A FINE lumber district of the province, embracing altogether 360 sq. miles, has come into the hands of the Muskoka Mill & Lumber Co., of Toronto. These limits are said to contain some of the best timber of the province, and represents one unbroken district, extending from the Restigouche river to the St. John, and up to the Quebec boundary line where it adjoins the company's timber limits in Quebec. The company intend to operate on both rivers. It is possible that at a later date they may build a mill at either Fredericton or St. John, where manufacturing will be carried on on an extensive scale. The custom here is for lumbermen to be placed in the woods about Oct. or Nov., but the Muskoka Co. will put their men in in July or August.

The drives have suffered through want of rain, though at present date most of them have been got through, but not without an increase of expenses. It was feared that Gilman Bros. and Borden had 6,000,000 or 7,000,000 tied up on the upper St. John, but they have got through safely. The drives in Queen's county are safe, but the cut is only about half of last year's.

The first week of the month showed 1,000,000 feet of long lumber cleared for United States ports; 5,000,000 feet of deals for the United Kingdom, and 4,500,000 laths for the States.

Some large shipments have gone out from Miramichi and there will be more to follow.

A. Cushing & Co. have shipped a car load of lumber to a port in Brazil.

James Miller & Co. have 10,000,000 feet safely down St. Mary's river, said to be the largest drives ever taken down that stream. In Queen's county, N. F. Douglas, J. A. Freeman and James Hunt have got about 6,000,000 into the booms near Milton.

ST. JOHN, N. B., June 20, 1894.

MICHIGAN LETTER.

[Regular correspondence CANADA LUMBERMAN.]

WITH few exceptions Michigan lumbermen have received with favor word from Washington, that lumber has been placed on the free list, subject, of course, to the final authorization of the bill by the president. It may be taken for granted, however, I think, that lumber has gone through all right this time. Already lumbermen from here have crews out looking up limits in Canada, and when the tariff may be taken as a finality, some further purchases will likely be made. It is recognized by lumbermen that they will have to take into their calculations, in case of free lumber, competition from Canada, but they think that this will be more than offset by the advantage in receiving logs free, as without any doubt our lumbermen largely look to Canada, under present conditions, for supplies.

SLOW TRADE.

It is quite remarkable the extent to which the lumber business in Michigan is depressed. Letters coming to mill men from different points are of a very discouraging nature. What buying is being done is in quantities that would have been indignantly refused a year ago. More than likely a number of the mills will be closed down, unless the demand for lumber looks up speedily; for, what is most unusual, the piling grounds are really now taxed to their utmost capacity to hold stocks on hand. There can be no doubt that the close of the season will show the reduction in the size of cut to have run into large figures. The depression in lumber is reacting seriously upon the labor classes, throwing large numbers of them out of employment.

BITS OF LUMBER.

J. L. Hurst, who is well known as a holder of Canadian limits, is negotiating for a large trade in Minnesota.

R. A. Loveland, of the Saginaw Lumber and Salt Co., does not take so gloomy a view of the situation as others. His experience is rather different, having shipped by rail during April and May fully as much stock as he might have expected.

It would be remembered what a falling off there was in lake shipments of lumber last year, the business being the smallest in twenty-five years. It is quite likely that the figures this year will come still lower.

Mills at Alpena have been forced to shut down, owing to the rains having swollen the waters of Thunder Bay river.

The Waubaushene and Muskoka of Toronto, two large Canadian vessels, have been loading at Ontonagan, Mich., taking 700,000 feet of board timber to Quebec for Geo. McBurney, and from there it goes to England. It is said to be very choice white pine.

Heavy rains the first week in the month have, in some cases, caused hard work for drives. In other cases, of course, the rains have been a help.

Lumber circles in Michigan lose one of their most prominent representatives in the death of Mr. Wm. McArthur, of the W. & A. McArthur Lumber Co., of Cheybogan, Mich. The deceased was one of several brothers, all of whom have been active and extensive operators in lumber for many years. The name is well known among the lumbermen of Canada.

In May 1893 the shipment of lumber from Bay City shows 21,577,000 ft. and from Saginaw 16,310,000 ft. Cut these figures in half and the shipment for the same period this year would not have been reached.

Three large rafts arrived at Bay City from Canada a week ago and have caused renewed activity in the mills.

All mills at Menominee and Marinette, numbering 21, are running their fullest capacity.

It is computed that up to the first of June over 30,000,000ft. of Canadian logs have reached the Saginaw river. The Michigan Log Towing Association is doing an extensive business in bringing Canadian rafts here. Among those who are receiving logs in large quantities are the Saginaw Lumber and Salt Company, the South End Lumber Company, Merrill, Ring & Co., Hargrave and Co. and the Holland, Emery Co.

SAGINAW, Mich., June 23, 1894.

VIEWS AND INTERVIEWS.

Ironwood

Lieutenant Schwatka, in describing some of the trees near Sonora, says that the ironwood looks very much like a fine variety of the mesquite, the wood of which is a bright cherry red. Its name is derived for its hardness and is well deserved. It uses up an axe to fell each tree, and as the quality of the different trees is always the same, and that of different axes is not, even that ratio of one axe to one tree has to be changed occasionally, and always in favor of the tree. It is said that a tramp who had wandered into that part of the country with the usual appetite of his class, applied for something to eat. In reply he was told that if he would get out a certain number of rails for a fence, the proprietor would give him a week's board. It was, as he thought, about a day's work he had assigned him, and bright and early the next morning he sallied out with his axe on his shoulder. Unfortunately the most tempting tree he met was an ironwood, and very late in the evening he returned with the axe helve on his arm. "How many rails did you split to day?" asked his employer. "I didn't split any, but I hewed out one," was the reply, and the tramp resigned his position.

Rings In Trees.

Whilst common opinion is settled that the age of trees is to be fixed by the number and character of the rings to be found in every tree, technically the subject is open to debate Accepting general opinion, however, as correct, a writer in the Literary Digest enlarges the subject by noting other phenomena to be explained by these rings. We are told, for example, that in the irregularities of these rings and other signs a very faithful register of climatic and other conditions in any given year during the whole period of growth is given. The years of small rings, that is of little growth, were either very dry, or the tree was exhausted by bearing an exceptionally heavy fruit-crop. The broad rings indicate abundant rain and good growing conditions. Brownish spots on the cut surface, looking as though they were worm-eaten, are evidence of a severe winter, the young sapwood formed in summer having been partly destroyed by severe cold, and the injured part covered over with sound wood the next year. The year may easily be fixed by counting the rings from the outside. If the layers of wood are not of uniform thickness all round they afford evidence that at this stage of growth there were conditions which hindered its growth on one side. The spread of its roots or branches has been arrested, perhaps, by a neighboring tree. The number of layers showing this irregularity indicates the number of years during which the tree was exposed to the unfavorable conditions. The student of forestry may learn lessons of practical value in the management of forests by a careful study of the annual rings.

English Walnut.

In a late number of Hardwood, Mr. O. S. Whitmore, the editor, who is a close student of forestry and attendant subjects, writes a special paper on the English walnut. He tells us that the tree called English walnut is a near relative of the native black walnut grown in certain parts of the United States. The name is a misnomer, for the tree is not a native of England at all, but of Asia, whence it was transplanted to Europe. It is true that it is cultivated to a large extent in England, both for the fruit which is sold in all American markets under the name of English walnuts, and for the lumber which the tree makes when it is fully matured. But it is also cultivated extensively in France, Germany and other parts of Europe. The continent exports far more of the fruit than does England. The tree is indigenous to the valleys and slopes of the Southern foot hills of the Himalaya mountains and on the eastern slopes of the Caucasus, and in fact entirely across the continent and in the islands of Japan. Its habitat is thus very extensive, and everywhere it is valuable, whether native or adopted. It is quite probable that the acclimated tree as now found in Europe, is quite as valuable as the Asiatic in its native wilds. The ancients call it the *Jovis glans*, the nut of Jupiter, whence our botanical term, *juglans*, which term covers the black walnut, *(j. nigra)* and the butternut *(j. cinerea)*. The English walnut is the *juglans regia*. In its native haunts the tree is large, often from four to six feet in diameter and from 75 to 85 feet in height. In thick woods it is tall and with a smooth trunk and a smallish head well up, giving a good body for timber. But in open glades, which it loves best, it is lower and wide branching, like the butternut. The wood is hard, heavy and much like our own black walnut in texture, but not always so finely figured. In color it is a dark brown, almost black, the sapwood lighter. With one exception it is the nearest approach to the native walnut. That exception is the California walnut, *(j rupestris* Eng.) which in some respects is the finest of the three dark species. The wood can be used for the same purposes as the black walnut, and not one person in ten can tell the difference when finished up. The tree flourishes fairly well in any moderately warm latitude. Under good care it is easy to propagate from seeds, and it grows rapidly as a sapling, and under good conditions will commence fruiting when ten years old, and thereafter will increase rapidly and continue to bear a heavy crop for from 50 to 75 years. There are trees in Europe, known to be 200 years old, which still yield abundant crops of nuts. At 40 to 50 years the tree becomes valuable for lumber, increasing from year to year at a pretage.

HARDWOOD MATTERS

So extensive are the white pine resources of the country, that, naturally, at times, they overshadow the hardwood interests. When there is a fight in the Legislature or the Commons only white pine is heard of. Hardwood men know just how seriously this condition has operated against their interests in the past by allowing the duties, under the McKinley tariff, on white pine lumber to have been reduced to $1.00, while the duty on hardwood has remained at $2.00. Possibly when free lumber in its fullest extent becomes a tariff certainty with the United States this grievance may be removed. This is to be remembered that white pine and the softer woods can never fill the place of hardwoods, and already, we hear of cases where hardwoods have commenced to be more generally used, because of the scarcity of pine in some sections. I have always felt that the hardwood men have, unfairly, been compelled to take a side-seat. But possibly they have been to blame themselves, for have they not been altogether too easy going, and in more ways than one neglected to protest against wrongs, and organize to protect their own interests, when a step in that direction was much needed?

