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RATIONAL FORESTRY.

By O. S. WHITMORE, EDITOR "HARDWOOD."

THE time is rapidly approaching when rational forestry must command the attention of every lover of his country. But before that time arrives there must be a better knowledge disseminated as to what the science of forestry really means, or perhaps, what is more important, what it does not mean. The popular idea has apparently been that it consists of two propositions: first, the suspension of further cutting of the forests of the country as far as possible to do so, by congressional or legislative action, and by moral forces; second, the indiscriminate planting of trees, with the half-formed idea that in some way or somehow this will pay in the dim future.

It must further be taught that the Creator did not clothe the earth with forests from any mere sentimental or aesthetic motive, but for the good of His creatures who were to inhabit it to the end of time; therefore, that the forests are grown to be cut for the benefit of mankind for fuel with which to cook his food and to warm him in winter, and for lumber with which to build a shelter over his head. These are the actual necessities of humanity, if it would be in any degree above a savage; if man would not continue to eat his food raw, dress in skins or woven grass and dwell in caves.

These wants of the human animal mark the first step in mental and moral development. The next step, the production of food other than the wild game of the forest, presupposes the cultivation of vegetable products suitable for his nourishment. This cannot be done in the uncut forests; and as man's first wants compel his living in a wooded area, he must destroy a portion of the forest that the ground it occupies might be turned into fields, and ultimately into pastures for tamed beasts suitable for food, as the dependence upon wild game became more precarious and the chase irksome; his development carrying this a point further to include domesticated beasts of burden.

Had man been content to go down the ages satisfied with the gratification of these simple wants, the inroads upon the forests, even to this day, would be small. But the Great Designer of his destiny decreed otherwise. It was necessary to man's perfect development that the finer, the aesthetic part of his nature should be cultivated. This demanded something better than a hut of bark or logs. With this demand came the one for better tools than were found in the stone axe and the saw shark's teeth. The metals lay in the earth at his feet. But to utilize them required the further destruction of the forest to feed the smelting furnace and the forge. The development of the human race, beginning slowly, increased rapidly for a time, then ebbed almost back to barbarism, again flowing forward, sometimes almost stationary, but always forward to the culmination of the 19th century. The log cabin gave place to the cottage, the cottage to the mansion and palace. The forest trail gave place to a bridge, the canoe and paddle gave place to the ship with sails, and finally the apotheosis of progress came with the modern railway and the Atlantic steamship.

Each step upward in the human scale has made its demands upon the timbered area.

In all ages the husbandman has been the great destroyer of the forest, and logically so. He has ever been the pioneer. He must first advance into the wilderness and create a demand for a town as a market center, and a demand for lines of transportation. The city is born of the wants of a given territory. Primarily the settler has cut down the forest, first to make a shelter for himself and family and his various belongings, and

for fuel, and secondarily to make room for fields and pastures. Incidentally some portion of the fallen timber has been utilized for economic purposes outside his immediate wants. It has gone to build the town that has grown up behind him, to build ships, railways, bridges and vehicles of transportation and fuel for towns and manufactories.

Speaking specifically of our own country, it is only within little more than half a century that lumbering as a special industry has begun to destroy the forest simply for the sake of merchandising its products. But that half century has wrought such a violent change in the states where lumbering as a special business has been followed, that it has roused the thoughtful to ask the question: What will the end be if the present destruction continues with no attempt made to modify its wastefulness? That there has been wastefulness by both lumbermen and farmers is beyond question. But the past is behind us. We may deplore its extravagance, but we must admit that there are extenuating circumstances. Artificial wants of modern civilization often made the farmer settler extravagant in his treatment of his woodland, while the professional lumberman has been impelled to the same thing by the necessity of making a profit from his operations. The enormous demand for lumber from non-lumbering sections has forced the production, while costly transportation to market has obliged him to leave all the coarser and low-valued products unutilized, not more than 20 per cent. of actual bulk of the forest growth ever producing any profitable return.

It is a fact that only quite recently has science discovered the means of utilizing forest waste by converting it into by-products of great value in small bulk, thus overcoming the problem of transportation to market at a profit. Until recently the only use of lumbering waste has been to convert it into small completely finished articles of every day use, and this could only be done in the older portions of the country where the market was contiguous, transportation charges small, and lumbering carried on on a small scale. But to-day there is less excuse for waste. Nevertheless all discussion of rational forestry must begin with the proposition, which is akin to an axiom, that forests were given by the Almighty to be cut for man's benefit, and that lumbering is a business for profit as much as raising wheat and cotton. It must also be granted that the owner of a tract of forest land in fee simple has as much legal right to harvest his crop of trees as the owner of a cultivated farm has to harvest his crop of corn when it becomes ripe in the fall. The state, having once granted the fee to land, cannot control the usufruct except by enactment in the original deed of conveyance, which must be understood and assented to by the grantee. But methods of usufruct can and should be controlled by the state. Our hurried, feverish national growth has caused this point to be greatly overlooked. Should the state act upon it at once, the further destruction of forests by fire could be practically prevented. To accomplish this should be work for practical, rational forestry.

Such points can only be barely suggested in this paper, but they include all methods of both lumberman and pioneer farmer, which in any manner imperil the interests of others; while outside of the mere legal questions there are great moral obligations, relating to the general welfare of the commonwealth, which must be discussed by forestry advocates, and up to which all classes must be educated. And these moral obligations relate not only to the present but to the future, to generations yet to come. Methods that affect climatic conditions, the water supply, destruction of navigable waterways by producing arid conditions; all these may be legal or simply

moral questions. It is the legitimate province of rational forestry to determine this by careful discussion and examination, and having done so to pursue the remedy.

This is a utilitarian age. Man works for the profit there is in it. The most practical part of rational forestry relating to existing forests is to convince the owner of a forest, be he a lumberman or a farmer that it is for his interest to improve upon his present methods of treating it. When he shall be made to see plainly that it will pay him and his children to handle his timber as a periodical crop, to be preserved with care, to be cultivated in a certain sense, to be protected from everything that might endanger it, as he would protect his cornfield from weeds and insects; then will rational forestry have performed its great mission. The work of that branch relating to the mere planting of trees and the reforestation of denuded areas is play in comparison.

THE INVENTION OF THE MATCH.

HISTORY does not give to any one man the credit of inventing the match. That useful article reached its present state of perfection by a long series of inventions of various degrees of merit, the most important of which resulted from the progress of chemical science. Starting from the tinder-box and fyrstan of the Saxons, the first attempt to improve on the old sulphur match was made in 1805 by Chancel, a French chemist, who tipped cedar splints with a paste of chlorate of potash and sugar. On dipping one of these matches into a little bottle containing asbestos wetted with sulphuric acid, and withdrawing it, it burst into flame. This contrivance was introduced into England after the battle of Waterloo, and was sold at a high price, under the name of Prometheans. Some time after a man named Heurtner opened a shop in London. It was named the Lighthouse, and he added the inscription to the mural literature of London:

"To save your knuckles, time and trouble,
Use Heurtner's Euperion."

An open box, containing fifty matches, and the sulphuric acid asbestos bottle were sold for a shilling. It had a large sale, and was known in the kitchen as the Hugh Perry. Heurtner brought out "vesuvians," consisting of a cartridge containing chlorate of potash and sugar and a glass bead full of sulphuric acid. On pressing the end with a pair of nippers, the bead was crushed and the paste burst into flame. This contrivance was afterward more fully and usefully employed for firing gunpowder in the railway fog-signal. The next was Walker. He was a druggist at Stockton-on-Tees, and in 1827 produced what is called "congreves," never making use of the word "Lucifer," which was not yet applied to matches. His splints of potash paste, in which gum was substituted for sugar, and there was added a small quantity of sulphide of antimony. The match was ignited by being drawn through a fold of sandpaper, with pressure; but it often happened that the tipped part was torn off without igniting, or, if ignited, it sometimes scattered balls of fire about. These matches were held to be so dangerous that they were prohibited by law in France and Germany. The first grand improvement in the manufacture took place in 1833, by the introduction of phosphorus into the paste, and this seems to have suggested the word "Lucifer," which the match has ever since retained. When phosphorus was first introduced to the match-makers, its price was \$21 per pound; but the demand for it soon became so great that it had to be manufactured by the ton, and the price quickly fell to \$1.25 per pound. Many inventors then entered the field, and matches were sent in shiploads to all parts of the world.

THE CARE OF A PLANER.

By N. A. CURTIS, IN "WOOD WORKER."

ON entering a mill to run a planer, a new hand should first examine the machine to see that everything is all right; more particularly should he try the bolts that fasten the knives to the cylinder—for, not knowing the circumstances under which the man before him left, there is no telling what damage might be caused by starting it up before examination.

Should the knives need grinding, it is a good idea to start the machine and run it a short time, to find out how it works. While you have it running, get a piece of hard wood that will dress $1\frac{3}{4}$ inches thick by two inches wide, about four feet long; dress it both sides, being careful when running it through the last time to keep it straight in the machine, so as to make it one thickness the entire length.

You can then take the knives off. Before grinding, try them on a knife balancer. Finding the lightest one grind it first, then grind the others to it. A word here to knife makers: If you were more careful in cutting slots, making them all of an even width and depth; that is, in making a set of knives, either to order or standard size, make all the rest in the set like the first one, it would assist wonderfully in keeping the knives in balance, as they could be ground to an equal width by grinding the narrow one first.

When a knife is put on the grinding machine, take the point of a pocket-knife blade and make a mark along the back edge of the knife; also mark on the slide the position when the knife was ground. It can be taken off and the next one put on, being careful to put the back edge just to the mark made for the first one. Then in grinding care should be taken to only grind enough to bring the marks on the slide together. After grinding, whet the knives to put on a keen edge.

If there is none on the cylinder, you should put a single thickness of writing paper under the back edge of each knife, to prevent shavings working under the cutting edge. You may find knives that need more paper than this, but if the cylinder and knives are all right, this is sufficient; too much paper will cause the bolts to spring the knife and do more harm than good.

Before putting the knives on, take the piece you have dressed, cut in two in the centre, put the two pieces on the bed of the machine, under the cylinder, one on either side, about three inches from the end. Having measured the exact thickness of the piece, run the head down or the bed up, as the case may be, until the finger points to a trifle full thickness on the gage. Then put the first knife on, leaving all bolts loose, except the second bolt from each end; these tighten just enough so you can move the knife by tapping it with a hammer. Then turn the cylinder slowly until the knife touches the pieces or passes over them, being careful not to cut a shaving off. In case it is out too far, by the use of a hammer you can set the knife in or out until both ends just touch the pieces. Then tighten the second bolt from each end as tight as you want it; the rest of the bolts may then be tightened about as tight as the two were when setting the knife. Do not draw each bolt as tight as you want it the first over, but go over them three times, drawing them a little tighter each time until tight enough. You can rest assured that if the knife was straight before on, it is on the cylinder straight.

If you can see the knife touch the pieces, it is best to rub some chalk on them, then set knife to just clean the chalk off. It is a double surfacer, the lower knives can be set by taking a piece about a foot long with one smooth, straight edge, laying it on the back bed plate (that is, the part that receives the lumber after passing over the lower head) and setting knife out until, by turning cylinder forward slowly it will catch the piece and draw it forward not more than $\frac{1}{4}$ inch. Try the piece on each end of the knife, so the ends will be set alike.

Having the knives all set, the next thing to look after is the oil holes. Look the machine over carefully and find them all. If they have plugs in them it is not always safe to trust to the plugs to keep the dirt out, for no matter how careful you are, there will from time to time a little drop in while you are oiling, and if there is no attention paid to it the hole will become so

filled that in putting in the plugs the dirt will be packed so tight in the holes that no oil can get to the bearings.

Should there be no plugs in the holes, whittle some, or have the turner make you some; but by all means have plugs for all of them. Then get a piece of stiff wire, sharpen it at one end, and with this clean the holes out every few days. A whisk broom is a good thing to have handy when oiling, to brush the dirt from around the plugs.