* * * *

A study of the report of the clerk of forestry for the Province shows that, in many counties, in fact in a large portion of them, what woods are left are hardwoods. In some cases, thanks to our prodigal methods of handling timber years ago, of these there is not any large quantity. But we have still rich resources, taking the province over, in these woods and we ought to make the most of them. It is known that a number of hardwood dealers in the United States, particularly those in the east, draw largely for their supply of lumber on the Dominion. An authority on the question tells us, that there are fine hardwood timbers to be found in Quebec and Ontario, within easy distance of the American border. Some of the best red oak, cherry, hard and soft maple, and rock and soft elm on the continent, says this writer, is found in these two Canadian provinces. Large holdings of hardwood in Canada are among American firms. One New York concern have something like 500,000 ft. of number 1 and 2, 4, 5, 6, and 8 quarter soft elm and probably 1,000,000 ft. of common and shipping cull, all old stock and dry ready for shipping. Other concerns in New York, Boston, Albany, Buffalo, says Hardwood, of Chicago, hold stocks of elm, birch, red oak, and maple in Canada.

* * * *

Mentioning this fact reminds me of a conversation I had a few days ago with one of the largest furniture dealers in the city. He tells me, on the authority of Canadian manufacturers, that nearly all the oak and birch, used in making up of furniture in Canadian factories, comes from the United States. These manufacturers say, what ever the reason may be, that they cannot get Canadian oak sawed in such a manner as to bring out the best features of the grain in the wood and this is also the case with burl birch. This occurred to me as an unpleasant reflection on our hardwood men; and certainly a method worthy of Dickens' circumlocution office that we send our woods from here to the States to be sawed, so that they might come back to our manufacturers in proper shape for their use. What have our hardwood men to say about this?

* * * *

For the first time, we are told, since quarter white oak came into fashion there is a decided shortage in the visible supply. The situation is explained by Hardwood thus: "In the first place the man who saws quartered oak must have plenty of timber to select from. He can use only his best clear logs, which naturally leaves those for plain sawing averaging a small per cent. of firsts and seconds. To even up, he must realize a price for the product of the selected logs for quarter-sawing which will cover loss on what is left. In the next place no lot of logs quartered will realize the per cent. of clears that they would plain sawed, and further they will produce a lower grade below clears, and the total product in feet will also be less. The difference between first and seconds plain and quartered is quoted at abous $10; but in actual sales has lately been as low as $8, while the average price of the balance of the log is not less than $2, the other way, or in favor of plain sawed. Add to this the extra cost of sawing, which cannot be less than $1 and is often $2, and the loss in percentage of uppers in the rejected logs and the loss in total output of the quartered logs, and it is plain to be seen why mill men cannot afford to quarter saw their white oak. It is doubtful if there is any extra profit in quartered oak when prices are at their best, with the highest difference ever known, even exceptionally fine timber, running extra high to clear logs. This is a point that has been slow to filter through the gray matter of the average hardwood man's brains."

ROB.

POSSIBILITIES OF SPEED BY STEAM.

In his recent inaugural address, the president of the French society of civil engineers, M. du Bosquet, pointed out that express trains daily attain seventy-five miles an hour on down grades, providing that such speeds are not dangerous. But the engines are not sufficiently powerful to maintain such speeds on a level. A draw-bar pull which would give seventy-five miles an hour on a down grade of one in 200 would give only fifty-seven and a half miles on a level, and thirty-one and a fourth miles on up grade of one in 200. A slight increase in the average speed greatly increases the power required. If 322 horse-power will draw a train at fifty miles an hour up an incline of one in 200, for a speed of 125 miles 2,960 horse-power would be necessary. High speeds, moreover, increase the weight of the engines per horse-power, and there is a limit beyond which the engines could not move themselves. At their maximum power, the modern French locomotives weigh about 158 pounds per indicated horse power; but a similar engine of 150 tons generating 2,000 horse-power, would be required to draw a train of 100 tons up a slope of one in 200. The highest possible speed for such an engine and train up the slope would be eighty-seven and a half miles an hour, and for this the engine would weigh 670 tons and would generate 8,932 indicated horse-power.

THE REASON WHY.

An engineer observed his steam gauge indicating a higher pressure than his safety valve spring was set for. He slackened the spring but the gauge kept rising and the steam did not blow off. When the pressure rose to 200 pounds he became alarmed; and as he could not start the engine he started the injector and opened the water blow-off cock. The damper being closed, this had the effect to prevent further increase of pressure. On examining the safety valve it appeared that the brass seat of the valve was a bushing put into an iron casting, that it had become loose, and that the steam had pressed it up against the valve. As the valve rose the seat followed it, and there could not have been a release of steam until the bushing was pushed out of its hole.

TRADE REVIEW.

Office of CANADA LUMBERMAN,
June 25, 1894.

THE GENERAL SURVEY.

IN his annual address to the shareholders of the Bank of Commerce a few days ago, General Manager Walker devoted, as is his custom, some little attention to the position of the lumber trades. Remarking that the exports of woods in all conditions, manufactured and unmanufactured, for the year ending June 30, 1893, was $29,000,000, against $25,000,000 five years ago, he draws attention to a feature of the lumber trade that possesses a good deal of encouragement. It has more than once been remarked in these columns, that no matter how severely lumber might suffer through a financial depression, such as has existed for the past year, yet there can be no doubt of the generally solid condition of the trade. Lumber is an asset, whether vested in the individual or country, that in the present day must steadily increase in value. Mr. Walker's reference to the promptitude with which United States firms, who had contracted to take Canadian lumber, carried out their obligations, notwithstanding the financial storm, is practical evidence confirming this view. Though the failures of individuals and firms across the border during the past 12 months have been numerous, and running into large figures, yet it has been interesting to note how lightly disaster has touched the lumber trade. In Canada, this is more exactly the case. Barring a number of weak concerns that went under a few years ago, at the time of the break of the real estate boom in our own city, there has been little trouble to note in connection with these trades. Large amounts of money are invested in Canadian timber, and in most cases these properties are held by men who have the ability and means necessary to withstand a financial storm.

Writing of trade as we find it to-day, it has to be admitted, of course, that there is a shrinkage in the volume of business doing, a result of the monetary stringency of the year, and in no small measure to the unsettled tariff conditions prevailing both in the United States and our own country. There is good reason to suspect that a finality has been reached, so far as the American tariff is concerned. We are likely to have free lumber. It may not be wise to predict just what the result of this will be upon Canadian lumber interests, but it will hardly prove of an unfavorable character. Business, as a whole, both here and abroad, must show healthful signs of revival before there will be any large increase in the consumption of lumber, any more than of other commodities. People are not buying generously of anything just now. But when this revival takes place, and there is reason to believe that it is coming, though possibly slowly, lumber will feel the benefit of the turn in the tide about as quickly and completely as any other business.

It is now generally conceded, that the cut of logs this year will be lighter than for the past year, though there will be abundance of logs to meet all demands. The supply of logs carried over from last year represents quite an amount.

Foreign advices touching lumber are not over encouraging, and we speak now more particularly of the trade in England ; at the same time we learn that some heavy shipments are being made from the Ottawa section to Great Britain. Shipments of considerable size are also going forward from New Brunswick. At Quebec ports there is not any very strong evidence of a large trade being done.

Despite the magnificent timbers of British Columbia the way has not opened out this season for very large exports. The Australian market, that has in the past been helpful to British Columbia trade, continues depressed, and the volume of business is circumscribed on this account. Local trade is fairly active and if prices can be kept maintained perhaps a more paying business will be done by the shingle men than for some little time past.

Election matters are absorbing the most interest in Ontario for the past month, and lumber affairs are being discussed, but outside of political talk there is not any large volume of business doing. Lumber business, so far as local consumption in Toronto, keeps slow.

UNITED STATES.

It is realized by candid and plain-spoken lumbermen that trade in the United States is going to show up exceedingly light. Practically into the heart of midsummer now, there is nothing to give impetus to further trade this year. It may, with safety, be said, that the tariff, so far as lumber is concerned, is settled, and whilst various opinions are held as to what the effect of free lumber is going to be on the general trade, yet the fact that the result is known, will likely lead to the perfecting of definite plans. The most vigorous objection is coming from the Southern States, as yellow pine is looked upon as a competing line with Canadian white pine. But taken as a whole United States lumbermen are not very much terrified at the coming of free lumber, whilst it may be taken for granted that Canadians are satisfied. Recovery from the depression of a year and more, though slow, is coming along, and if crops, which now look hopeful, are of good size, and prices show anything at all of an upward tendency, the market will no doubt improve. One of the marked features of the trade is the general dullness that is shown in the Eastern States.

Were we to single out any one line as being in an especially demoralized shape it would be spruce. It is a hard matter to make out what will be the outcome of the spruce market. A continued decline in price is taking place. Large mills in Maine would like to close down, for there is no encouragement in manufacturing at present prices, but to close down means a serious loss. The Lumberman's Review, of New York, remarks on the situation : "It is but a natural sequence that the small mills should be the first to succumb under the present conditions, for it is evident that with logs either on the Kennebee or Penobscot ruling at $10 to $11 per thousand, no mill can saw out a spruce frame and deliver it at Boston or Sound ports for $13, and have as much money at the end as at the beginning of the season. But $13 is the basis to-day for any frame capable of being classed as "easy." One year ago the price opened at $14.50, and held to that figure until the cloud of depression began to settle over the country, when strength was replaced by weakness, and the price went to $13.50 at the close."

FOREIGN.

The Timber Trades Journal, of London, Eng., prefaces an article on the future of lumber with the words, "Hopes are delusive." It has really been impossible to keep track of the United Kingdom market for a year and more. It has certainly been dull. This much could easily have been written of it at any time, but yet this dullness has had frequent bright rays strike through it, and the hope on each occasion was, that this brightness might be lasting. It is here that hopes have been delusive. There has been no permanency in any revival that has shown itself, and we can hardly say any more of the British market at the present writing. Quoting again from our English contemporary, "Trade is as flat as ditchwater all the while the stuff keeps pouring in to speedily fill the gaps which the moderate supplies of previous years has brought about." A discouraging sign of the market is the manifest desire of dealers to undersell each other in a vain effort to make a turn in business. Farnworth & Jardine, of Liverpool, in their current circular say, that the arrivals from British North America during the past month have been 8 vessels, 3,929 tons, against 14 vessels, 10,601 tons, during the corresponding month of last year, and the aggregate tonnage to this date from all places during years 1892, 1893 and 1894 has been 87,750, 72,626 and 65,744 respectively. The same authority says that continued dullness prevails with very little signs of improvement ; the consumption has been moderate, and there is little change in value to record, but some articles, such as Canadian woods, have given away owing to a decline in freights. Stocks of all articles are quite sufficient, in some instances, too heavy.

A somewhat lengthy review of the Australian timber trade appears in the Melbourne Age of recent date, and it discloses the fact that the lumber market reports of late have been of more moving of timber. The terribly depressed conditions of lumber for a long period is admitted, but these indications of a revival, though not very marked, have much of encouragement in them.

The South American market, it is thought, will continue to improve.

TORONTO, ONT.

TORONTO, June 25, 1894.

CAR OR CARGO LOTS.

1 1-4 in. cut up and better	33 00	36 00
1X10 and 12 dressing and better	20 00	22 00
1X10 and 12 mill run	16 00	17 00
1X10 and 12 common	13 00	14 00
1X10 and 12 spruce culls	10 00	11 00
1X10 and 12 mill culls	10 00	11 00
1 inch clear and picks	28 00	32 00
1 inch dressing and better	20 00	22 00
1 inch siding mill run	14 00	15 00
1 inch siding common	12 00	13 00
1 inch siding ship culls	11 00	12 00
1 inch siding mill culls	9 00	10 00
Cull scantling	8 00	9 00
1 1-2 and thicker cutting up plank	24 00	26 00
1 inch strips 4 in. to 8 in. mill run	14 00	15 00
1 inch strips, common	12 00	13 00
1 1-4 inch flooring		16 00
1 1-2 inch flooring		16 00
XXX shingles, 16 inch	2 50	2 60
XX shingles 16 inch	1 50	1 60
Lath, No. 1		2 15
Lath, No. 2	1 80	1 85

YARD QUOTATIONS.

		F. M.	
Mill cull boards and scantling	$10 00	1 1-2 in. flooring, dres'd	26 00 30 00
Shipping cull boards, promiscuous widths	13 00	" " rough	18 00 22 00
" stocks	16 00	" " dres'd	25 00 28 00
Scantling and joist, up to 16 ft	14 00	1 1-4 in. flooring, undressed, B.M.	16 00 18 00
" " " 18 ft	15 00	1 1-4 in. flooring, dres'd	18 00 20 00
" " " 20 ft	16 00	" " undres'd	12 00 15 00
" " " 22 ft	17 00	Beaded sheeting, dressed	20 00 35 00
" " " 24 ft	19 00	Clapboarding, dres'd	12 00
" " " 26 ft	20 00	XXX sawn shingles per M.	2 60 2 70
" " " 28 ft	22 00	Sawn lath	2 60
" " " 30 ft	24 00	Red Oak	30 00 40 00
" " " 32 ft	27 00	White "	37 00 45 00
" " " 34 ft	29 50	Basswood, No. 1 and 2	28 00 30 00
" " "	23 50	Cherry, No. 1 and 2	70 00 90 00
" " " 36 ft	31 00	White ash, 1 and 2	24 00 35 00
" " " 38 ft	33 00	Black ask, 1 and 2	20 00 30 00
" " 40 to 44 ft	37 00		
Cutting up planks, 1 and thicker, dry	25 00 28 00		
" board	18 00 24 00		
Dressing blocks	16 00 20 00		
Picks Am. inspection.	30 00		

HARDWOODS—PER M. FEET CAR LOTS.

Ash, white,	1 to 2 in.	$18 00	$20 00	Elm, soft	1	1½	$11 00 $12 00
" "	2½ to 4	20 00	24 00	" "	2	3	12 00 13 00
" black,	1	1½	16 00	18 00	" rock	1	1¼	14 00 16 00
Birch, sq.,	1	4	17 00	20 00	" "	1½	3	15 00 18 00
" "	4X4	8X8	20 00	22 00	Hickory	1½	2	28 00 30 00
" red	X	½	20 00	22 00	Maple	1	1½	16 00 17 00
" "	2	4	22 00	25 00	"	2	4	17 00 18 00
" yellow	1	4	14 00	15 00	Oak, red, p'n	1	1½	28 00 30 00
Basswood	1	1¼	15 00	16 00	" "	2	4	30 00 32 00
"	1½	2	16 00	18 00	" white "	1	1½	28 00 30 00
Butternut	1	1½	23 00	25 00	" " "	2	4	30 00 35 00
"	2	3	25 00	28 00	" quart'd	1	2	48 00 52 00
Chestnut	1	2	2 00	25 00	Walnut	1	3	85 00 100 00
Cherry	1	1½	50 00	60 00	Whitewood	1	2	32 00 36 00
"	2	4	60 00	65 00				

OTTAWA, ONT.

OTTAWA, June 25, 1894.

Pine, good sidings, per M feet, b.m.	$32 00 40 00
Pine, good strips, " " "	27 00 35 00
Pine, good shorts, " " "	20 00 27 00
Pine, 2nd quality sidings, per M feet, b.m.	20 00 25 00
Pine, 2nd quality strips, " " "	18 00 22 00
Pine, 2nd quality shorts, " " "	15 00 18 00
Pine, shipping cull stock, " " "	14 00 16 00
Pine, box cull stock, " " "	11 00 13 00
Pine, s.c. strips and sidings " " "	11 00 14 00
Pine, mill cull	8 00 10 00
Lath, per M	1 60 1 90

QUEBEC, QUE.

QUEBEC, June 25, 1894.

WHITE PINE—IN THE RAFT.

	cts.	cts.
For inferior and ordinary according to average, quality etc., measured off	14	@ 18
For fair average quality, according to average, etc., measured off.	16	20
For good and good fair average, " " " " "	23	27
For superior " " " " "	28	30
In shipping order " " " " "	29	35
Waney board, 18 to 19 inch " " " " "	30	36
Waney board, 19 to 21 inch " " " " "	37	40

RED PINE—IN THE RAFT.

Measured off, according to average and quality	14	22
In shipping order, 35 to 45 feet " "	22	30

OAK—MICHIGAN AND OHIO.

By the dram, according to average and quality	45 51

ELM.

By the dram, according to average and quality, 45 to 50 feet	30 35
" " " " 30 to 35 feet	25 28

ASH.

14 inches and up, according to average and quality	30 34

BIRCH.

16 inch average, according to average and quality	20 23

TAMARAC.

Square, according to size and quality	17 19
Flatted, " " "	15 18

STAVES.

Merchantable Pipe, according to qual. and sp'cfct'n—nominal	$330 $350
W. O. Puncheon, Merchantable, according to quality	90 100

DEALS.

Bright, according to mill specification, $115 to $123 for 1st, $78 to $82 for 2nd, and $37 to $42 for 3rd quality.

Bright spruce, according to mill specification, $40 to $43 for 1st, $27 to $28 for 2nd, $23 to $25 for 3rd, and $19 to $21 for 4th quality.

OSWEGO, N.Y.

OSWEGO, N. Y., June 25.—Any expected revival in the lumber trade that may have been looked for after the opening of navigation is slow to show itself. The shipments are running light and the unsatisfactory

feature of the trade is that no one seems just certain how things may open out later on. There is no noticeable change in prices.

WHITE PINE.

Three uppers, 1¼, 1½ and 2 inch	$47 00@48 00
Pickings, " "	39 00 40 00
No. 1, cutting up, " "	34 00 35 00
No. 2, cutting up, " "	24 00 25 00
In strips, 4 to 8 wide, selected for moulding strips, 14 to 16 ft.	32 00 34 00

SIDING.

1 in siding, cutting up picks and uppers	32 00@39 00	1¼ in selected	38 00@43 00
1 in dressing	19 00 21 00	1¼ in dressing	20 00 22 00
1 in No. 1 culls	14 00 15 00	1¼ in No. 1 culls	15 00 17 00
1 in No. 2 culls	13 00 14 00	1¼ in No. 2 culls	14 00 15 00
		1 in. No 3 culls	11 00 12 00

1X12 INCH.

12 and 16 ft., mill run	21 00 24 00
12 and 16 feet, No. 1 and 2, barn boards	19 00 20 00
12 and 16 feet, dressing and better	27 00 31 00
12 and 16 feet, No. 2 culls	15 00 16 00

1X10 INCH.

12 and 13 feet, mill run, mill culls out	21 00 23 00
12 and 13 feet, dressing and better	26 00 28 00
1x10, 14 to 16 barn boards	18 00 19 00
12 and 13 feet, No. 1 culls	16 00 17 00
12 and 13 feet, No. 2 culls	15 00 16 00
14 to 16 feet, mill run mill culls out	21 00 23 00
14 to 16 feet, dressing and better	26 00 28 00
14 to 16 feet, No. 1 culls	17 00 18 00
14 to 16 feet, No. 2 culls	15 00 16 00
10 to 13 feet, No. 3 culls	11 00 12 00

1¼X10 INCHES.

Mill run, mill culls out	$22 00@25 00	No. 1 culls	17 00 18 00
Dressing and better	27 00 35 00	No. 2 culls	15 00 16 00

1X4 INCHES.

Mill run, mill culls out	17 00 21 00	No. 1 culls	14 00 15 00
Dressing and better	24 00 30 00	No. 2 culls	13 00 14 00

1X5 INCHES.

6, 7 or 8, mill run, mill culls out	20 00 25 00	6, 7 or 8, No. 1 culls	16 00 17 00
		6, 7 or 8, No. 2 culls	14 00 15 00
6, 7 or 8, drg and better	25 00 30 00		

SHINGLES.

XXX, 18 in pine	3 70 3 90	XXX, 18 in. cedar	3 50 3 70
Clear butts, pine, 18 in.	2 70 2 90	Clear butt, 18 in. cedar	2 50 2 70
XXX, 16 in. pine	3 00 3 20	XX, 18 in. cedar	1 90 2 00
Stock cedars, 5 or 6 in	4 50 5 00		

LATH.