Should your belts become loose enough to slip on an ordinary cut, don't get mad, jerk them off and cut an inch or two out of them the first thing, but use some judgment. See first if the pulley side is free from dust and dirt. If it is coated with dirt, take it off, get an old plane-bit or broad chisel and scrape the dirt off clean, then put the belt back on and try it; if it still slips, put a little castor oil on it. Never use resin on a belt. When a belt becomes so loose that castor oil will not keep it on the pulley, it is then time to cut it, but don't cut a belt when you are out of humor with it, for nine times out of ten you will take out too much; if you had stopped to think how much it needed out, you would have guessed closer. You will be surprised to see how long a belt will run without cutting at all if you will give it a scraping once in a while, keep it clean, and occasionally apply a little castor oil. This renders it pliable and causes it to adhere to the pulleys closely. Belts should not be allowed to remain strained on the pulleys from Saturday night until Monday morning. Short feed belts should be released from strain every night. It only takes a minute to do it, and lengthens the belt's life.

The operator should have among his tools a sharp hatchet, to cut the lugs from the ends of boards, knock out loose, dead knots and raft pins, etc., before putting the board through the machine. Nor should the care of a machine be confined exclusively to the operator. It should be given a thought outside. The yard foreman should see that the lumber taken from a pile or shed is not allowed to strike on end on the ground. All hands should be given to understand that there must be a piece of old board laid on the ground for the ends of boards to rest on. If there is no yard foreman, these orders should be given from the office, for one board run into the machine that has the end filled with sand and small gravel, will ruin the knives for nice work until they are ground again.

None but an operator who is concerned in the appearance of his machine and the nice work that can be done on it, knows the hard work it takes to keep a planer in good running order.

JOSIAH ALLEN AS AN EXPERT IN FORESTRY.

WALL seein' we wuz right there, we thought we would pay attention to the Forestry Buildin'.

And if I ever felt ashamed of myself, and mortified, I did there; of which more anon.

It was quite a big buildin', kinder long and low—about two and a half acres big, I should judge.

Every house has its peculiarities, the same as folks do, and the peculiar kink in this house wuz it hadn't a nail or a bit of iron in it enywhere from top to bottom—bolts and pegs made of wood a-holdin' it together.

Wall, I hadn't no idee that there wuz so many kinds of wood in the hull world, from Asia and Greenland to Jonesville, as I see there in five minutes.

Of course I had been round enough to our woods and the swamp to know that there wuz several different kinds of wood—ellum and butnut, cedar and dog-wood, and so forth.

But good land! to see the hundred and thousand of kinds that I see here make anybody feel curious, curious as a dog, and made 'em feel, too, how enormous big the world is—and how little he or she is, as the case may be.

The sides of the buildin' are made of slabs, with the bark took off, and the roof is thached with tanbark and other barks.

The winder-frames are made in the same rustic, wooden way.

The main entrances are made of different kinds of wood, cut and carved firstate,

All around this buildin' is a veranda, and supportin' its roof is a long row of columns, each composed of three tree trunks twenty-five feet in length—one big one and the other two smaller.

These wuz contributed by the different States and Territories, and by foreign countries, each sendin' specimens, of its most noted trees.

And right here wuz when I felt mad at myself, mad as a settin' hen, to think how forgetful I had been, and how lackin' in what belongs to good manners and polite ness.

Why hadn't I brung some of our native Jonesville trees, hallowed by the presence of Josiah Allen's wife?

Why hadn't I brung some of the maples from our dooryard, that shakes out its green and crimson banners over our heads spring and fall?

Or why hadn't I brung one of the low-spreadin' apple trees out of Mother Smith's orchard, where I used to climb in search of robins' nests in June mornin's?

Or one of the pale-green willows that bent over my head as I sot on the low plank foot-bridge, with my bare feet a-swingin' off into the water as I fished for minnies with a pin-hook.

The summer sky overhead, and summer in my heart.

Oh, happy summer days gone by—gone by, fur back you lay in the past, and the June skies now have lost their old light and freshness.

But poor children that we are, we still keep on a-fishin' with our bent pin-hooks; we still drop our weak lines down into the depths, a-fishin' for happiness, for rest, for ambition, for Heaven knows what all—and now, as in the past, our hooks break or our lines float away on the eddies, and we don't catch what we are after.

Poor children! poor creeters!

But I am eppisodin', and to resoom.

As I said to Josiah, what a oversight that wuz my not thinkin' of it!

Sez I, "How the nations would have prized them trees!" And sez I.

"What would Christopher Columbus say if he knew on't?"

And Josiah sez, "He guessed he would have got along without 'em."

"Wall," sez I, "what will America and the World's Fair think on't, my makin' such a oversight?"

And he sez, "He gussed they would worry along somehow without 'em."

"Wall," sez I, "I am mortified—as mortified as a dog."

And I wuz.

There wuzn't any need of makin' any mistake about the trees, for there wuz a little metal plate fastened on each tree, with the name marked on it—the common name and the high-learnt botanical name.

But Josiah, who always had a hankerin' after fashion and show, an talked a sight to me about the "Abusex-celsa," and the "Genus-salix," and the "Fycus-sycar-morus," and the "Atractylus-gummifera."

He boasted particular about the rarity of them trees. He said they grew in Hindoostan and on the highest peaks of the Uriah Mountains; and he sez, "How strange that he should ever live to see 'em."

He talked proud and high-learnt about 'em, till I got tired out, and pintoed him to the other names of 'em.

Then his features dropped, and sez he, "A Norway spruce, a willer, a sycamore and a pine. Dum it all, what do they want to put on such names as them into trees that grow right in our dooryard?"

"To show off," sez I, coldly, "and to make other folks show off who have a hankerin' after fashion and display."

He did not frame a reply to me, he had no frame.—From "Samantha at the World's Fair," by Josiah Allen's wife.

A MOVING SPIRIT.

"What is your line of business?" whispered the editor to a man he was about to introduce to northern capitalists.

"I hauls furniture," huskily came the reply.

"Here, gentlemen, continued the editor, 'is Mr. Jones' one of the moving spirits of our city."



FULL of his usual fire and vigor was Mr. Peter Ryan when I met him a week ago, shortly after his return from Ottawa, where he had been putting in some of his best knocks at the Perley & Pattee lumber sale. Toronto's Registrar is a well-known character among nearly all classes of the community, in city or out of it. His tall, erect, and always genial bearing makes him a marked man, wherever he may go. A long experience in trade, and especially as a trade auctioneer, has made his name and face familiar to hosts of business men everywhere. Besides who does not know Peter Ryan as one of the cleverest stump speakers in the Province? Everyone may not agree with all that Peter may tell them, though he is a pretty level-headed chap, but they enjoy his talk, nevertheless, and he is as good a knocker, and he has knocked many an opponent out, on the public platform, as when making the knocks ring from his auctioneer's hammer. Try to trip Peter Ryan up with interruptions from an audience, and if with his ready Irish wit he cannot give as good as one may give him then call my name Dennis. Mr. Ryan takes a very intelligent interest in lumbering operations. The Provincial Government may give him credit for not a little of the success of their last timber sale, when Mr. Ryan was master of ceremonies with the hammer. He has handled this little weapon in not a few other instances where lumber has been the article to be knocked down to the highest bidder. Mr. Ryan did not forget to say that he was an out-and-out free trader. "We want no restrictions in trade," said he - and of course he would like to see free lumber.

S. W. Osgood, of the Whitehall Lumber Company, of Cheboygan, Mich., has this to say in regard to the lumber business of Cheboygan and of lumber matters in general: "Shipments of lumber during the past season from Cheboygan have amounted to 100,000,000, several of the mills are running nights to work up the stock. Lumber operations will be somewhat curtailed both in Canada and other points where Cheboygan mills go for their supply. Alger, Smith & Co. are putting 10,000,000 feet of logs into Spanish river and Georgian Bay, Canada, to be towed to Cheboygan next season. It is estimated 250,000,000 feet of logs were towed from Canada to Michigan points last season, principally to Saginaw, Bay City, Alpena, Cheboygan, and Manistique."

Senator Snowball, of Chatham, N. B., is of opinion that free lumber, as given by the Wilson tariff bill, which to all appearance is to become law, will indirectly benefit the north shore of New Brunswick by attracting the trade of the southern ports to the United States and leaving more of the British market for the northern counties, who would be handicapped in the American market by heavy freights. The senator points out that Spain and Mediterranean ports took more of our lumber last year than usual. Last year the Miramichi dealers shipped 6,000,000 feet to Spain, 5,000,000 feet to France and 1,500,000 feet to Africa ports, besides 40,000,000 feet to Great Britain and 31,000,000 feet to Ireland. So far as present trade is concerned this extensive lumberman says it is in an unsatisfactory condition owing to its prevailing low prices for fish and lumber.

In answer to the enquiry, "How is logging this winter?" Mr. R. Cook, Manager of the South River Lumber Co. Ltd., South River, Ont., said, "that operations were being impeded by the heavy snows, and if these continued they would not be able to get out as large a cut as had been anticipated. Mr. Cook's company have been manufacturing a considerable quantity of shingles. I asked him, if he anticipated that red cedar shingles from British Columbia would prove a serious competitor in Ontario with white pine shingles. "During the present year," Mr. Cook replied, "I believe that

British Columbia shingles will come into active competition with shingles here. There was a fair quantity of these shingles sold in the province last year at about \$2.75, as against \$2.25 for pine, and so far as my enquiries have gone they have given good satisfaction. But the matter does not give me any great concern. I am under the impression that we have lately been cutting up for shingles a grade of white pine that it would have paid better to have manufactured into lumber." Mr. Cook informs me that United States lumbermen have been active in cutting spruce in the Parry Sound section, and at a loss, he thinks, to our lumber interests. Spruce is one of our best timber resources, but it is not having the protection from the Government that ought to be the case. Hemlock in no inconsiderable quantity is being sacrificed in the northern woods through the farmers destroying the logs for the sake of the bark. The time will come, Mr. Cook believes, when we will see the foolishness of this waste. Mr. Cook formerly carried on lumbering at Dashwood, in Huron Co., and had been in that section a week ago. In place of an excess of snow there he found mud. Hemlock is now the chief timber in Huron, but it is fast being cut out. There is yet a fair stock of hardwoods.

Standing fully six feet in height, I would say, and of genial countenance and pleasant manner, is Mr. H. H. Spicer, of Vancouver, B.C., who has been a week or so in the city in the interests of his shingle business. Mr. Spicer is one of the largest red cedar shingle manufacturers on the coast. The past year, he says, was not without its vicissitudes in shingle manufacturing in his province. The shingle men of Washington Territory, adjoining, have been in a pretty demoralized condition, and whilst this would not be a fair term to use in speaking of the trade in British Columbia, yet the shingle trade there was also somewhat overdone, and prices broken. I suggested to Mr. Spicer that the newly-organized shingle manufacturers' association, in connection with which he is a moving spirit, would probably remedy this evil. He replied, "Yes, he hoped so. But, right here, I would like to say," added Mr. Spicer, "that this association has not any idea of creating a corner, or fixing a combine, in shingles that would unfairly raise prices. All we want is a reasonable profit, and we are not likely to get more than this, as the shingle trade is to-day. A more important object is to protect ourselves against the unwise and reckless cutting that has to some extent been the case in the past. I agree thoroughly with the editorial in the LUMBERMAN of last month, in which you point out that whilst a combine that means an unjust monopoly of trade should be condemned by any sensible man, that at the same time there is also another evil, that in justice to the honest trader needs to be guarded against, viz.: that phase of competition that so ruins prices that the inevitable end is bankruptcy." Mr. Spicer would like to see free trade in shingles, but does not anticipate that in the meantime, at any rate, British Columbia would reap any direct benefit owing to the overstocked nature of the Washington Territory market. Mr. Spicer expects Ontario to prove a profitable field for operations in the future.