No. 1, 1¼	2 30	No. 2, 1¼	2 25
No. 1, 1 in	1 80		

SAGINAW, MICH.

SAGINAW, Mich., June 25.—All our advices from Michigan tell of a depressed market. This will be gleaned from what is said in our regular Michigan letter this month, and information that comes to us from any other source is much on the same lines. In the cargo market there is hardly anything to report. Those who may happen to make sales are not particular that much should be said about them. A stranger, unacquainted with the lumber business, were he to visit this port, would consider that the lumber trade was lively; for, of course, a large quantity of lumber, relatively, is going from here all the time. Michigan has by no means lost its hold as a lumber-producing, lumber-shipping state, but compared with other years and with what would be expected, the trade is light. With the tariff somewhat nearer to a settlement, apparently, there will be more definite conditions in the future; but everyone has been living on the future to so large an extent that the fare has become rather indigestible. Prices are unsettled.

FINISHING LUMBER—ROUGH.

Uppers, 1, 1¼ and 1½	45 00	Fine common, 1 in	35 00
2 in	46 00	1½ and 1¾ in	36 00
Selects, 1 in	40 00	2 in	37 00
1¼ and 1½	40 00	C, 7, 8 and 9 in	30 00
2 in	40 00		

SIDING.

Clear, ½ in	24 00	C, ½ in	10 00
⅝ in	48 00	⅞ in	34 00
Select, ½ in	21 00	No. 1, ½ in	13 00
⅝ in	40 00	⅞ in	23 00

TIMBER, JOIST AND SCANTLING.

2x4 to 10x10, 12, 14 and 16 ft.	$11 00	20 ft	14 00
18 ft	13 00	22 and 24 ft	15 00

For each additional 2 ft. add $1; 12 in. plank and timber $1 extra; extra for sizes above 12 in.

SHINGLES.

XXX 18 in. Climax	3 65	18 in. X (cull)	1 00
XXX Saginaw	3 40	XXX shorts	2 25
XX Climax	2 25	XX	1 50
18 in. 4 in. c. b	1 25		

LATH.

Lath, No 1, white pine	2 00	Lath, No. 2, W. pine, Norway	1 65

BOX.

11 to 12 in. (No 3 cut)	14 00	Narrow	13 00@14 00
11 to 8 in (No. 3 cut)	13 50	1¼ in	15 00 18 00
2x13 and wider	15 00 17 00	2 in	15 00 18 00

SHINGLES.

3 in. XXX, clear	3 85 4 00	16 in., "A extra	2 60 2 70
3 in. XX, 6 in. clear	2 85	16 in. clear butts	2 10

LATH.

No. 1, 4 ft	2 50 2 60	No. 1, 3 ft	1 10
No. 2, 4 ft	1 95		

NEW YORK CITY.

NEW YORK, June 25.—If any improvement in lumber is to be noted, perhaps it may be said it is for the best. Prices are a little firmer, and here is one indication along this line. With the railroad strike ended it is hoped that help will also come for this reason. White pine is not very brisk, nor is there any remarkable activity in Southern products. Spruce is slow to move.

WHITE PINE—WESTERN GRADES.

Uppers, 1 in	$44 00@45 00	Coffin boards	20 00 22 00
1¼, 1½ and 2 in	46 00 47 00	Box, in	$17 00@17 50
3 and 4 in	55 00 58 00	Thicker	17 50 18 50
Selects, 1 in	40 00 41 00	Ceil'g, base, fig. No. 1	40 00 42 00
1 in., all wide	41 00 43 00	No. 2	35 00 37 00
1¼, 1½ and 2 in	43 00 44 00	No. 3	24 00 26 00
3 and 4 in	52 00 53 00	Shelving, No. 1	30 00 32 00
Fine common, 1 in	36 00 37 00	No. 2	25 00 27 00
1¼, 1½ and 2 in	38 00 40 00	Molding, No. 1	36 00 37 00
3 and 4 in	46 00 48 00	No. 2	34 00 36 00
Cutting up, 1 in. No. 1	28 00 30 00	Bevel sid'g, clear	22 50 23 00
No. 2	21 00 23 00	No. 1	22 00 22 50
Thick, No. 1	29 00 32 00	No. 2	20 00 20 50
No. 2	24 00 26 00	No. 3	16 00 17 00
Common, No. 1, to 12 in	22 00 23 00	Norway, c'l, and No. 1	23 00 25 00
No. 2	20 00 21 00	No. 2	20 00 22 00
No. 3	17 00 18 00	Common	18 00 19 00

ALBANY, N.Y.

ALBANY, N. Y., June 25.—A certain degree of activity in lumbe. that was noticeable the early days of the month has hardly been sustained throughout the month. No one wants to buy in large quantities. Buyers who had hitherto purchased by boat load prefer buying in smaller quantities, and this, when such methods are generally adopted, means a considerable lowering in the volume of trade. Planing mill men are agitated on account of the likelihood of free lumber going through. They say it will seriously affect manufacturing at this point, as our people will not be able to compete with dressed lumber coming from Canada.

PINE.

2½ in. and up, good	$56 $60	10-in. common	$15 $16
Fourths	58	12-in. dressing and better	28 34
Selects	50	Common	15 17
Pickings	45	1¼-in. siding, selected, 13 ft.	40 45
1¼ to 2-in. good	52 55	Common	15 17
Fourths	47 50	1-in. siding, selected	38 42
Selects	42 45	Common	15 17
Pickings	37 40	Norway, clear	22 25
1-in. good	52 55	Dressing	16 18
Fourths	47 50	Common	11 15
Selects	42 45	10-in. plank, 13 ft., dressing and better, each	c. c. 42 55
Pickings	37 40	10-in. plank, 13-ft. culls, each	21 25
Cutting-up	22 27	10-in. boards, 13 ft., dressing and better, each	28 32
Bracket plank	30 35	10-in. boards, 13-ft. culls	17 21
Shelving boards, 12-in. up	30 32		
Dressing boards, narrow	19 21		

LATH.

Pine	$2 40	Spruce	$2 45

SHINGLES.

Sawed Pine, ex xxxx	$4 40 $4 50	Board butts, 6 x 18	$5 00 $6 00
Clear butts	3 15 3 25	Hemlock	2 30
Smooth, 6 x 18	5 50 5 60	Spruce	2 20 2 30

BOSTON, MASS.

BOSTON, MASS., June 25—Unquestioned dullness is the record of trade in this port. This is not confined to lumber only but the fact that things are slow generally is after all poor consolation for the lumberman who has bills to pay. The hope is bright, that when the tariff is positively fixed, general business will improve and with it lumbermen will be helped. Free lumber is not going to be altogether acceptable to the trade here and yet the very fact that the tariff is fixed will have a steadying effect on trade. Spruce is out of all calculation in any record of lumber affairs. It is being knocked hither and thither and the question is being asked, when will come the end?

EASTERN PINE—CARGO OR CAR LOAD.

Ordinary planed boards	$12 00	¼ inch	$ 9 25 9 75
Coarse No. 5	16 00	11-16 inch	9 00
Refuse	11 00 12 00	5/4 inch	8 50
Outs	9 00 10 00	Clapboards, sap ext.	50 00 55 00
Boxboards, 1 inch	10 75 11 00	Sap clear	45 00 50 00
⅞ inch	9 75 10 00	Sap, and clear	40 00
		No. 1	25 00

WESTERN PINE—BY CAR LOAD.

Uppers, 1 in	$52 00@54 00	Fine com., 3 and 4 in	42 00 46 00
1¼, 1½ and 2 in	52 00 55 00	No. 2, 1 in. Fine com	28 00 30 00
3 and 4 in	60 00	1¼, 1½ and 2 in	29 00 31 00
Selects, 1 in	45 00 46 00	No. 1 strips, 4 to 6 in.	43 00 44 00
1¼, 1½ and 2 in	48 00 50 00	No. 2	36 00 37 00
3 and 4 in	51 00	No. 3	28 00 30 00
Moulding boards, 7 to 11 in. clear	36 00 38 00	Cut ups, 1 to 2 in	24 00 32 00
60 per cent. clear	34 00 36 00	Coffin boards	21 00 23 00
Fine common, 1 in	40 00 41 00	Common all widths	22 00 26 00
1¼, 1½ and 2 in	41 00 43 00	Shipping culls, 1 in	15 00 15 50
		do 1¼ in.	15 50 16 50

SPRUCE—BY CARGO.

Scantling and plank, random cargoes	14 00@15 00	Coarse, rough	12 00@14 00
Yard orders, ordinary sizes	15 00 16 00	Hemlock bds., rough, " dressed	12 00 13 00
Yard orders, extra sizes	16 00 18 00	Clapbds., extra, 4 ft.	12 00 14 00
Clear floor boards	19 00 20 00	Clear, 4 ft.	29 00 30 00
No. 2	16 00 17 00	Second clear	30 00 32 00
		No. 1	23 00 24 00
			12 00 16 00

LATH.

Spruce by cargo	2 50@2 75

SHINGLES.

Eastern sawed cedar, extra	$3 00 $3 25	Eastern shaved sawed cedar, 1st quality	5 00
clear	2 30 2 75	2nd quality	4 75
2nd's	2 00 2 35	3rd "	3 85 4 00
extra No. 1	1 50 1 75	4th "	3 00 3 25
		Spruce No. 1	1 50

BUFFALO AND TONAWANDA, N.Y.

TONAWANDA, N. Y., June 25—He would be a thorough going optimist who would anticipate that the month will close with either the volume of trade, or the prices, levelling up as well as for the corresponding month last year. The amount of trade doing is light and it is thought that any activity just at the present time will be cut very short as we enter into midsummer. Buffalo lumbermen are fearing that the continued dullness in trade will lead to a marked cutting of prices and this would demoralize trade not a little.

WHITE PINE.