From various interviews and observations that have found a place in this page, it will have been noticed that quite an interest is taken in the question of placing the Red Cedar shingles of British Columbia on the Ontario lumber market. In the judgment of some the plan is unworkable, heavy freight rates, a dearer shingle, and other conditions adding to the unpracticability of the scheme. Then Ontario is the great pine province of Confederation, and is the natural home of the white pine shingle. The Red brother from the west is looked upon as an intruder on preserves that belong to some one else, forgetful of Bobby Burns' refrain, that we're a' brothers for a' that. Suggested by considerations of this kind, our friend H. G. Ross, of New Westminster, B. C., has given us his views of the situation from his point of view. This is what Mr. Ross has to say. "The growth of the trade in British Columbia red cedar shingles with Ontario is probably worthy of notice and will interest some of your readers. In 1892 probably not more than 20 cars left British Columbia for Ontario, last year it jumped up to

about 300 cars, and the trade is now regarded as fairly introduced. Mr. A. Tait, of Orillia, who was in this Province recently, looking up the shingle interests, said that although he had been running his shingle machines night and day in the past, he would make but few pine shingles in future, he regards our shingles as the coming article. Lumber, he said, had in the past fifteen years doubled in value in Ontario, while to-day pine shingles were not bringing any more than they were fifteen years ago. He had made a number of tests and had satisfied himself there was no money in running stock, no matter how poor it was, into shingles. A number of practical tests, he said, were to be made this season by Ontario mill men, and he was convinced the results would surprise many of them. We have heard others express the same opinion as Mr. Tait and are convinced that the only man who has not found this out for himself is the man who does not figure. The British Columbia mill men therefore feel that the invasion of Ontario by British Columbia red cedar shingles need place no hardship on the shoulders of their eastern brethren. Apart from that the people are the judges and they recognize British Columbia cedar shingles as the best and will buy them accordingly, so the Ontario pine man may as well govern himself accordingly. Among the comparative points of merit are: Our shingles will last more than twice as long as pine, will shrink and swell less with heat and moisture, consequently are not as hard on the nails; they are cut from clear stock; are a wider shingle than pine and can therefore be laid faster and cheaper and will not warp or split when laid. We can show you out here roofs thirty and forty years old as water tight as when laid. Some of the Ontario people not familiar with red cedar complain of the dark streaks in the shingles. This is purely the nature of the wood, is no indication whatever of rot and occurs just as frequently in live green trees that are sound to the heart as it does in hollow-hearted trees. The fact that they are kiln dried, we see commented on unfavorably. This is done purely to save freight in precisely the same manner as pine shingles intended for long shipment are dried in Ontario, Michigan, and Wisconsin, and red cedar as it contains no gum and is but very little subject to expansion and contraction with heat and cold will come through a heat without injury that would ruin pine. It has been found that eight to ten days in a hot air kiln at a maximum temperature of 170 degrees will reduce the weight tolerably well without any injury to the fibre of the wood, and when it is considered that at least \$1 per M is saved in freight to Ontario the necessity for kiln drying is apparent. We have too much rain here to dry naturally excepting during three or four months of the year. Most of the mill men here are Ontario lumbermen, many of whom have already put in several years of patient struggling and waiting, realizing that the time must come when this magnificent wood would find a market. There is a total mill capacity in this Province of fully eight hundred million shingles annually. These shingles will probably find their way into every corner in Ontario next season, that is if the consuming public will realize their value and will be willing to pay a price that will enable the manufacturers to pay wages and live, and if the mills can be run to even one half their capacity and dispose of their product it will be much better than they have done yet."

An interest in the curious is natural to almost everyone. In this respect we are all children, and it is by retaining this simplicity, this readiness to receive, that we can often pick up much that is useful. Two tid-bits in the line of lumber, that have come under my notice, I give place to be: (1) At Mongtze, in China, there is a timber mine. The trees have been buried under sandy soil to a depth of six to twenty-five feet, and they are well preserved. Apparently they have been overwhelmed by an earthquake at some immemorial time. They are of the pine trees called "Nan Hou" by the Chinese, and contain a preservative essence, hence the wood is employed in making coffins. (2) In manufacturing some of the smallest wooden articles, millions of feet of timber are annually consumed. One match firm is said to be the largest consumer of white pine in the country. A company in Sweden is said to consume several millions of feet of spruce each year in making small turned wooden boxes for druggists.



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J. S. ROBERTSON, EDITOR.

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.

Special 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 15 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.

A WORD WITH SUBSCRIBERS.

THE current CANADA LUMBERMAN goes to a large number of subscribers with bill enclosed for subscriptions that fell due at the new year. The amount in most cases is not more than one dollar, and, even where arrears are owing, the indebtedness to the individual is only trifling. If at 2,000 such accounts mean anything from \$2,000 to \$3,000 to the publisher, and money is much needed by him at the present time. It costs a heavy outlay each month to produce a journal of the completeness and character of the LUMBERMAN. Subscribers, we have reason to believe, appreciate these efforts to give them a first-class trade journal. Our desire is to make further improvements during 1894. Saying this much, we rely upon subscribers responding favorably to the present request to remit promptly the amounts now due.

POSSIBLE CAUSE FOR STRIKES

IT is feared by those who have given some study to the matter, and who are rather more considerate in these affairs than others, that there will be an unusual number of strikes in the wood working trades in the United States so soon as spring trade revives. The cause of this will be in the movement, already being put into operation, to reduce wages, the likely passage of the Wilson bill being made to furnish the excuse for this step. It is stated by those who have been watching these matters from a sociological point of view, that when the duty on lumber was reduced to \$1.00 per thousand, the same cry went forth about the destruction of business and the reduction of wages, and yet lumber in the States has sold for a higher price since the reduction than it ever did before. After the depression of the past six months it would be a thousand pities, if, on the threshold of the spring season, the lumber business should meet with the set back of a succession of strikes at different points. If through change in legislation, or from other justifiable cause, it becomes needful, because of an increase in the cost of production to curtail expenses, at some important point, and wages are brought under the knife, reasonable men will not object to this course. On general principles, however, and we believe the closest observation will verify the fact, wages ought not to be reduced except as a last

resort. We would not suggest anything radically socialistic in dealing with the wage question, but the more closely employer and employee can come into touch with one another, and the feeling be allowed to grow that there is a mutual interest to be served, fewer strikes will be heard of, and the general welfare of both will be advanced. Contrawise, it is not infrequently the case that employers will make a proposed change in tariff, or other like cause, simply a scarecrow to reduce wages, when as a matter of fact the influence of the change is sometimes in an opposite direction. The Scotch bard was not without an intimate knowledge of human nature when he sung so pathetically of "Man's inhumanity to man."

EDITORIAL NOTES.

THE large increase in the lumber traffic of Duluth and Superior, contrasted with a steady and growing decrease on Lake Huron and Lake Michigan, furnishes another illustration of the rapid depletion of the forests of this once-great white pine state. Michigan lumbermen are seeking other fields for operation, Canada to wit, as well as Duluth, because the lumber of their own state is vanishing.

ACCORDING to a statement furnished by the United States consul general, the value of white pine lumber exported from the Ottawa district to the United States during the December quarter increased from \$139,000 to \$534,000 as compared with the corresponding quarter of 1892, the value of shipments of white pine lumber in bond from this district to the United States for export increased from \$59,000 to \$96,000. In the export of pickets, shingles, timber and wood pulp, a considerable increase is also shown.

THE Oregonian's "Handbook of the Pacific Coast" estimates the standing timber of the state of Oregon at 266,893,225,000 feet. The extent of this timber wealth can be appreciated when it is stated that the forests of Minnesota, a great lumbering state, contain only 127,497,526,000 feet of lumber, while Michigan, another great lumbering state, contains 100,000,000 feet less timber than is represented in the forests of Coos and Curry counties of Oregon alone. The forests of those two counties cover 1,050,000 acres, and it is estimated that they contain 24,200,000,000 feet of timber.

DISCUSSING the subject of evolution in grades the Timberman remarks that "Millmen are very widely divided on the question as to whether the multiplying of grades should be encouraged from their standpoint. Many argue that the fewer grades they sell the better in actual results; while others, with much plausibility, that the more grades there are the better for the manufacturer as well as the dealer, as with minute grades there is less chance for the wholesaler to profit thereby at the expense of the manufacturer. Certainly, if the manufacturer wishes to get close to the consumer, and to get all profit out of lumber that there is in it, he must adopt a close system of grading."

THE European consumption of teak for 1893 is given by Denny, Mott & Dickson, of London, Eng., as some 50,000 loads, as compared with an average consumption of some 48,000 loads for the last seven years. In face of a falling off of nearly 32 per cent. in the world's shipbuilding of the year, this maintenance of consumption is considered most striking, and points conclusively to the fact that the low prices of the year have helped to force this valuable wood into more general consumption. The growing practice of sheathing war ships with teak has increased the demand for naval purposes, H. M. Admiralty having bought 7,200 loads of teak during the year, and, further, contracted for some 9,000 loads to be supplied within about the next six months.

UNDER the most favorable conditions the rafting of logs is beset with many risks. But when something of the magnitude of the Juggins' experiment is tried, we begin to learn how great are the risks that some men are prepared to take in this department of work. A

recent illustration is given in the case of the scheme of rafting logs on the Pacific ocean during the winter months. What is known as the Coos Bay raft has gone to pieces during a gale off the California coast, and caused severe financial loss to all concerned. It is not improbable that the scheme of rafting logs to San Francisco may be profitably carried out during one or two months of the summer, when there are but few storms, but any attempt to convey logs in the raft during the balance of the year is sure to meet with failure. Unfortunately the Pacific ocean is pacific only in name when it comes to log rafting.

IN the agitation that is waged ever and anon for the re-imposition of the export duty on logs going into the United States, the forces in favor do not come alone from lumbermen. The fishermen of the North Shore have all along had a hand in the fight, contending that in the rafting of logs to the Michigan side the bark peels off, injuring the nets of the fishermen of that locality, and besides that, the accumulation of this bark is proving hurtful to fish culture in these waters. An object lesson on these lines is to be seen in Ottawa, there being on exhibition in the office of the Minister of Marine a fishing net taken from the waters of Georgian bay, completely interwoven with bark that has peeled off of logs while being towed from the Canadian side over to Michigan. It is likely that if this question should come before the Commons this net will be made to do argument for Mr. Little and those who hold with him for a re-imposition of log duties.

IN the event of the Wilson bill becoming law, and lumber is made free, Mr. R. H. Alexander, manager of the Hastings saw mill, Vancouver, B. C., does not anticipate that the British Columbia lumber industry will be greatly benefited. Lumber connections with the Puget Sound territories could not bring any gain, for it would be like shipping coals to Newcastle to send lumber there. Business with more distant points, however, he thought, might be increased owing to the superior quality of British Columbia lumber. As to helping prices, Mr. Alexander was of opinion that if the bill passed it would not have that tendency, as the American market was protected by a \$2 per 1,000 feet tariff, and which, if taken off, would have the effect through competition from this side, of lowering the present prices asked. As a whole, matters would practically be about the same as at the present time, but a little extra business might be done in disposing of odds and ends and in some lines the Province makes a specialty of.

THE past month has been one of several visits of lumbermen to the Parliament buildings here. Elsewhere reference is made to the purpose of at least two of these visiting deputations. A third deputation, and one that gave rise to some unnecessary gossip in the daily press at the time, was composed of Mr. James Connee, M. P.; Walter Ross, secretary of the Rat Portage Lumber and Milling Company; Mr. D. C. Cameron and Mr. J. W. Chadwick, president of the Rat Portage Board of Trade. The members of the government present to receive the deputation were Sir Oliver Mowat, Hon. Mr. Hardy, Hon. Mr. Dryden, and Hon. Mr. Harcourt. The conference was of a private nature, and it was this fact, we suppose, that excited the curiosity and widened the imagination of the interposing scribes of the local press. A discussion took place, we believe, in regard to certain fishing rights and privileges affecting the interests of the people in that territory. There is some lack of uniformity in the system of log measurement in the Rat Portage territories from the fact that limits sold by the Dominion Government before the territory came under the jurisdiction of the Ontario Government are under different regulations to those limits sold by the government since then. It was also suggested to the government that it would be in the interests of the local mills to bring on a sale of limits as the mills could to advantage handle more logs. One daily paper remarks that Mr. Connee and his friends came out of the conference smiling, and it is taken for granted, of course, that the government must have given some reasonable heed to their wishes. What a tell-tale is the human face!

NEWS AND NOTES.

F. E. Shaw has purchased the Cooper sawmill, near Elmvalle, Ont.

A man named Pettyplace, of Greenock, Ont., had his arm broken while engaged sawing logs.

Moore & Vandusen's sawmill at Lion's Head, Ont., was burned a week ago. Partly insured.

Hermann Kemkers, of Hanover, Ont., has 1,000 sawlogs piled up in one pile, and is evidently proud of the feat.

The boiler of a steam sawmill, near Eganville, Ont., exploded the other day seriously injuring the engineer, John Possette.

John Richardson, of Windermere, Ont., was accidentally killed through a falling log striking him on the head and crushing him in a frightful manner.

John A. Humphrey's steam sawmill, about two miles from Moncton, N.B., was burned on the 8th inst. Loss, \$15,000; no insurance. The mill will be re-built at once.