Up'rs, 1, 1¼, 1½ and 2 in	$46 00 48 00	Shelving, No. 1, 13 in and up, 1 in	31 00@33 00
2¼ and 3 in	52 00 55 00	Dressing, 1¼ in	25 00 26 00
4 in	58 00 60 00	1¼x10 and 12	26 00
Selects, 1 in	38 00 39 00	1½ in	24 00 25 00
1¼ to 2 in	42 00	2 in	26 50 28 00
2¼ and 3 in	49 00 50 00	Mold stps, 1 to 2 in	33 00 35 00
4 in	54 00	Barn, No. 1, 10 and 12 in	21 00 23 00
Fine common, 1 in	35 00 38 00	6 and 8 in	20 50 22 00
1¼ and 1½ in	37 00 38 00	No. 2, 10 and 12 in.	18 00 19 00
2 in	39 00 40 00	6 and 8 in	18 00 19 00
2 in	45 00	No. 3, 10 and 12 in.	14 00 16 00
4 in	45 00	6 and 8 in	13 50 15 50
Cut'g up, No. 1, 1 in.	27 00 29 00	Common, 1 in	16 00 18 00
1¼ to 2 in	33 00 34 00	1¼ and 1½ in	18 50 20 00
No. 2, 1 in	17 00 18 00	2 in	19 00 22 00
No. 2, 1¼ to 2 in	23 00 24 00		
No. 3, 1¼ to 2 in	18 00 19 00		

EXHAUST STEAM.

THE use of exhaust steam is the more profitable as the percentage of the steam utilized is increased, and as the back pressure produced by its use is reduced, if we add back pressure to an engine we increase the mean pressure required upon the piston in order to maintain a given mean effective pressure: that is, we increase the horse power of the engine, so far as the boiler is concerned, by an amount equal to the horse power constant multiplied by the back pressure added, and require a proportionately greater supply of steam. The condensing engine may be considered in the same way. Suppose we have an engine which develops one-horse-power for each pound of mean effective pressure running on a mean effective of fifty pounds, an absolute back pressure of five pounds, and a steam consumption of twenty pounds per hourly horse power. If we cut off the condenser, and exhaust at atmospheric pressure, we shall have added ten horse power to the work of the engine, requiring two hundred pounds of steam additional per hour. As this additional horse power is used in overcoming the increased back pressure, the effective horse power remains at fifty, and the steam consumed per effective or indicated horse power per hour is increased twenty-five per cent. Now if we have an application for as much or more heat as would be furnished by two hundred pounds of boiler steam we can take it profitably from the exhaust. If not, it would be better to use steam direct from the boiler.

SINGLE-VALVE ENGINES.

NOT very long ago it was almost universally conceded, says the American Machinist, that nothing in the way of an early cut-off in the cylinder of a stationary steam engine could be accomplished by a single-valve with, at the same time, a reasonably economical steam distribution. This belief prevailed long after the use of the link motion on locomotives, where the steam is so well handled by the operation of the link and single valve as to have kept other means for the most part out of the field. The practice, after it was found that some lap could be added to a slide valve, soon came to the point of making it such as it would cut off the steam at an average for both ends of the cylinder of three-quarters stroke. This was thought to be about the limit to expansion possible with a single valve. Now single-valve automatic engines are made to cut off at as early a point in the stroke as is desirable—many of them being so constructed that the following with steam for three quarter stroke is not possible, and the steam distribution is very good indeed: not equal to that of four-valve engines, but not so much behind in point of economy as would appear probable. The multiplied demand for small engines no doubt have a good deal to do with the perfecting of the governing devices, and with determining that it was not necessary that they be full-stroke machines; and the perfecting of the mechanism has had as much to do with increasing the demand for them.

THE NEWS.

—P. Atkins, lumber, Morden, Man., is dead.

—The saw mill at Rapid City, Man., has resumed cutting.

—Mr. Mitchell will erect a new saw mill at Selkirk, Man.

—A saw mill is being erected at Kenabutch, Sudbury, by Americans.

—Walnut lumber is being shipped from the vicinity of Leamington to Germany.

—An arc light electric plant has been put in Joseph Chew's saw mill at Chelmsford, Ont.

—Thos. Dumas, Bristol, Que., has purchased the sash and door factory at Eganville, Ont.

—McIlvanie & Ellis, saw mill and general store, have started business at Lumby, B. C.

—Lloyd & Co., lumber, St. Boniface, Man., have been succeeded by Lloyd & McCutcheon.

—T. Paradis, saw mill, Levis, Que., who recently assigned, is offering ten cents on the dollar.

—H. J. Hall has taken over and will refit and operate the Shantz planing mill at Berlin, Ont.

—Bush fires are reported to have done considerable damage in the vicinity of Fort William, Ont.

—Wm. Mason & Sons have recently put a system of fire protection in their saw mill at Ottawa.

—Wm. Proctor has sold his interest in the Beaverton, Ont., saw mill to John Ferris, late of North Bay.

—Two thousand six hundred pieces of yellow pine arrived recently down the Gatineau, having been ratted 156 miles.

—W. L. Johnson, of New Westminster, B. C., is shipping large quantities of shingles to the eastern provinces.

—Messrs. Paquette & Godbout, St. Hyacinthe, Que., will place a new 90 horse-power boiler in their planing mill.

—The Keewatin Lumber Co.'s large mill at Keewatin, Ont., has resumed operations for the regular summer's work.

—Ramesbottom & Spencer's saw mill at Little Current, Ont., has commenced cutting, with prospects of a busy season.

—F. Lloyd, of Chemaimus, B. C., is erecting a saw mill at Hall's Crossing, having a capacity of 20,000 feet per day.

—The dam of Messrs. Boivin & Gagnon's saw mill at Baie St. Paul, Que., was severely damaged by floods on the first of June.

—The city of Winnipeg has awarded the contract for the supply of lumber to Mr. D. E. Spragge, at $13.90 per M. delivered.

—The Muskoka Mill and Lumber Company, are reported to have secured 360 square miles of fine lumber district in New Brunswick.

—The Simcoe Wood & Lumber Company, Simcoe, Ont., has been incorporated under a provincial charter; capital stock, $45,000.

—Miller & Woodmain's steam saw mill at St. John, N. B., closed down a fortnight ago, the employees refusing to accept a reduction in wages.

—The W. C. Edwards Lumber Company, of Ottawa, has purchased a timber limit on the Black and Coulonge rivers, from McKay & Hough.

—The demolition of the old saw mills at Montmorency Falls, Que., has been commenced, their usefulness having become a thing of the past.

—It is reported that a large raft of logs belonging to the Victoria Harbor Lumber Co., containing 79,000 pieces, has broken loose in Georgian Bay.

—Burglars recently broke into the office of Messrs. Dyck & Dauming, lumber dealers, Winnipeg, but secured no booty beyond fifty cents' worth of postage stamps.

—J. R. Booth has finished the re-building of the old Perley mill on the Chaudiere river, Ottawa, and operations have begun. About two hundred men will be employed.

—O. E. Konkle, of the Hamilton Lumber Company, of Hamilton, in conjunction with an American capitalist, will erect a $200,000 opera house and hotel in that city.

A sawdust explosion took place in the Ottawa river a few days ago. After the explosion about fifty feet square of sawdust, two feet thick above the surface of the water, floated away.

—Since the opening of navigation there have been five million feet of lumber shipped from the Ottawa docks by barge for the English market. It is an unprecedentedly heavy shipment.

—The Musquash Lumber Co. has been incorporated in New Brunswick with a capital stock of $25,000, to manufacture lumber, etc. John Sealy, St. John, N. B., is one of the incorporators.

—Mr. C. H. Waterous, general manager of the Waterous Engine Works Co., Brantford, visited St. Paul recently in connection with the rebuilding of their branch factory recently destroyed by fire.

—The Montmagny Manufacturing and Electric Company, of Montreal, are applying for incorporation, with a capital of $10,000. The manufacture of lumber is one of the objects of the new company.

—Mr. Robert Stewart, lumber merchant, of Guelph, has purchased a timber limit, ten miles up the Muskoka River from Bracebridge, from Mr. C. W. Hays. There are 300 acres in the limit, all pine.

—J. W. Baker has erected a new steam saw mill at Lake Edward, Que., and will shortly commence sawing spruce logs there, of which a large quantity were cut last winter upon the limits around Rat river and the lake.

—The Eau and Bow River Lumber Company, of Calgary, met with a serious loss recently by the bursting of a boom by the freshet. The boom contained about $5,000 worth of logs, most of which have gone down the river.

—The Rathbun company's mill, at Lindsay, Ont., has recently been enlarged. A new 100 horse-power Wheelock engine, a shingle mill, and an automatic machine for feeding the furnaces with the refuse, have been added.

—A log drive, consisting of three million feet of timber, mostly white pine, recently arrived at D. Sprague's mill at Winnipeg, having been rafted over a distance of 500 miles. The timber was cut from the Lake of the Woods district.

—It is reported that the Canada Lumber Co., of Ottawa, have disposed of their limits and improvements on the Mississippi to Wm. Caldwell, formerly of Lanark, who owns the saw mill on the south side of the river. The sale includes the limits, all the logs on the river after this season's cut, the shanty and mill appurtenances.

The E. R. Burns Saw Co., whose works in Toronto were destroyed by fire recently, have begun the rebuilding of their factory. The new building, which is being constructed of brick, will be very much larger than the old one, and will be supplied with a full outfit of modern machinery. Orders are now being filled at their branch factory in Montreal.

Muskegon, Mich., from being one of the largest lumber producing points in the States, is fast retrograding, until this season the cut will not much exceed 100,000,000 feet.

—The W. C. T. U. of the Dominion are taking an active interest in the welfare of raftsmen and lumbermen. During the past winter large parcels of literature, scrap books and comfort bags have been sent to the lumbermen in the Ottawa and Muskoka districts, which, it is said, are much appreciated by the men. A missionary has been engaged for three months to visit the camps.

—From the Ottawa Citizen we learn that probably the most commodious mill platform in America is that in connection with Mr. J. R. Booth's mills in that city. Since the acquisition of the Perley & Pattee mill the platform has been extended in nearly every direction, and now ample room is afforded the large number of men to keep the lumber properly classified. The work is so thoroughly systematized that a particular place is allotted to lumber of every grade and dimension, and a fair average of what leaves the platform daily is obtained through the medium of a check book in which all loads are marked.