The Cosmopolitan for February introduces a famous European author to its readers—Valdes of Madrid, and the artist, Marold, of Paris, well known as a French illustrator.

Robert Riddle has cut near Kincardine, Ont., four logs measuring 2,816 feet, all out of one tree. One log alone, twelve feet long, made 800 feet of lumber. Such a cut in that vicinity is an unusual thing in these days.

The Halifax Critic, which is a creditable exponent of the mining, manufactory and commercial interests of the Maritime Provinces is to be hereafter known as the "Canadian Colliery Guardian-Critic," giving some attention to the iron and steel trades.

Armstrong Bros., Markdale, Ont., are sawing large quantities of elm and maple logs. The timber is said to be exceptionally fine. The elm is made into cheese boxes and fruit baskets, and used throughout Ontario. The maple is cut into mangle rollers, and is shipped chiefly to Liverpool, Eng.

A new industry has been started on the Chaudiere in the shape of a factory for the manufacture of material for wooden boxes. It is a little over a month since a Philadelphia firm represented by Mr. Hamilton made arrangement for leasing a portion of the old Grier property in the rear of Merrill's foundry. The old forge and other furniture which was at that time in the building has since been removed and a planing machine with several saws substituted. The equipments are now almost ready to commence work. The factory will be under the supervision of Mr. W. S. Mayo, formerly over the E. B. Eddy's company's box factory in Hull. All the lumber used will probably be taken from the Chaudiere piling grounds and will consist for the most part of heavy deal. The lumber will be cut into size for boxes, and will in this shape be shipped to the company's factory in Philadelphia. The motive power for driving the machinery is supplied by a small waterwheel of fifty horse power. This new industry will give employment to a number of men, and will be advantageous on account of its running all the year round.

A deputation composed of Messrs. A. H. Campbell and J. H. Main of the Muskoka Mill and Lumber Company; Messrs. A. P. Cockburn and J. S. Playfair of the Muskoka Navigation Company; Messrs. Mickle & Dymont, of Gravenhurst, and Mr. John Waldie waited on the Ontario Government, recently, with reference to the work which the Gilmour Co., are doing at the Hollow lake to divert some of the waters to the Gull River waters. The objection is taken to the work of the Gilmour Co. because it is feared that the diversion of the waters in the manner proposed will lower the Muskoka waters, and thus interfere with navigation and lumbering operations. The Gilmours have already completed their work at a cost of \$50,000, and asked to be given the opportunity for at least one season of demonstrating that Muskoka interests have nothing to fear. The Free Grant Gazette, commenting on the case, expresses a degree of disappointment over the prospect of seeing such a large quantity of Muskoka pine transported athwart the upper Muskoka and Black waters to the Trent waters, instead of being brought down by the natural waterways of Muskoka.

LUMBERMEN DISPUTE.

TOWARDS the end of last year an application was made to the Ontario Government for a charter of incorporation of Messrs J. T. Hurst, L. S. Moore, A. H. Fleming, Temple Emery, Nelson Holland and H. O. Fleming, well-known United States lumbermen, for a company to be called "The French River Boom and Rafting Company, limited." The objects of the company were to acquire, construct and maintain any and all dams, slides and other works necessary to transmit timber down the French river, to raft upon the said river and adjacent waters, and to widen river, remove obstructions and build boats and other equipments for the purpose of carrying on their business at a proposed cost of \$30,000. The capital stock of the proposed company is to be \$40,000, and it is proposed to bring down the river 10,000,000 feet of lumber each year for five years to come, and to charge a rate of 35c. per 1,000 feet for their services in so doing.

When this application was referred to Hon. Mr. Hardy, Commissioner of Crown Lands, several firms interested in the matter strongly opposed its being granted. A week ago a deputation waited on Mr. Hardy in reference to the application. The following firms were represented, either by one of their members or by counsel:—The Beck Manufacturing Co., the Ontario Lumber Co., the Victoria Harbor Co., Burton Bros., the Georgian Bay Co., Cook Bros. and Arthur McLeod.

The application was opposed on several grounds. It was stated by the deputation that the application was in reality for a boom and tug company, and not for a timber slide company; that the river did not in any way come under the jurisdiction of the Province, being a navigable river; that no improvements in the river were necessary, and that it was not the intention of the proposed company to improve the river, but that they would simply block the operations of any other company that might not join in with them, and that the proposed cost of the suggested improvements was ridiculously high, as not more than \$5,000 could be necessary. The proposed tolls was also described as excessive.

The deputation were in consultation with Mr. Hardy for several hours, and the question was very fully discussed. Mr. Hardy promised to look into the matter, and as early as possible to give a decision.

B. C. SHINGLES IN ONTARIO.

THE manufacture of red cedar shingles in British Columbia has reached a point where those engaged in this branch of lumbering must look beyond the borders of their own province for a market. At home and throughout Manitoba and the Northwest one finds the shingles of this sister province in large demand, relatively, for it must be remembered that the population of these territories has not yet attained a volume where the consumption will run into very large figures. So it is, that we find the shingle manufacturers of the Pacific Coast, looking to Ontario to supply a new field for consumption. Last year fair numbers of these shingles were sold in Ontario, sufficient to pave the way for a larger trade. One manufacturer, probably the largest in British Columbia, Mr. H. H. Spicer, has arranged through Mr. F. N. Tennant, a well-known lumberman of the city, to specially push his red cedar shingles throughout Ontario. Mr. Spicer has spent some time in the city during the past fortnight perfecting arrangements, and his announcements over the name of Mr. Tennant will be found on another page. The price at which these shingles will be sold, for the present, though perhaps not very long, will be close, both for the purpose of introduction, and further because the output of the British Columbia mills is of such a size that to secure a trade low prices becomes necessary. Of the quality and main characteristics of the red cedar shingles nothing needs to be said here as these are points fully discussed elsewhere in the LUMBERMAN pages.

THE EBONY TREE.

A GREAT deal of difference in color exists in the trunk of the exogen between the alburnum and the true wood. In no case is it more apparent than in the ebony tree, for here the true wood is of an intense black, while the alburnum is of a light grey. The

contrast between the two is very great, and it is the black part that is so much esteemed as an article of commerce. The deep jet of the ebony has passed into a proverb, and "as black as ebony" is a similitude sometimes heard among us. Ebony is a handsome material for carving and for the manufacture of ornamental articles, and is most effective when used for inlaying furniture, in contrast with box or other white wood. The rosaries of the Roman Catholics are sometimes of ebony; and chess boards and chess men, and rulers, and walking sticks, and numberless fancy goods are made of it. There are several species of the tree growing in different parts of the tropics, and even beyond their range, as far north as Switzerland in the old world, and New York in the new. The centre of the stem, in the ebony, is always of the jetty black we have described, but in varieties of the species it assumes shades of yellow, green and red. It is a forest tree, with hard, dense wood, that gives some trouble to the woodcutter. The branches are rounded, and the leaves entire, mounted on short footstalks. The fruit is pulpy in its nature, and of a roundish shape; when fully ripe some of the species may be eaten, but in an immature state the juices are acrid and unwholesome. A great deal of ebony timber comes to us from Madagascar, the Mauritius, and other tropical places. But the valuable forests of Ceylon furnish it in the most abundance. They are on the eastern side of the island, and reach as far as the town of Trincomalee, which is situated on a bay of that name. On either hand are found trees of the utmost value; here is the delicate satinwood, and the tulipwood, and the ironwood, the name of the last denoting its duration and solidity; it is an ornamental tree, bearing violet-scented buds.

XYLOLITH.

EXTRAORDINARY claims are made in Germany for the substance called xylolith, or "wood stone," a structural material composed of magnesia cement, or calcined magnesite, mixed with sawdust and saturated with a solution of chloride of calcium. This pasty mass, before the cement sets, is spread into sheets of uniform thickness and subjected to a pressure of more than 1,000 pounds to the square inch. It is made in sheets from $\frac{1}{4}$ to $1\frac{1}{2}$ inches thick, and of all sizes, the dimensions being almost unchangeable by dryness or moisture. A sheet measuring one meter square when perfectly dry will expand from one to two-tenths of one per cent. when soaked in water, and a moist sheet will contract in drying to about the same extent. Being so little subject to contraction and expansion, it is considered specially valuable for floors in railroad stations, hospitals and similar buildings, and for decks of vessels. It is readily planed, sawed, bored and fashioned with ordinary wood-working tools, and may be painted or decorated in the same manner as wood. It is nearly water-proof and may be made entirely so by painting the surface.

ROMANCE OF THE SAW.

THE saw is a tool of great antiquity, and its invention is attributed to the ancient Greeks in the twelfth century before Christ. It seems that Talus, a grandson of the reigning king and a prolific inventor, reflecting that the statuary of that day was nothing but shapeless blocks having only a faint resemblance to the human form, set to work to produce tools which would enable the artisan to work with greater freedom. He invented the saw, the lathe, the compass and the level. In the saw he noticed the mouth of the serpent, and reproduced the shape of the teeth in iron, and therefore formed the saw. For this invention alone he acquired great fame, so much as to incur the jealousy of the king, who was something of a mechanic himself, and Talus was disposed of in true classical style, pitched from the top of a high mountain and buried secretly. For this exhibition of jealousy the king, being found out, fled to the island of Crete, and while waiting for the little ripple in Grecian affairs to quiet down, made himself famous by building the Cretan Labyrinth. From the days of the Grecian king Dædalus and Talus the history of the saw is in a vague condition, but ancient pictures have frequent representations of it, and even in prints of the building of the ark this tool finds its corner.

OTTAWA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

An event of the month in lumber circles here has been the sale by public auction on 24th inst. of some 1,300 miles of timber limits, the property of Perley & Pattee. Your jovial citizen, and clever knight of the hammer, Peter Ryan, was master in control. The sale, which took place at the Russell House, was made necessary, as your readers likely know, by the death of the late W. G. Perley. The sale brought together a large representation of lumbermen and capitalists from various parts of the Dominion, and some, though not a numerous contingent, of United States lumbermen. Taken altogether the sale was a success. Particulars are as follows:—

Parcel No. 1, 96 square miles on the Kippewa river, Quebec, was sold to Mr. J. C. Browne, of Ottawa, at \$160 a mile.

Parcel 2, comprising 47 miles on the Kippewa, was sold to Mr. Browne for \$450 a mile.

Parcel No. 7, 235 miles on River Coulonge, was sold to Messrs. Fraser & Bryson for \$890 a mile.

Parcel 8, comprising 104 miles on Lake Temiscamingue, Ont., was bought by Messrs. Bronson, Weston & Co. for \$500 a mile.

No. 3.—37 miles, Bonnechere, sold to W. C. Edwards, \$500 per mile.

No. 4.—100 miles, River Dumoine, sold to Mason & Son, \$100 per mile.

No. 5.—115 miles, Black river, sold to Hon. P. White, \$30 per mile.

No. 6.—200 miles, Black river, sold to W. C. Edwards, at \$170 per mile.

No. 9.—191 miles, Petewawa, sold Hawkesbury Lumber Co., at \$45 per mile.

No. 10.—212 miles, Petewawa, sold Hawkesbury Lumber Co., at \$55 per mile.

Prominent among those who took part in the sale may be named: Messrs. W. C. Edwards, Rockland Ont.; E. Whitney, Minneapolis; James D. Klock, Klock's Mills; W. C. Chadwick, W. C. Cameron, and W. Ross, Rat Portage; James Gillies, Carleton Place; C. McLachlan, Arnprior; John and George Bryson, Fort Coulonge; Peter White, Speaker of the House of Commons; A. Fraser, of Westmeath.

LARGE CONTRACTS FOR LUMBER.

Activity in the lumber trade during the month has been further shown by the closing of a number of large contracts for lumber to be cut by the mills in Ottawa and vicinity during 1894. These were completed by representatives of Quebec and English houses. Among the buyers are Messrs. Sharple & Co., of Quebec, represented by Mr. William Power; Dohel, Beckett & Co., represented by Mr. Evans; Mr. R. M. Cox, of Liverpool; Brussell & Co., of Quebec, represented by Mr. Billingsley; and Messrs. E. Harper Wade, of Quebec, and Alex. McArthur, of Toronto. The purchases include the output of deals from the mills of Messrs. J. R. Booth, Gilmour & Co., the Hawkesbury Lumber Company, and Messrs. Buell, Hurdman & Co. The cut of the mills owned by W. C. Edwards & Co. is not yet sold. The value of the sales will aggregate \$2,500,000. It is reported that Messrs. Skellings, Whitneys, and Barnes have purchased the full cut of the McLachlan mills at Arnprior, aggregating about 60,000,000 feet of lumber, the value of which will reach \$900,000. It is stated that at least four millions of dollars' worth of lumber has been sold in Ottawa for export during the past two weeks. Usually, the sales of a season's cut extend over several months, but this year they have all been made within a few days.

INDIFFERENT LENGTHS.

A large gang of millwrights are at work on the annual repairs in connection with Buell, Hurdman & Co's. two saw-mills. The principal work to be done is around the old mill where the machinery has become more or less worn out with many years service.

A number of teams are at present engaged hauling logs which were carried over the Chaudiere Falls in the heavy floods of last spring back from where they have been piled at Water's ship yards to the gap above the E. B. Eddy company's paper mills. The logs are selling to Buell, Hurdman & Co. and will be sawn by that firm next spring.

A private letter received in Ottawa states that George O'Hara, of this city, who has been four years lumbering in British Columbia, was held up with two gentlemen from Toronto, and robbed of \$2,000, a \$175 gold watch and a diamond ring. O'Hara was on his way to Sydney from Victoria to pay a number of workmen he had in the lumber business.

Various estimates of the winter's cut are made from time to time. The general opinion is that the cut will about equal

that of last season, although the operations of some of the concerns will not be as extensive, as they have a good stock of last winter's logs still on hand. The Rathbun Company will turn out about the same quantity of logs as last year; W. C. Edwards & Co. will also cut about the same. The estate of Ross Bros., the McLaren estate, the Ottawa Lumber Company and J. R. Booth will take out about the same number of logs as last season. The operations of Gilmour & Hughson will be somewhat restricted. The David Moore Lumber Company will take out one raft of square timber and logs from its Kippewa limits. The Hawkesbury Lumber Company will reduce its cut about one-third.

OTTAWA, Can., Jan. 26, 1893.

BRITISH COLUMBIA LETTER.

[Regular correspondence CANADA LUMBERMAN.]

THE Wilson tariff bill is being keenly discussed by lumbermen here. The lumbermen of Washington and Oregon territory, are, with a few exceptions, opposed to lumber being made free, but in contending against this proposition they unconsciously pay a high complement to the excellence of B. C. lumber. What is feared most, if the measure passes in the original form, is that B. C. lumbermen will invade California, and because of the superiority of our lumber they will be able to capture the trade.

COAST CHIPS.

Stokes, Shooks and McTaggart have taken over Parly's mill at Mission City.

The Pacific Coast Lumber Co. have just completed a good and commodious Dry Kiln, replacing the one lately destroyed by fire.

R. H. Alexander, manager of the Hastings mill, Vancouver, has been appointed Consul for Peru at the port of Vancouver.

C. M. Beecher, of B. C., M. T. & T. Co., and John Wilson, of Brunette Mills, have just returned from business trips to Eastern Canada.

About forty men are now employed in the construction of the Burrard Inlet Red Cedar Company's mill, at Port Moody. It is expected to be running this spring, and will be most modern in every point and detail, including the machinery.

A piece of oak cut on Pitt Meadows, was brought to the city a few days ago by James Fox, of Coquitlam. It will be news to many that oak flourishes on the lower Mainland. The tree from which the piece was taken was of recent growth.

The B. C. Iron Works Co. are now engaged in building a 7-foot Kendall hand mill for the Red Cedar Lumber Mill at Port Moody. These mills are spoken of as being specially well adapted for cutting the heavy cedar and fir of the Pacific Coast.

The celebrated cigar shaped raft at Coos Bay, Oregon, is slowly breaking up and all efforts to tow the big mass out of the bay are futile. It is impossible to manage the raft while towing and it will probably be necessary to construct three or four rafts from it in order to save the timber.

It is reported in mill circles that the Royal City Planing Mills branch of the M. T. & T. Co., this city, have contracted to supply an Ontario dealer with 15,000,000 cedar shingles during the next six months. This is said to be the largest order of the kind ever seen in British Columbia, and no less than 100 cars will be required to carry the shingles to their destination. The outlook for the shingle trade in 1894 is brighter than for several years past.

NEW WESTMINSTER, B.C., Jan. 22, 1894.

MICHIGAN LETTER.

[Regular correspondence CANADA LUMBERMAN.]

THE manufacture of elm hoops for sugar, pork and flour barrels has grown into a large industry in some parts of Michigan. There are five hoop mills on the Saginaw river, the cut of which in 1893 amounted to 75,000,000. H. Seeley operates a hoop mill at Beaverton, and the Michigan Lining & Hoop Company, of Coleman. A new stave and hoop mill is being built by Hecox & Co., at Coleman; and Geo. Fiege, of Saginaw, operates a mill at Gaylord. There are also a few others in northern Michigan. Elm logs last winter brought \$6 to \$8 and are about \$1 a thousand less this season. Large quantities of elm logs are also consumed in the manufacture of staves. The stock of hoops cut last season was pretty well sold up. There is a large quantity of elm timber in this section of the state. A few years ago it was considered of little value, but the development of the hoop and stave industry has put a good value on this timber. The Hecox Company, of Toledo, recently paid \$10,000 for the elm timber on 2,500 acres of land near Coleman. The stave men just now are concerned over the Wilson bill not feeling sure how it is going to strike them.

It is confidently believed, at least in Menominee, Mich., that the Kirby-Carpenter Company of that city, is the heaviest producer of white pine lumber in North America, if not in the world; and there is but one lumber concern in the United States in any line that exceeds it in the actual number of feet, though by no means equal to it in the value of the product. The Kirby-Carpenter Company last year cut a total of 114,617,297 feet of lumber and 23,147,000 shingles. There was on hand at their docks January 1st, 1894, 51,617,297 feet of lumber, of which 21,312,827 was sold awaiting water shipment, mainly to the east, while about 4,000,000 is destined for Chicago. The shingles on hand at the same time amounted to 9,715,000, while the logs in the boom scaled the insignificant total of 1,472,000 feet.

BITS OF LUMBER.

Fisher & Turner, of Bay City, will harvest 20,000,000 feet of Georgian Bay logs this winter.

C. C. Barker, of Bay City, is cutting 20,000,000 feet of logs this winter, and will run his mill for all there is in it for 1894.

The Saginaw Lumber & Salt Company is harvesting many logs in the Georgian Bay country this winter as it did last.

E. M. Fowler, of Chicago, and Arthur Hill, of this city, sailed from New York, January 27th, on an extended European tour.

Three carloads of the pine were recently started from Saginaw on a long journey to Buenos Ayres, via New York, and from Buenos Ayres it is destined for transportation 150 miles into the interior. The lumber was shipped by the Saginaw Lumber & Salt Company.

At the annual meeting of the stock-holders of the A. W. Wright Lumber Company directors were elected as follows: A. W. Wright, E. P. Stone, C. H. Davis, W. T. Knowlton, A. D. Smith, Saginaw; O. D. Witherell, Chicago. A. W. Wright was elected president, C. H. Davis, vice-president, W. T. Knowlton, secretary and treasurer.

E. Andrews says that he is feeling the effect of the business depression in his shingle trade, having sold 400,000 shingles the other day at 50c. a thousand less than he sold for in October. He says shingles are now selling at \$2 and \$3. His mill cut 11,000,000 last season; he has 1,200,000 on hand, and is putting in a stock of logs for another season's run.

Loggers in this district are rather in despair because of the warm and moist weather, causing the woods and swamps to be redolent with mud and water. Cold weather is greatly needed and unless it comes the loggers will fail in their expectations. A good many logs in the aggregate are on the skids, but not many have been hauled. There is no demand of consequence for labor and there will not be until the weather freezes up. Loggers are paying from \$8 to \$18 a month, and have experienced no trouble in getting all the help they want.

Lumber sales are said to be slow at Bay City, and collections are reported slow, although credits are closely scrutinized. Logs are coming in by rail for several concerns, and a number of lumbermen are giving attention to logging matters here and in Canada. The streams tributary to Saginaw will furnish very few logs another season, probably not to exceed 100,000,000 feet in all, if that many. The last season only 14,000,000 feet came out of the Rifle river. No logs were left in the stream at the close of operations.

SAGINAW, Mich., Jan. 27, 1894.

TRADE NOTES.

The survival of the fittest applies more to the manufacturing and producing of satisfactory oils than to almost anything else we know of. A satisfactory oil is a thing to be prized. No one except an engineer, or one who has charge of lightning running machinery, can appreciate an oil that will do the work and keep the bearings cool, as against an oil that comes a little short, that can't quite do the work, costs a little less but takes double the quantity and keeps everybody nervous, fearing stoppages and delays caused by hot boxes, cut outs, etc. There is no further any uncertainty about oils. Long practice and experience have come to the aid of Samuel Rogers & Co. together with their ample means and facilities for manufacturing and selling oils of all grades, places them at the head of the list in this line. Their oils have undoubted merit. They are careful, painstaking, reliable people; their great aim being to produce the best quality possible in every grade, from the cheapest black oil, to the finest engine and cylinder oil. They have made a special study of the various grades required for all the various uses, and especially sawmill uses, and have produced heavy, strong oils that are prizes for heavy work. We can say to our friends that they can depend on the goods they buy from this company, they are solid. See their advt. in this issue of the LUMBERMAN.

THE NEWS.

CANADA.

—James N. Howard intends erecting a sawmill near Exeter, Ont., at an early day.

—Lumber at the rate of ten to twelve loads a day is reaching Thistle station, Ont.

—The new shingle mill, of Jas. Thompson, Terrawoon, Ont., is about completed.

—Alex. McLaren has removed the machinery in his sawmill at Snow river to Cobden, Ont.

—Snow is abundant in New Brunswick, at least two or three feet, and other big storms coming.

—Jas. Macaulay, lumber merchant, South Indian, Ont., has assigned to A. Mutchmer, Ottawa.

The Gillies Bros. Company, limited, of Ottawa, has been incorporated with a capital of \$200,000.

—David Campbell's sawmill, at Inverhuron, Ont., is now running with a considerable force of men.

—G. G. Scovil is cutting a large amount of lumber in Kings county to be brought to St. John by rail for shipment.

—McCrae & Son, of Everett, Ont., sawmill men, propose going extensively into the manufacture of lath this season.

—Clark Bros.' property on West side St. John's harbor, N.B., has been sold by auction, realizing \$2,000. Wm. Barnhill is the purchaser.

—A. Growlberger & Co., and Chas. Landrie & Co., two new firms, are carrying on lumbering operations on the south branch of the Petewawa river.

—Wylie Bros., at Saginaw, Mich., will change their shingle mill into a band sawmill. They have closed a deal for a ten years' log supply from the Canada shore.

—C. W. Batreck & Son, of Midland, Ont., are going to build a large shingle and tie mill at Bying Inlet, Ont., and have it ready to commence cutting June 1st, 1894.

—Gilmour & Hughson will take out about 300,000 logs from their limits this winter, and calculate to saw next summer 2,000 a day in their Hull Point mill, and 3,000 in the Chelsea mills.

—Jos. Biette has rented the saw mills at Scone, Ont., and in the spring will erect a large cheese-box and heading factory and sawmill combined, on site of the one lately purchased by Krug Bros.

—The Brunette Sawmill Company, B.C., have, it is said, bought out the business of the Shoal Bay Lumber Syndicate and intend commencing logging operations there almost immediately.

—The explosion of a portable sawmill engine near St. Catharines, Ont., a few weeks ago, so shook the city, that the residents at once concluded, that an earthquake had visited them and so proclaimed it to the world.

—Ottawa lumber dealers say that the excellent prices obtained for timber limits at the sale of the Perley & Pattee property on Wednesday are due to the prospects of the abolition of the United States duty upon sawn lumber.

—An indication of how the shingle business has been overdone in New Brunswick is shown in the fact that W. A. Hickson, of Newcastle, who two years ago changed his lumber mill to a shingle mill is now changing back again.

—The Quebec Chronicle says that the ship "White Rose," 1,500 tons, and the barque "Prince Eugene," 1,300 tons, have been chartered to load timber at that port next spring. The rates are said to be 19s. 3d. for Liverpool, 18s. for Belfast and 17s. for Greenock.