FIRES AND CASUALTIES.

FIRES.

—On the 10th of June A. Tuttle's planing mill at Moncton, N. B., was burned. Loss, $3,000.

—John Dale's saw mill on Trading Lake has been destroyed by fire. Loss, $2,000; no insurance.

—J. H. Davey's sash and door factory, Bradford, Ont., destroyed by fire. Loss, $1,000; no insurance.

—Kilbourn & Dunbar's saw mill at Kemble, Ont., has been destroyed by fire. Loss, $2,000; insurance, $1,000.

—The steamer Red River arrived at Selkirk on May 26 with the first barge load of lumber of the season. It came from Drake's mill.

—Corry Bros. steam saw mills at Havelock, Ont., were burned to the ground on the 6th of June. The loss is only partially covered by insurance.

—Hamilton's steam saw mill, St. John, N. B., was destroyed by fire recently. The insurance had recently been cancelled because the chimney had no spark arrester.

On the 13th of June the shingle and planing mill at Hepworth, Ont., owned by James Hawley and leased by William Foster, was burned. It is supposed that a spark from the furnace falling in the dry cedar shavings, was the origin of of the fire. No insurance.

—J. & T. Conlon's saw mill at Picnic Island, Little Current, Ont., was destroyed by fire on the 14th ultimo. The mill was one of the largest on the Georgian Bay, running two circulars and a gang saw, and employed from 100 to 125 hands. It will be some time before the mill can be rebuilt. The loss amounts to about $50,000, with insurance of about $20,000.

—A serious conflagration occurred at New Westminster, B. C., by which nearly the whole of the Royal City planing mills were consumed. The machine shop and plant, the shingle mill, box factory, three engines, four boilers, lumber racks, lumber piles, and wharf were destroyed. The loss is estimated at $100,000, and insurance $75,000. The fire originated in the furnace room.

CASUALTIES.

—While adjusting a belt in Philip Brook's saw mill near the village of Newmarket, Ont., a few days ago, James Titus had his left arm nearly severed from his shoulder.

PERSONAL.

Mr. Alex. Fraser, the millionaire lumberman of Weatmeath, Ont., has purchased a residence in Ottawa, and is going to the capital to reside.

Mr. W. H. Drydale, of Buenos Ayres, in company with Mr. C. A. McCulloch, of New York, visited Ottawa recently. Mr. Drydale is a son of the president of the widely known Drysdale Lumber Company, of Buenos Ayres, and is making a tour of the lumber districts to study the various phases of the business preparatory to being accepted as a member of the firm.

PUBLICATIONS.

A handsome catalogue of 190 pages, in embossed cloth binding, has been received from Messrs. John Bertram & Sons, proprietors of the Canadian Tool Works, Dundas, Ont. The book is embellished with illustrations made direct from photographs of numerous iron, brass and woodworking machines manufactured by this company, accompanied by letterpress descriptions, prices, &c.

An unique feature of the Review of Reviews, so ably edited in England by Mr. W. T. Stead and in America by Dr. Albert Shaw, is its summary each month, of the contents of the leading magazines of the world, for this summary includes the best of English and French journals. Even newspaper men, who are forced to cover a good deal of reading each month, find this feature of the Review of Reviews most helpful.

TRADE NOTE.

Mr. John J. Gartshore, of Toronto, recently sold 70 tons of steel rails to Giles Bros. & Co., Braeside; also locomotive, 12 cars and 1⅓ miles of light steel rail to C. A. McCool & Co., Cartier, for logging purposes.

The CANADA LUMBERMAN, $1.00 per year. Subscribe.

BRITISH COLUMBIA DOUGLAS FIR.

CORRESPONDENCE being carried on in the columns of the Timber Trades Journal, of London, Eng., brings out some strong points favorable to the Douglas fir of British Columbia. A writer from Virginia would give a larger meed of praise to the pine of his state, but an answer comes from A. C. McDonald, of Victoria, B. C., pointing out that the largest ship building firms on the Clyde give their preference to the "suitability of theDouglas fir lumber for ship building purposes." Strength is given to this communication when it is remembered that the United States Navy at Wilmington, Del., have used lumber from Burrard Inlet for supply purposes in preference to that from their own country. Considerable quantities of British Columbia timber have also been used by the Montreal Harbor Board in their operations of deepening the canals of the St. Lawrence. W. J. Stevens, another ship builder, confirms all that is said by these others as to the superiority of Douglas fir, where durability is desired.

WHY PULLEYS RUN UNSTEADY.

CENTRIFUGAL force has less to do with making a pulley run unsteady than the mere tendency it has of trying to get where it can rotate about its own centre of gravity. A wheel is generally looked upon as so much weight, and, if held off its centre, must go switching about like a heavy stone in a short arm sling, tending to pull the machinery to pieces. This may be well enough for a start, while the wheel is getting up to speed, but the time soon comes when the wheel will turn to its own centre and let the shaft swing for a while. Just notice how the juggler can seize a dish of any kind, as a dinner plate, for instance, and throw it up with a whirling motion, and while in the air, catch it on the end of a stick and cause it to rotate with ease. At first the plate is switched about by holding it off to one side of centre, but as the speed increases, it gradually brings the point of support near the centre, till at last it is allowed to spin on its own centre of gravity. In this case all the driving power, supporting force and the resistance of the load were brought to one single point, with nothing to react upon but the inertia of the plate.

THE POWER OF FLOWING STREAMS.

COMMON opinion respecting the energy or power of flowing streams is nearly always exaggerated, and greatly so. A current of large area conveys an idea of an almost irresistible force, when in fact it represents but a trifling power. The following table, taken from the Mechanical World, will serve to show how little work is represented by the current of streams. The force that may be utilized, or the head seen in the third and fourth columns, is very slight, and is the height to which the water will rise when obstructed. This depends, in a measure, on the shape of the obstructing faces. A plain radial current wheel will give not more than two-thirds the work that a well made Poncelet wheel will, because the water will rise higher on the curved floats of the latter named wheel.

Velocity of Steam.		Equivalent Head.		Pressure.	Total Energy.
Miles per Hour.	Feet per Second.	Feet.	Inches.	Pounds per Square Inch.	H. P. per Square ft. Sec. Area.
1	1.467	0.033	0.43	2 1	0.0055
2	2.933	0.134	1.62	8.4	0.0445
3	4.4	0.300	3.69	18.9	0.15
4	5.867	0.534	6.42	33.0	3.355
5	7.333	0.834	10.07	52.5	0.694
6	8.8	1.200	14.36	75.6	1.2

POWER OF MILL STREAMS AND FLUMES.

THE following table shows the number of pounds of water that will pass through an orifice an inch square under various heads from one to ten feet ; also the foot pounds of work there are in those quantities of water, the net foot pounds per minute utilized by a wheel with a rating of 80 per cent., and the horse-power developed by the wheel :

Head feet	Cubic feet per minute (actual)	Lbs. per min. (62½ lbs. = 1 cubic foot.	Foot lbs. per minute (gross.)	Net foot lbs. per min. (80 per cent. realized).	Horse-power (80 per cent. duty.)
1	2.1376	133.2437	133.2437	106.592	.0034[20]
2	3.0272	188.6955	377.2910	301.913	.009149
3	3.6992	230.5835	691.7505	553.400	.016770
4	4.2752	266.2935	1065.1740	852.139	.025822
5	4.7808	298.0032	1450.0160	1160.013	.035152
6	5.2352	326.3275	1957.9650	1566,372	.047466
7	5.6576	352.5671	2468.5997	1974.880	.059845
8	6.0480	376.992	3015.936	2412.749	.073114
9	6.428	399.7312	3597.58c8	2878.065	.087214
10	6.7648	421.6725	4216.725	3373.380	.102252