—The spool mill erected by Clark, Skilling & Co., at Newcastle, N.B., is now in operation, employing a large crew. The spool mill at Oyster river, near Chatham, owned by McAiton, has been enlarged and is also in operation. A larger amount than usual of spool wood is being manufactured on the Miramichi, for the British market, chiefly to Scotland.

—Mr. J. Morrow, C. P. R. ticket agent for Eastern Ontario, is given as authority for the statement that the Hawkesbury Lumber Co., has just engaged over one hundred and fifty men from the vicinity of Little Metch, Rimouski county, Quebec, to work in their mills in Hawkesbury next summer. The men have hitherto been engaged in the fisheries along the coast of the gulf of St. Lawrence and work in lumber mills will be an altogether new industry to them.

—The News-Advertiser, Vancouver, B.C., says that shingle bolts cost \$4 to \$4.50 per cord, and that it cost \$1.30 per thousand to produce shingles, the very lowest price at which they can be put on board the cars at Vancouver being \$1.50 per thousand. At Tait's mill the wages paid are \$1.50 and \$1.65

per day; while at Spicer's mill they range from \$1.50 to \$2 per day. The latter firm employs sixteen white men and a number of Chinamen in the mill, but in the woods their hands are all white men.

—A Saginaw dispatch says: J. T. Hurst will have 70,000,000 feet of Canada logs, but he could not tell for the life of him if he will be able to find a market for them. One of his jobbers has 27,000,000 feet on skids, and is now hauling them to the water. Fisher & Turner are putting 20,000,000 feet into the Wahnapiatae. J. W. Howry & Sons are putting 20,000,000 feet into Georgian bay waters, and the Holland-Emery Lumber Company, Saginaw Lumber & Salt Company, C. K. Eddy & Sons, Bliss and others operating with him, are putting in from 15,000,000 feet each and upward. Several Bay City firms not named are also putting in stock there.

GENERAL.

—Over 40,000,000 trees have been planted in Switzerland in seven years in the effort to "reforest" the country.

—The tallest tree on earth is perhaps a gum tree, Eucalyptus regnans, recently discovered in Australia. It is 415 feet high.

—The output of the Saginaw river lumber mills for the past season will approximate 630,000,000 feet, against 708,000,000 feet in 1892.

—The forest area of the civilized world is 1,286,824,000 acres divided as follows: Europe, 766,824,000; United States, 380,000,000; East India, 140,000,000 acres.

—The strongest timber known is the "Bilian" or Borneo ironwood, whose breaking strain is 1.52 times greater than that of English oak. By long exposure it becomes of ebony blackness and immensely hard.

—What looks like a case of murder, the victim being a lumberman in Newfoundland, is recorded in the press of that colony. "An altercation took place at Exploits between Appleton Cleaves, foreman of Mr. Phillips' lumbering teams, and a man named Cater, a book-keeper for the same gentleman. It was all about a boat, alleged to have been owned by Cleaves and taken by Cater unlawfully. After quarrelling for some time, Cleaves struck Cater, and he picked up a heavy auger, and in retaliation struck his opponent two blows on the head with it. Cleaves fell stunned and was taken to his quarters in a half-stupefied condition. Cleaves was an elderly man and had been engaged in the lumbering business in Newfoundland for nearly twenty years. He was a native of the State of Maine and was born near Portland. He was married, and his wife, who is very wealthy, resides at Passadumkeay, in that State. He proposed giving up the business and returning home this year."

FIRES AND CASUALTIES.

FIRES.

—Vaughan's sawmill, situated near the C.P.R. station, Chatham, Ont., was burned on 1st inst. Loss, \$3,000. No insurance.

—S. S. Armstrong & Co.'s new steam sawmill and shingle mill, Cranbane, Que., was totally destroyed by fire a few weeks ago. No insurance.

—The sash and heading factory and planing mill with dry kiln, of Lawrence & Son, Watford, Ont., was destroyed by fire on the 1st inst. The loss is heavy with an insurance of only \$1,600.

CASUALTIES.

—Geo. Wilson had his two legs badly jammed between logs, while working at a lumber camp back of Orillia

—Samuel Draper was killed by a falling log while at work at Mickle & Dymont's camp, near Draper township, Ont.

—A man named Patrick, living near Ratho, Ont., was killed on 1st inst. while hauling logs, becoming pinned under several large logs.

—Thos. McLaughlin, of Norval, Ont., was killed instantly while sawing a tree, which becoming lodged between two others, sprung back, striking him in the temple.

—While John Saunders, of Markdale, Ont., was tightening down the cap on the manhole of a boiler in a sawmill the cap blew off, striking Saunders in the breast and killing him instantly. The body was fearfully scalded with steam and hot water.

PERSONAL.

John McMurty, lumber merchant, Port Hope, Ont., died suddenly a fortnight ago of apoplexy.

J. B. Klock, of Klock & Co., lumbermen, is spoken of as the Conservative candidate for Nipissing at the next election.

The death took place on 12th Jan., of Mr. Wm. Merrill, a partner with Mr. H. Vari, in a large saw and planing mill, in Norwich, Ont.

The sudden death of Mr. Duncan McRae, of New Westminster, B. C., took place a fortnight ago. The deceased was a timber inspector for the Provincial Government. He had been a resident of the Province for twelve years, and been engaged in lumbering operations in one shape or another the larger part of his lifetime. He was highly esteemed by all who knew him.

QUEBRACHO WOOD.

QUEBRACHO wood is of a blood-red color, very bright when freshly cut. It is found in great abundance in large forests in North Argentina. The wood so far has only been appreciated in Europe by tanners, as it contains a large proportion (said to vary from fifteen to twenty per cent.) of its weight in tannin, to the presence of which has been ascribed its extraordinary durability. It is stated that when, for the purpose of extending railways in the province of Santa Fe, posts which had surrounded grazing inclosures were taken up, the wood, though having been for one hundred and fifty years, and sometimes longer, in ground alternately parched by great heat or sodden by tropical rains, appeared to be in as good condition as though recently cut. The wood is especially suitable for railway ties, on account of its stability, durability and weight, and by its freedom from attacks by insects. It weighs about seventy-eight pounds per cubic foot, does not decay, and is not compressible, so that holes must be bored clear through the wood, and equal to the diameter of the bolts.

PAVING BLOCKS OF BLAST FURNACE SLAG.

ABOUT twenty years ago it was discovered by a Mr. Woodward that blast furnace slag run into an iron mold and annealed would make an exceedingly tough block suitable for road paving, much cheaper than granite or any other stone. The manufacture of these blocks is now carried on in England, and has become a staple industry. The total product is a present about 100,000 blocks per week, of a value of about \$3.25 per ton. The process of manufacture is as follows:—The slag, when of suitable quality, is run into a ladle; from this it is poured into cast iron moulds secured to the periphery of a horizontal wheel. Each mould has a hinged bottom. The wheel is slowly rotated, and the bottom of the molds are released in succession. The blocks, molten inside, but solid at the surface, drop upon a soft bed of granulated slag, and are quickly removed and stacked in an annealing stove. When full, the doors of the stove are closed, and the blocks are allowed to anneal themselves without extraneous heat. In about eight hours the doors are opened and the blocks withdrawn. They are then fit for use. Without annealing they would soon crumble to pieces from internal stresses. The blocks are in great demand for street paving, not only locally, but also foreign towns where they can be conveyed by water.

HEATING IRON IN COLD WATER.

IT would now seem as though the common, but time-honored blacksmith's forge, and all other kinds of fiery furnaces, will become extinct and live only in the memory of a rapidly-receding past. The forge and furnace of the future will consist of a lead-lined glass or porcelain vase or cupola filled with cold acidified water, to which is connected a strong positive conductor. A pair of tongs with insulated handles attached to a flexible negative conductor are also provided, making the new forge and outfit complete.

The smith seizes the piece of iron he wishes to manipulate with the insulated tongs and plunges it into the sour water, which begins to boil and bubble the instant it comes in contact with the iron, which, in a remarkable short space of time, turns to a red and then to a white heat, ready for the work of the smith.

So rapidly is the heating done, that the water and the portion of the iron not immersed in the water is but slightly warmed.

The principle involved in this process is the same as in incandescent electric light. Resistance produces the light and heat. It is said that enormous heat can be produced by the method, much greater than is necessary to extract the iron from the most refractory ores.

Like all, or nearly all, of the late practical applications of electricity, this discovery will no doubt lead to marvelous results in the perfect and rapid handling of heavy iron and steel plates and bars that have to be hammered and welded, and more valuable still for tempering purposes, as the required heat for the immersed portion can be quickly obtained, while the remaining portion is kept comparatively cool, which cannot be done by present methods. By electricity we live and move, and by electricity some of us die.—Mechanical News.

CANADA'S LUMBER TRADE IN 1893

Review of the Business of the year.

A RETROSPECT.

THE year 1893 was one of much anxiety to business men of all branches of trade, and in almost all parts of the world. It is very generally conceded, we believe, that in the United States and Great Britain, the financial depression was much more severely felt than here, and is apparently proving of longer duration. In other parts of the world, particularly, in Australia, commercial disaster in some of its severest forms has taken possession of the people, and it will yet be some time, we fear, before trade in that colony will have recovered itself.

It would be a strange phenomenon, if, with financial depression so wide spread, Canadian lumber, which finds a market in almost all parts of the world, was not measurably affected. Perhaps this stringency was the more felt by the timber trades of Canada from the fact that the year 1893 opened with many indications of a largely increased trade and at prices that would certainly have proved pleasantly remunerative. This view of the situation was reflected in interviews with prominent Canadian lumbermen in the early part of the year, some of the most cautious taking as hopeful view of the outlook at that period as was the case with others mentally built on a more sanguine plan. No one seemed to doubt that the trade would show a large increase over 1892, for the stocks of lumber on hand were very light, and values were steadily advancing. The mills of the Ottawa and the Georgian bay Territories opened with a large staff of hands in anticipation of a good trade.

Presently the clouds began to gather. The silver difficulties caused serious disturbance in monetary circles in the United States, and almost, as like a bolt out of a clear sky, we began to hear of this bank and another closing its doors, and for a few months, at least, a panic sharp and severe overtook business of every kind. Representatives of Canadian lumber firms, who had experienced no difficulty in finding customers for their lumber, were suddenly brought up with a short stop. Our lumber was wanted, but the one story was told in every ear. Money could not be had from the banks and consequently business could not be done. The piling grounds at all leading points in place of being bare, as had been the case the early part of the year, were now uncomfortably crowded with lumber. Lumbermen, generally, had, in fact, reached the point of not wishing to do business, considering it safer to hold on to their lumber than give it out where only paper was to be given in exchange, much of which was not negotiable, and nearly all of which was surrounded with doubt and uncertainty.

This was the condition of the lumber trade in Canada, as well as the United States, throughout the early summer of 1893, and which so continued, though in less aggravated form, along until the year had finally passed into the archives of the past. This remark, however, ought to be made, that whilst the depression in trade in the United States left its marks in Canada, at the same time the strain here was not as severe as there. As a matter of fact no serious failures occurred in the Canadian lumber trade in 1893, where not a few lumbermen of some importance and size across the border went to wreck within this period, unable to bear the continued strain put upon them.

Trade in lumber was likewise affected during the year by the slow moving features of business in the United Kingdom and other foreign points of export. It is doubtless true that very much was not expected of lumber in these places, from the fact that trade had been experiencing one continued series of set-backs for a long period of time. If it was not a London carpenters' strike, then things were all awry with dock men, and when the seat of trouble was not there it was somewhere else. Still the lumbermen of the United Kingdom had hoped that there was to be an end to these conditions, and we on this side of the Atlantic were not without expectations of improved trade as an outcome of this

hope. In Australia, of course, the bottom fell completely out of trade, and little lumber business was done. Things were not so bad in South America, and later in the year there were encouraging signs of improvement, but taking the year throughout only a fair trade was done with these points.

And yet, whilst conditions throughout 1893 disappointed hopes and expectations that had taken strong possession of the breasts of Canadian lumbermen, when they entered into the activities of business in the early spring, still this disappointment can only be temporary. As a Canadian lumberman remarked to the writer a few days since lumber in Canada is gold. The lumber trade has reached a point where any man holding Canadian timber need not fear any depreciation in its value. Where the sacrifices will come in, if anywhere, is in an injudicious or ill-advised disposition of these resources, a penny turned to-day, only at the sacrifice of a pound a little later on. But much of this kind of business need not be feared at the hands of Canadian lumbermen. They know pretty well what they are doing.