Representative Lumber Manufacturers and Dealers

Town	Railway, Express, or nearest Shipping Point	Name	Business	Power, Style and Daily Capacity
Ottawa, Ont.	Ottawa	**Booth, J. R.**	Lumber, Wholesale and Retail	Steam, Circular and Band Mill
Ottawa, Ont.	Ottawa	**Bronson & Weston Lumber Co.**	2 Sawmills, White and Red Pine, Wholesale	Water, Gang and Band, 450m
Parry Sound, Ont.	Utterson	**Conger Lumber Co.**	Lumber, Wholesale and Retail	
Parry Sound, Ont.	Parry Sound	**Parry Sound Lumber Co.**	Saw, Shingle and Lath Mills, Pine, Wholesale	Water, Gang, Circular, Saw 90m, Shingles 70m, Lath 30m
Muskoka Mills, Ont.	Midland	**Muskoka Mill and Lumber Co.,** Head Office, Arcade, 24 King st. w., Toronto	W. Pine Lumber, Lath and Bill Stuff, all lengths.	2 Mills, Water, 1 Band, 2 Gangs and 3 Circulars.
Alexandria, Ont.	Alexandria	**McPherson, Schell & Co.**	Cheese Box Factory, Pine, Spruce, Cedar	
Almonte, Ont.	Almonte	**Caldwell, A. & Son**	Sawmill, Pine, Lumber, Hemlock, Hardwoods	Circular, 3m
Barrie, Ont.	Barrie	**Dyment & Mickle**	Sawmill, Pine, Spruce, Cedar, Hardwoods	Steam, Circular, 40m
Barrow Bay, Ont.	Wiarton	**Barrow Bay Lumber Co., Limited**	Saw, Shingle and Heading Mill, Pine, Cedar Oak, Oak Railway Ties, Paving Blocks	Steam, Circular, 16m
Blind River, Ont.	Blind River	**Blind River Lumber Co.**	2 Saw, Sh. and Lath Mls., Pine, Hem., Bl. Birch	Stm., Band, Cir., S. 75m, Sh. 60m
Bobcaygeon, Ont.	Fenelon Falls	**Boyd, Mossom & Co.**	Lumber, Wholesale and Retail	
Barrie, Ont.	Barrie	**Burton Bros.**	Lumber, Wholesale and Retail	
Waubaushene, Ont.	Waubaushene	**Georgian Bay Consolid. Lumber Co.** Hd. office arcade 24 King st. w., Toronto	Pine only.	Waubaushene mill, stm., 200m; Pt. Severn mill, water, 120m
Calabogie, Ont.	Calabogie	**Carswell, Thistle & McKay**	Lumber, Wholesale and Retail	
Callander, Ont.	Callander, G.T.R.	**John B. Smith & Sons** Head Office, Strachan Ave., Toronto	White and Red Pine Lumber, Bill Stuff, Lath and Shingles	Steam, 2 Circular, 80m
Collins Inlet, Ont.	Collins Inlet	**Collins Inlet Lumber Co.**	Lumber, Pine, Oak, Ash, Birch, Whol. and Ret.	
Glammis, Ont.	Pinkerton	**McIntyre, N. & A.**	Saw, Shingle and Lath Mill, Timber Lands, Hemlock, Pine, Lumber, Hardwoods	Steam, Cir., Saw 14m, Sh. 20m
Hamilton, Ont.	Hamilton	**BRADLEY, MORRIS & REID CO.**	Lum., Tim., Pine, Hem., Hwds., Whol. and Ret.	
Huntsville, Ont.	Huntsville	**Heath, Tait and Turnbull**	Sawmill, Pine, Spruce, Hemlock, Hardwoods	Steam, Circular, 25m
Hamilton, Ont.	Huntsville and Katrine	**Thomson, Robert & Co.**	Sawmill, Pine, Spruce, Hardwoods	Steam, Circular, 4m
Keewatin, Ont.	Keewatin	**Dick, Banning & Co.**	Sawmill, Pine, Hardwoods, Wholesale	Steam, Circular
Keewatin, Ont.	Keewatin	**Keewatin Lumber & Mfg. Co.**	Saw, Lath, Sh. and Pl. Mill, Moving Posts, Pine	Water, Band and Circular, 100m
Lakefield, Ont.	Lakefield	**Lakefield Lumber Mfg. Co.**	Lumber, Wholesale and Retail	
Little Current, Ont.	Sudbury	**Howry, J. W. & Sons.**	Lumber, Wholesale and Retail	
London, Ont.	London	**Gordon, James**	Exp. and dlr. in Am. Hwds, made to specification	
Longford Mills, Ont.	Longford	**Longford Lumber Co.**	Saw and Plan. Mill, Tim. Lands and Logs, Pine	Steam, Band and Circular, 100m
Norman, Ont.	Norman	**Minnesota & Ontario Lumber Co.**	Lumber, Wholesale and Retail	
Louise, Ont.	Elmwood, G.T.R.	**S. B. Wilson & Son**	Hardwoods, Shingles, Lath, Handles.	Steam, Circular, 20m.
Toronto, Ont.	Warren, C.P.R	**The Imperial Lumber Co., Limited**	Pine	80 M. per day, Stm., 2 Cir. Saws
Toronto, Ont.	Cache Bay, Ont.	**Davidson, Hay & Co.**	W. Pine, Lath, Shingles, Dim. Timber, Car Sills	Stm, 2 Band, Cir. & Gang, 140m
Toronto, Ont., Mill: Stony Lake	Lakefield	**S. J. Wilson & Co.**	Pine and Hardwood, Wholesale	Steam, Circular, 15m.
Toronto, Ont.	Toronto	**F. N. Tennant**	Lumber, Wholesale	
Toronto, Ont.	Toronto	**Donogh & Oliver**	Lumber, Wholesale	Com.
Toronto, Ont.	Toronto	**Victoria Harbor Lumber Co.**	3 Saw, Shingle and Lath Mills, White Pine, Whol.	Stm., Cir., Gang and Band, 140m
Toronto, Ont.	Toronto	**W. N. McEachren & Co**	Lumber, Wholesale	Com.
Toronto, Ont.	Toronto	**James Tennant & Co.**	Lumber, Lath, Shingles, etc., Wholesale	Com.
Toronto	Toronto	**DeLaplante & Bowden**	Pine and Hardwood Lumber, Whol. and Retail	
Toronto, Ont.	Toronto	**James McBain Reid.**	Ry. and Ship Timber, any required dimensions	
Wiarton, Ont.	Wiarton	**Miller, B. B.**	3 Sawmills, Lumber, Barrel Heads	Stm., Wr., Cir., Port. & Sta., 10m
Montreal, Que.	Montreal	**Dufresne, O. Jr. & Frere**	Sawmill, Pine, Spruce, Hemlock, Hdwds., Whol.	Steam, Circular and Band, 50m
Montreal, Que.	Montreal	**SHEARER & BROWN**	4 Sawmills, Oak, Ash, Elm, Pine, Hem., Dim.	2 Stm., 2 Wat., Band, Cir., 40m
Moodyville, B.C.	New Westminster	**MOODYVILLE SAWMILL CO.**	Sawmills, P. Fin, Spruce, Cedar, Hardwoods	Steam, Circular, 20m
New Westminster, B.C.	New Westminster	**Brunette Sawmill Co.**	Saw and Planing Mills, Sash, Doors and Blinds. Fir, Cedar, Spruce, Hardwoods	Steam, Gang and Circular
Canterbury, N.B.	Canterbury Stn.	**James Morrison & Son**	Sawmill. Pine, Hardwoods	Steam, Circular, 38m
Bridgewater, N.S.	Bridgewater	**DAVIDSON, E. D. & SONS**	5 Saw, Shgle. and Lath Mills, Pine, Spr., Hwds.	Water, Circular and Gang, 200m
South River, Ont.	South River, G.T.R.	**South River Lumber Co., Ltd.**	Pine, Spruce, Birch, Hemlock, Shingles	Stm., Cir., 40m, Shingles, 35m, Lath, 15m

Lumbermen desirous of being represented in this Directory can obtain information in regard to rates by communicating with the Publisher.

WANTED AND FOR SALE

Advertisements will be inserted in this department at the rate of 15 cents per line each insertion. When four or more consecutive insertions are ordered a discount of 25 per cent. will be allowed. This notice shows the width of the line and is set in Nonpareil type. Advertisements must be received not later than the 24th of each month to insure insertion in the following issue.

WANTED

FOR HEMLOCK, DIMENSION LUMBER, hardwood flooring, cedar shingles, piles, sawdust, etc., write J. E. MURPHY, lumberman, Hepworth Station, Ont.

$5,000 CASH and balance can remain on mortgage for finest lumber yards in Toronto, at Queen's Wharf, with buildings and brick residence and large tract of land, best of railroad facilities for shipping. $22,500 will purchase this property, which is a bargain seldom offered, easily worth $35,000. Apply G. G. Christie, Lumber Dealer, 86 Bay street, Toronto.

FOR SALE

PORT ROWAN SASH AND DOOR FACTORY and Sawmill and Shingle Mills. The Factory is fitted with new 60 h. p. steel boiler, also with following new machinery by Macgregor and Gourlay, of Galt.

Large Matcher and Planer combined, Band Saw, Power Mortiser, Shafter, Jointer and Sandpaper.

Apply

Box 16, Port Rowan, Ont.

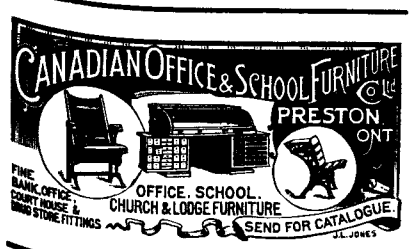
FOR SALE OR TO LET

TWO-STOREY FRAME PLANING MILL AND Carpenter Shop—Vine Avenue, Toronto Junction, including boiler and engine, with or without machinery; size of building, 40x120 ft.; steam heated; stable, storehouse, office, and large yard in connection; can be utilized for any manufacturing business. Apply, J. P. WAGNER, Toronto Junction.

RAILS FOR TRAMWAYS

NEW AND SECOND-HAND STEEL AND iron rails for tramways and logging lines, from 12 lbs. per yard and upwards; estimates given for complete outfit.

JOHN J. GARTSHORE,
49 Front St. West, Toronto.



SCRIBNER'S LUMBER AND LOG BOOK

Has had a sale of ***over one million copies,*** and is the most complete book of its kind ever published. Gives measurements of all kinds of Lumber, Logs, Planks, Timber; hints to lumber dealers, wood measure, speed of circular saws, care of saws, cord-wood tables, felling trees, growth of trees, land measure, wages, rent, board, interest, stave heading bolts, etc.

. . . PRICE, 35c., POST PAID . . .

Orders have been received for this book from nearly all parts of the civilized world, viz.: United States, Canada, Australia, Cuba, Nova Scotia, South America, West Indies, South Africa, England, Germany, and France.

G. W. FISHER, Box 238, *Rochester, N. Y.*

Sole Canadian Agents :-: Prices Reduced.

WATEROUS, BRANTFORD, CANADA.

FIRST ANNUAL SALE

— OF —

Timber - - Limits

1,671 SQUARE MILES

The subscriber has been instructed by the several owners to offer for sale in separate parcels, by

PUBLIC AUCTION

IN THE ROTUNDA OF THE

Board of Trade

IN THE

CITY OF TORONTO, ONT.

— ON —

WEDNESDAY, AUGUST 29, '94

commencing at 2 p.m. prompt, the following valuable timber limits:—

Townships of Dill, Snider, Caldwell, N. and S. Burleigh, McMahon, Morin, Striker, Houghton, McGivern, N. W. part of 155, parts of Mississauga Indian Reserve, Cobden, and the mills, etc., of the Blind River Co.: also Townships 43 and 51, berths 5 and 6 Butt, 2, 3 and 6 McClintock, 2 and 5 Livingston, 2 Finlayson, 3 McCraney, 2, 3, 4 and 8 Thunder Bay, 3 Perry, 3 McMurrich, 1 Pringle, 19, 20, 21, 25, 27, 65, 67 and 6d Rainy River District, Province of Ontario. Also in the Upper Ottawa Agency, Province of Quebec, the following very choice limits: No. 7, R 1, block A—597, 598, 599, 601, 602, 603, 604, 591, 592, 593, 594, 600, 512, 513, 514, 515, 516, 517, 181, 18, 26, 27, 28, 35, 37, Kippawa; 394 and 395 Black, etc., etc. The above include the limits of Barnet and Mackie, E. E. Lawzon, and the valuable adjacent virgin limits on the Upper Ottawa.

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28 Victoria Street
TORONTO

. . . THE . . .

FLINT & PERE MARQUETTE RAILROAD

FROM

Port Huron and Detroit

Is the Short Line to

SAGINAW AND BAY CITY

(Centres of the vast lumber interests of Michigan)

MT. PLEASANT, CLARE, REED CITY
BALDWIN, LUDINGTON, MANISTEE
AND
MILWAUKEE, WIS.

The last-named place reached by the Company's line of steamships across Lake Michigan.

The line thus formed is a short and direct route from

MONTREAL TORONTO
and all Canadian Territory
To ST. PAUL, DULUTH and Pacific Coast Points.

This road traverses a section of Michigan with unrivalled advantages to settlers. Cheap lands, thriving villages and towns, well watered with streams in all directions: a market for every product of Forest and Field.

The policy of the "F. & P. M." is known to all travellers and settlers.

A. PATRIARCHE, Traffic Manager.
GENERAL OFFICES: - **SAGINAW, MICH.**

$165.00

Highest Grade . CYCLES .

FOR

$95 SPOT CASH!

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. . ONLY ABOUT TWENTY LEFT . .

These Wheels will be sent subject to examination to any part of Ontario, on receipt of a sufficient sum to cover express charges.

—FULLY GUARANTEED—

These Wheels are equal to any, and bear the highest testimonials, which will be forwarded on application.

GEO. F. BOSTWICK

24 WEST FRONT ST. - TORONTO.

E. C HILL, Mngr. Cycle Department.

Every Lumberman wants it — **35** cents buys it

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SAVES TIME SAVES MISTAKES SAVES MONEY

BRIMFUL OF EVERY-DAY, PRACTICAL INFORMATION

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H. P. ECKARDT & CO.

WHOLESALE GROCERS

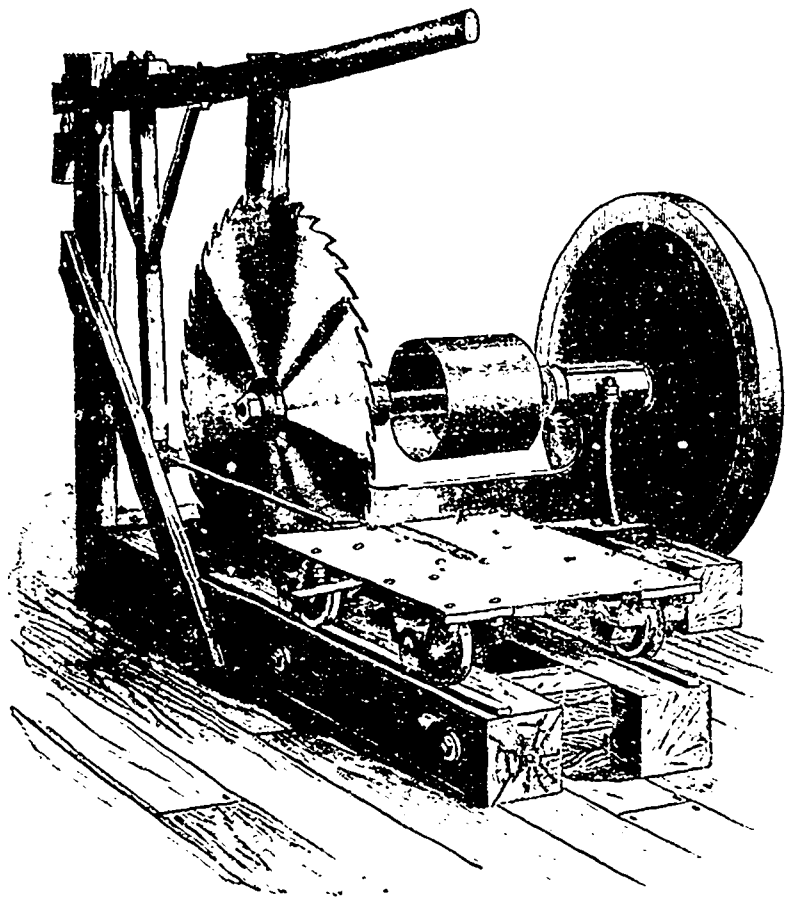
Lumbermen's Supplies a specialty.....

..... Correspondence solicited

H. P. ECKARDT & CO. - 3 FRONT ST. EAST, TORONTO

XXX SHINGLE BOLTER

... OR SPLITTER ...



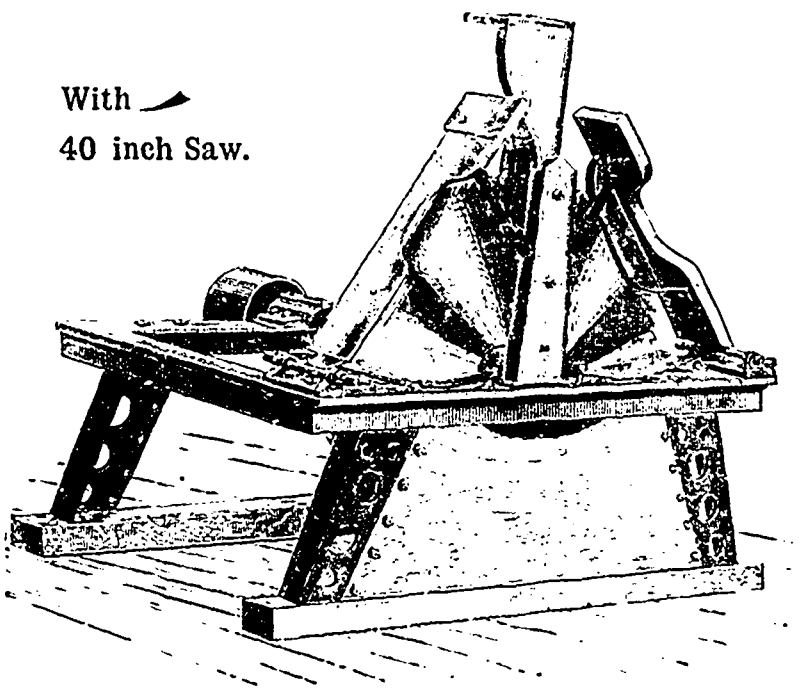
Timber when split with an axe will follow the grain of the wood, when split with a saw it is of course perfectly straight no matter how winding the timber may be—and the first cut then is a perfect shingle; on this account alone a splitter will not only save from 10 to 25% of the timber, but will add about 5,000 shingles to each day's cut.

Make more Shingles per Day and more from the same quantity of timber and **You Will Save Money!**

F. J. DRAKE'S IMPROVED

XXX SHINGLE EDGER

With 40 inch Saw.

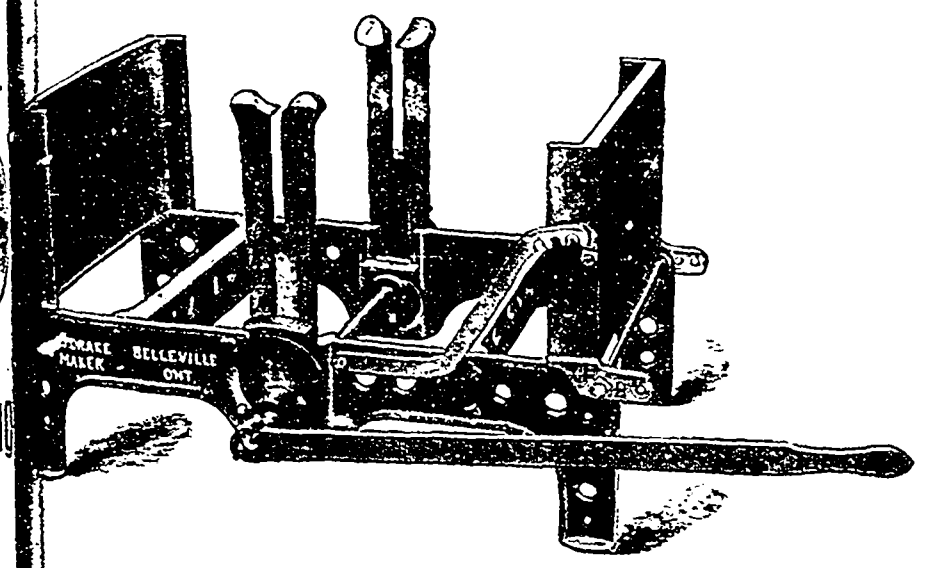


Will make more No. 1 Shingles from the same quantity of timber than any Wheel Jointer in existence.

It has a heavy iron frame made for two operators, two inch steel saw arbor, with extra long bearings; driving pulley 8 inches diameter, 7 inches face; saw 40 inches diameter, 16 guage; speed, 1600 per minute.

MILLMEN who have once used this machine will not use any other. For capacity, removing sap-knots, rot or any other imperfections, for making parallel shingles and economy of stock, it is superior to any other.

XXX SHINGLE PACKER



The Frame is constructed of iron double bolted and braced. A Steel Shaft with Four Eccentrics presses the shingles tightly together from both top and bottom of bunch by single movement of Lever or Handle.

They are the strongest packer made, and will pack tighter than any other both using same length of lever.

They are "self-locking"—when the bunch is pressed the lever will retain its position without being held there.

They can be raised on legs to any desired height. Bolt holes are drilled in the frame for this purpose.

They have less joints to rack loose than any other, and if they ever do get loose can be tightened up easier.

They can be used to pack in from either end, and the bunch of shingles can be removed from either end.

They are adjustable for 16 or 18 in. shingles, and can be easily changed to make five different lengths and work equally as well with one size as the other.

They are made 20 in. wide for 25 courses; 22½ wide for 22 courses; and 25 in. wide for 20 courses. I keep the 20 in. ones always in stock and make other sizes to order.

These Machines are shipped all complete ready for work. When ordering give plain directions for shipping.

MANUFACTURED ONLY BY

F. J. DRAKE

...BELLEVILLE, ONT...