ONTARIO.

What we have already said in this review of the situation, taking the lumber field generally, applies quite fittingly to the Province of Ontario. Here, more than in some other provinces, the boom of early spring was actively felt. There had been a large cut in the woods and the drives came along in good shape. Mills started up with a strong force of men cutting. Lumber was much needed, for the piling grounds were devoid of almost any stocks. As a matter of fact there was so strong a confidence in the lumber situation, that large orders for lumber had been placed before the saw had, in many cases, touched the logs. Prices were not only firm, but for white pine in particular, were steadily advancing. It may be that this condition of the situation was in a degree abnormal. Some think so. At any rate there was no difficulty in placing sales for Ontario lumber at profitable quotations, until the financial depression seized our neighbors to the south of us. Then trade began to shrink, stocks piled up, and sales were comparatively few. The figures of the cut of 1893 would have run into large numbers, but the unexpected always happens, and a season that opened out unusually propitious, closed with dulness and inactivity as a prominent feature.

Opinions vary as to the probable effect of the present depression upon work in the woods this winter. It had been supposed, at the commencement of the logging season, that the cut would fall considerably short of that of a year ago, but from reports that have come into our hands the indications point to a moderately large cut. How well the logs will be got forward, having once been cut, is yet problematical. We hear of an over abundant supply of snow in some quarters hindering operations, whilst at other points work is retarded because of too little snow, mud and water being the substitute. It is always a matter of concern how the drives will come along when spring once opens.

QUEBEC

Returns from the Supervisors of Cullers' office at the port of Quebec do not record a trade of encouraging size for 1893. Of white waney pine there was only 2,460,541 feet measured and culled as compared with 2,659,166 feet in 1892; 1,120,697 feet of white pine, as compared with 2,310,081 feet in 1892; 393,391 feet of red pine, against 392,196, feet in the previous year; 573,079 feet of elm, against 198,806 feet; 158,285 feet of ash, against 198,806 feet, 140,909 feet of birch and maple, against 425,927 feet. In the item of oak alone there was an increase, the figures being 1,150,087 feet for the present year, as against 915,913 feet last year.

BRITISH COLUMBIA.

Commercial records show that the lumber trade of British Columbia ran into large figures for 1893. A leading Vancouver firm, in order to keep up with the demand, found it necessary for a considerable period to make double shifts by day and night. A great deal of shipping was also done there being gathered in the main harbor towards the close of the year the most numerous lumbering fleet on local record. But as Commerce, of Vancouver, has pointed out a large volume of trade does not always carry with it large profits. Says this journal:

"Trouble in Southern America and depression in Australia caused much of a large output to be sold to little profit. Over competition did similar detriment to the shingle trade. Quite a number of the smaller loggers, moreover, assigned during the year, and lumberers of this class now loudly demand in what they declare to be absolutely necessary self protection, the appointment of a Government log scaler, who shall authoritatively estimate the cubical contents of the logs, for which purchasers at the mill must pay." Taking British Columbia interests, however, as a whole, during 1893, they compare most favorably with, and were maintained on a far sounder basis than was the case in the neighboring State of Washington, where, as a result of reckless over competition in falling markets—by men and companies having in many cases insufficient capital—slaughter sales were general, insolvency frequent and demoralization in the ascendant. The establishment of the new fast steamship service between Vancouver, Victoria and the Australian Continent, should, moreover, give an immense early impetus to our lumber industries, by affording them ready access to a great, albeit at present, a temporarily depressed market, which has hitherto been mainly held and controlled by the lumber exporters of the United States. A close estimate places the cut of logs in British Columbia for 1893 at 120 million feet, of which 3 million were sold and shipped to Washington mills.

MARITIME PROVINCES.

For the very full information given below, touching the lumber trade of the Maritime Provinces for 1893, we have to thank Mr. J. B. Snowball, the well-known lumberman, of Chatham, N. B.

The winter of 1892-3 proved the most favorable for log-getting of any we have had for many years, consequently we have had a much larger output for the force employed, than we anticipated. Spring freshets were poor, and driving expensive. About ten millions superficial feet of logs were left in the brooks.

Notwithstanding the favorable season the export from this port fell off twelve millions superficial feet from last year. And while the exports from St. John were ten millions more than in 1892, still the exports for the Province show a decrease of thirteen millions. The increased export from Nova Scotia is caused by the excessive quantity of birch deals shipped from that Province.

The present winter is the most severe experienced for twenty years. Snow is now deeper all over Eastern Canada than at any time last winter. Operations in this district were entered into on a limited scale, and with an anticipated production of 25 per cent. less than last year, but the severe weather is likely to reduce the production below the estimate, and next year's export from this port must be small.

The proposed United States tariff, if adopted for wood goods, will have an indirect beneficial effect on the trade of this section of New Brunswick. Freight rates from Eastern New Brunswick to the United States ports are so high in comparison with those from St. John and Bay of Fundy ports, that our trade in that direction is about nil, excepting in laths and shingles, but under the proposed tariff the export of a considerable portion of the southern and western portions of this Province is likely to be attracted to American ports, leaving more of the trans-Atlantic trade to be supplied from this section.

France, Spain and Mediterranean ports have taken a larger portion of our exports this year than formerly, and if the "favored nation" treaty is ratified, as it will probably be at once, between France and Canada, a larger portion of our export is likely to go to that country, to the great relief of the English market, and with a fair prospect of better prices for spruce.

The stock of merchantable deals wintering here is 7,600 St. Petersburg Standards, against 7,000 Standards last year and 11,000 Standards in 1891. Logs are 4,000 Standards against 3,000 last year.

SHIPMENTS FROM MIRAMICHI FOR 12 YEARS, FROM 1882 TO 1893, INCLUSIVE.

1882—117 millions	1886— 72 millions	1890—88 millions
1883—149 "	1887— 68 "	1891—72 "
1884—108 "	1888— 73 "	1892—95 "
1885— 87 "	1889—110 "	1893—83 "

THE SHIPPERS FROM THE PORT OF MIRAMICHI, IN THE SEASON OF 1893.

Shippers.	No. Vessels.	Tons.	Sup. ft. deals, scantling, ends and boards.	Palings. Pcs.
J. B. Snowball.....	36	25,169	22,081,347	2,421,206
D. & J. Ritchie & Co.....	20	10,964	10,660,238	83,800
F. E. Neale.....	11	12,847	13,519,604	
E. Hutchison.....	10	7,974	7,109,925	
Geo. Burchill & Sons.....	4	3,631	4,601,000	
W. M. McKay.....	21	18,621	18,084,380	32,000
Wm. Richards.....	8	7,509	6,607,000	29,972
Clark, Skilling & Co.....	2	1,069		
J. W. Bennett.....	1	739		
Total.....	113	88,523	82,663,494	2,566,978

DISTRIBUTION OF MIRAMICHI SHIPMENTS.

Country.	No. Vessels.	Tons.	Sup. ft. deals, scantling, ends and boards.	Palings. Pcs.
Great Britain.....	49	42,791	39,333,633	2,407,625
Ireland.....	44	32,356	30,850,877	159,353
France.....	7	5,066	4,964,239	
Africa.....	2	1,421	1,330,254	
Spain.....	11	6,889	6,184,491	
Totals.....	113	88,523	82,663,494	2,566,978

ST. JOHN SHIPMENTS, 1ST DEC., 1892, TO 1ST DEC., 1893.

Shippers.	No. Vessels.	Tons.	Sup. ft. deals, scantling, ends and boards.	Tons Timber.
Alexander Gibson.....	55	72,351	67,505,580	850
W. Malcolm Mackay.....	77	77,878	65,282,983	4,444
George McKean.....	33	29,917	23,021,530	
J. & L. B. Knight.....	1	953	843,241	
Totals.....	166	181,099	156,653,334	5,294

DISTRIBUTION BY PORTS OF ST. JOHN SHIPMENTS, 1893.

Countries and Ports.	No. Vessels.	Tons.	Supt. ft. deals, scantling, ends and boards.	Tons Timber.
Bristol.....	3	3,728	3,472,852	
Barrow.....	1	1,843	2,422,400	
Continent.....	6	3,734	3,573,604	
Fleetwood.....	11	14,477	14,462,277	
Garston.....	6	6,953	7,004,811	
Ireland.....	54	40,490	38,968,156	70
Liverpool.....	33	47,055	42,788,326	5,224
London.....	12	16,269	2,845,616	
Penarth, f. o.....	13	14,879	13,082,537	
Scotland.....	7	6,621	5,746,545	
Sharpness.....	6	9,066	8,426,545	
Wales.....	14	15,984	13,859,665	
Totals.....	166	181,099	156,653,334	5,294

SHIPMENTS FROM ST. JOHN TO TRANS-ATLANTIC PORTS FOR THE PAST 16 YEARS.

Year.	Total sup. ft. deals, etc.	Timber (tons) Birch.	Pine.
1878.....	188,168,610	7,989	2,493
1879.....	153,279,357	11,548	3,237
1880.....	215,485,000	16,035	2,441
1881.....	210,281,730	5,134	1,734
1882.....	201,413,717	7,576	3,332
1883.....	181,517,932	11,778	3,883
1884.....	164,829,825	14,006	3,836
1885.....	152,543,026	13,769	3,686
1886.....	138,934,392	7,354	4,313
1887.....	118,450,590	5,197	1,587
1888.....	153,184,187	4,721	457
1889.....	180,167,488	7,221	487
1890.....	132,608,516	1,311	4,317
1891.....	122,242,682	5,004	
1892.....	146,529,309	10,200	
1893.....	156,653,334	5,294	

TOTAL TRANS-ATLANTIC SHIPMENTS OF NEW BRUNSWICK 1892, COMPARED WITH 1893.

Ports.	No. Vessels.	Tons.	Sup. ft. deals, etc.	Tons Timber
Miramichi.....	134	103,565	94,907,523	228
St. John.....	164	165,207	146,529,309	10,250
Bathurst.....	17	10,746	9,866,015	24
Dalhousie (including Campbellton).....	48	25,615	22,568,604	805
Richibucto (including Buctouche).....	29	13,887	13,002,512	
Shediac.....	23	11,278	10,156,333	
Sackville (including Baie Verte).....	24	13,775	14,576,566	
Outports of Hillsboro } Moncton { Harvey } { Cocagne }	16	13,712	13,542,949	
Totals.....	455	357,775	325,149,811	11,307

The Trans-Atlantic Shipments from the Province of New Brunswick for the past ten years were :

Year.	Sup. ft. deals, etc.	Tons Timber.
1884.....	333 millions s. ft.	1889—369 millions s. ft.
1885—292	“	1890—293
1886—276	“	1891—253
1887—250	“	1892—325
1888—277	“	1893—312

SHIPMENTS FROM NOVA SCOTIA, 1893.

Ports.	No. Vessels.	Tons.	Sup. ft. deals, etc.	Tons Birch Timber.
Outports of { Pugwash.....	10	6,467	17,300,000	990
{ Northport.....	6	6,860		
{ Tidnish.....	9	9,281		
Halifax.....	64	39,456	34,352,656	
Jordan River.....	1	524	415,108	
Parrsboro.....	39	44,426	40,792,496	
Pictou.....	20	12,990	6,888,000	4,616
Saint Mary's River and Liscomb.....	7	4,823	4,315,680	
St. Margaret's Bay.....	5	2,935	2,593,698	
Sheer Harbor.....	2	1,403	1,316,092	
Ship Harbor.....	3	1,460	1,279,200	
Totals.....	166	130,625	109,252,930	5,606

The shipment of deals from Nova Scotia to Trans-Atlantic ports were :

1883.....	77,918,000	1889.....	92,605,488
1884.....	69,159,000	1890.....	99,512,924
1885.....	79,647,765	1891.....	78,603,742
1886.....	87,280,125	1892.....	87,861,398
1887.....	82,959,589	1893.....	109,252,930
1888.....	85,070,005		

INCREASING THE TEMPERATURE OF STEAM.

SOME short time ago, says the Scientific American, it was suggested by Lord Rayleigh that the efficiency of the steam engine might conceivably be increased by adding some salt to the water in the boiler, which should have the effect of raising the boiling point of the solution. The idea sought to be conveyed was that the initial temperature of the working fluid might be thereby increased, thus providing for a larger range and a greater fall of temperature between the boiler and the condenser.

Certain critics objected to this proposition that to raise the boiling point of an aqueous solution does not necessarily imply a corresponding elevation of the temperature of the evolved vapor, which is simply that of water, and must accordingly possess only the temperature corresponding to the pressure. A number of experiments to determine the temperature of the steam arising from a boiling salt solution have been made from time to time ; but the results have been of a conflicting character. The difficulty of arriving at trustworthy results in this class of experiments consists in the circumstance that, while the walls of the steam chamber must be at a temperature higher than that of boiling water, and yet below the temperature of the solution, a sufficient quantity of steam must be evolved to insure that these walls shall not exercise any appreciable cooling effect upon it. These desiderata are claimed to be all satisfied by an arrangement devised by Professor Sokurai, of the College of Sciences of the Imperial Japanese University, by the aid of which it has been determined that the temperature of steam escaping from boiling aqueous solutions of such salts as calcium chloride, sodium nitrate, potassium nitrate, is exactly the same as the solution itself. This is a corroboration of Lord Rayleigh, but whether of any material service to mechanical engineers remains to be seen.

THE WAY IT LOOKS.

A WRITER on the care of engines says it looks like pure laziness for a man to plant certain pieces of bright work on an engine because a little extra work is required to keep them bright. It does look that way. Moreover, a man who will shirk work in that way will probably shirk in every other way he can get a chance.

A THREE CENT STAMP DOES IT.

ON receipt of a three cent stamp we will mail free to any address a copy of our little hand-book entitled "Rules and Regulations for the inspection of pine and hardwood lumber," as adopted by the lumber section and sanctioned by the Council of the Board of Trade, of Toronto, June 16, 1890. Address, CANADA LUMBERMAN, Toronto, Ont.

SOLID EMERY WHEELS.

THE distinctive feature of the various makes of solid emery wheels, says J. Wendell Cole, in Cassier's Magazine, is in the kind and quality of the cement used. They may be divided into, first wheels in which are used gums like rubber and shellac ; second, those cemented under hydraulic pressure and dried and seasoned, like the Northampton and Tanite wheels ; third, wheels made by pressure and moulding, and cured by heat like the Hart or Detroit wheels ; and fourth, the several verified makes, in which a flux is melted into cement.

No one kind of wheel is the best for every kind of work. The rubber cement has to be softened and melted by friction heat before the emery will cut without glazing, and this takes much extra power. Other cements are not good conductors of heat, and cause the wheel, if used dry, to flake out or "spall" off. Vitrified wheels have to be watched carefully as they are of a brittle, glassy nature, easily cracked by a blow. In fact, emery wheels are like steam boilers—very useful, but they must be in good condition to stand the strain, and should have intelligent care with frequent inspection. They should also be kept round, as, if out of round, they cut only on the high side and thus waste the time of the workman, and also are worn into cams and strike a dangerous blow, whereas, the round wheel gives a continuous cut the whole circle. A careless workman, bringing his castings against the wheel with a blow as he starts grinding, causes many wheels to get out of the round, while a careful grinder seldom gets a wheel much out of round.

The best cement is one that binds the emery together with sufficient strength to resist the centrifugal strain due to the high speed at which emery wheels cut best, about 5,000 feet surface speed per minute. It must not soften by frictional heat, nor glaze, nor burst, nor become brittle and break with cold. It must not hold the cutting grains until they are too dull to cut ; nor release them so readily as to waste away the wheel too fast. It must be capable of being mixed evenly with the grain emery, so that the wheel may not have hard or soft spots and be out of balance, and it must also be capable of being tempered to suit different kinds of metal or work. As great care and skill is required to select and use only pure and strong chemicals in these cements, and as careful, skilled workmen are necessary to manipulate and use them aright, one runs great risks in buying wheels to try from any but well-known, experienced and thoroughly responsible makers.

THE ELM.

THE elm (Ulnus Campestris) is an old and long familiar tree, the wood of which, however, according to Timber, of London, Eng., is of no great importance, and is used for a variety of purposes, while knobs or monstrosities found on the tree are cut into thin slices and polished, and employed by carpenters in the process of veneering. The wood is very durable and the keels of troughs and waterpipes in the neighborhood of salt springs are always constructed of elm timber. The elm tree lives to a great age, and some trees in Oxfordshire were famous even in the time of Queen Elizabeth. The "Long Walk" at Windsor was planted at the beginning of the last century, and is well known and greatly admired though some of the trees have passed their prime. There is a great elm tree in the south of England that measures sixty-one feet in circumference. Its trunk is hollow and has a door fitted into it and fastened by a lock and key. Another great elm, near London, has a winding staircase cut within it, and a turret at the top where at least twenty persons can stand. But perhaps the largest and finest elm tree in the world was (for it unfortunately is not) in the county of Kildare, in Ireland. Two of the huge branches fell down of their own weight, and that on a still, calm day, when their was not a breath of wind. The timber of the branches was conveyed away and sold for guineas. The noble tree did not long survive the loss of the branches. It was already tottering to its fall, and a violent storm tore it up by the roots, a great mass of earth rocks being torn up with them. The elm is taller than most of our forest trees, and the masses of light shade, formed by its abundant yet rather loose foliage, impart much beauty to a woodland scene.

TRADE REVIEW.

Office of CANADA LUMBERMAN, February 1, 1894.

THE GENERAL SURVEY.

FOR a month, usually dull, under the most favorable conditions, January has shown fair expectations of an encouraging lumber trade ahead. The results of the recent lumber sale at Ottawa, particulars of which are given in our correspondence from the Capital, furnish one reason, at least, for this hope. Good prices were realized, and the property well distributed in a number of hands, indicating a general confidence in the future. A larger number of contracts than the custom of previous years would lead one to expect, made at Ottawa during the month just closed, is likewise evidence of the present activity in lumber. The value of the sales closed at Ottawa during the first month of the year are placed at so large a figure as \$2,500,000, and it is said that at least \$4,000,000 of lumber for export has been sold in Ottawa during the past two weeks.

What is true of lumber in the Ottawa valley is true of the trade generally at other lumber centres. The worst of the depression of the past has left us, and the future contains many rays of hope.

When we commence to particularize there is not so much to be said of immediate business. That is, what is doing has a relation to the future rather than the present. Local trade in our own Province, and in the city, continues dull, which is all we have been able to say of it for some months. In Quebec and the Maritime Provinces there has been large activity during the month. British Columbia lumber matters are more active, especially the shingle interests, for which a good trade is expected during the year.

United States lumber reports are not yet any too hopeful. At the leading mill points, we are told, there are heavy stocks on hand, and not much demand during the month just closed. Contrawise, it is said, that there are signs of considerable building activity for the early spring, which will mean a distribution of stocks on hand and a demand for fresh stocks.

At foreign points it is believed that trade for '94 will show some improvement, though it must be admitted there has been a great deal of hoping against hope for a year past, and that there is abundance of room for bettered conditions. British trade, it is expected, will improve; South America, it is thought, is growing away from its financial difficulties, and time will improve the monetary situation in Australia.

Following our usual custom we give elsewhere in this issue of the LUMBERMAN a review of the lumber trade of the Dominion for 1893.

TORONTO, ONT.

TORONTO, February 1, 1894.

Table listing various lumber products and their prices in Toronto, Ontario, including items like cut up and better, dressing and better, and various sizes of mill run and common lumber.

YARD QUOTATIONS.

Table listing yard quotations for various lumber products, including mill cull boards, shipping cull boards, and various sizes of flooring and siding.

Table listing hardwoods and softwoods prices per M. feet car lots, including items like Ash, Birch, Basswood, Bitternut, Chestnut, Cherry, Elm, Hickory, Maple, Oak, Walnut, and Whitewood.

OTTAWA, ONT.

OTTAWA, February 1, 1894.

Table listing Ottawa lumber prices, including pine good sidings, pine good strips, pine good shorts, and various sizes of mill run and common lumber.

QUEBEC, QUE.

QUEBEC, February 1, 1894.

Table listing Quebec lumber prices, including white pine in the raft, measured off, and various sizes of mill run and common lumber.

RED PINE—IN THE RAFT.

Table listing red pine prices in the raft, including measured off and in shipping order.

OAK—MICHIGAN AND OHIO.

Table listing oak prices from Michigan and Ohio, including by the dram.

FLAM.

Table listing flam prices, including by the dram.

ASH.

Table listing ash prices, including 14 inches and up.

BIRCH.

Table listing birch prices, including 16 inch average.

TAMARAC.

Table listing tamarac prices, including square and flattened.

STAVES.

Table listing staves prices, including merchantable pipe and W. O. Ponceon.

DEALS.

Table listing deals prices, including bright according to mill specification.

BOSTON, MASS.

EASTERN PINE—CARGO OR CAR LOAD.

Table listing Boston eastern pine prices, including ordinary planed boards, coarse No. 5, refuse, and various sizes of mill run and common lumber.

WESTERN PINE—BY CAR LOAD.

Table listing Boston western pine prices, including uppers, selects, and various sizes of mill run and common lumber.

SPRUCE—BY CARGO.

Table listing Boston spruce prices, including scantling and plank, yard orders, and clear floor boards.

LATH.

Table listing Boston lath prices, including spruce by cargo.

SHINGLES.

Table listing Boston shingle prices, including eastern sawed cedar and eastern shaved sawed cedar.

OSWEGO, N.Y.

WHITE PINE.

Table listing Oswego white pine prices, including three uppers, pickings, and various sizes of mill run and common lumber.

SIDING.

Table listing Oswego siding prices, including 1 in siding, cutting up, and various sizes of mill run and common lumber.

IX12 INCH.

Table listing Oswego IX12 inch prices, including 12 and 16 feet mill run, mill culls out, and various sizes of mill run and common lumber.

IX10 INCH.

Table listing Oswego IX10 inch prices, including 12 and 13 feet mill run, mill culls out, and various sizes of mill run and common lumber.

Table listing lumber prices in inches, including mill run, mill culls out, dressing and better, and various sizes of mill run and common lumber.

Table listing lumber prices in inches, including 6, 7 or 8, mill run, mill culls out, dressing and better, and various sizes of mill run and common lumber.

Table listing lumber prices in inches, including XXX, 18 in. pine, clear butts, pine, 18 in., and various sizes of mill run and common lumber.

Table listing lumber prices in inches, including Buffalo and Tonawanda white pine, uppers, and various sizes of mill run and common lumber.

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COST OF SAWING LUMBER.

THE following calculation of the cost of sawing lumber, made in the office of the Timberman, Chicago, is based, of course, on data from United States mills, but relatively will find an application to Canadian mills, and as material for comparison, ought to have a value to Canadian lumbermen.

Estimates as to the proper charge for the saw bill vary, says our cotemporary, according to locality, conditions and the ideas of lumbermen, from \$1.50 to \$2.50, while some contend that in an economically arranged mill there should be a profit at \$1. Some instances were given illustrative of these differences.

In one mill in Mississippi 35,000 to 40,000 feet of inch stock is cut and put out of the mill with thirteen men all told, including foreman, fireman and filer. In another—in Alabama—thirty men take logs from the landing in the woods, haul them by rail five miles, put them through the mill dry kiln and deliver at the planing mill. Product 75,000 feet a day. At another, but larger, Alabama plant to do the same work it takes 150 men for every 100,000 feet of output.

In a well-equipped Northern white pine mill cutting from 80,000 to 100,000 a day, about fifty men are required to take the logs from the pond and put the lumber in pile. This means a labor cost of production of about 80 cents to \$1.25 per thousand, according to wages. Still in a Muskegon mill of about 200,000 feet per day capacity the cost of this work averaged for months 60 cents.

A man thoroughly posted in the mill business makes the following schedule of crew and wages for a double decked mill, cutting nearly or quite 100,000 feet a day, based on western Wisconsin conditions.

Position.	No. of men.	Av. Wages per man.	Total.
In pond	3	\$1.75	\$5.25
On deck	3	1.50	4.50
On carriage	4	2.25	9.00
Sawyers	2	3.00	6.00
(Off Bearers	2	1.50	3.00
Edgerman	1	2.75	2.75
off bearers	2	1.50	3.00
Trimmer men	2	1.50	3.00
Slasher	2	1.50	3.00
Buggy loaders	6	1.50	9.00
wheelers	6	1.50	9.00
Pilers in yard	8	2.00	16.00
Filers (head \$5 others \$2)	3	3.00	9.00
Engineer and fireman	2	2.50	5.00
Grader	1	4.00	4.00
Roustabouts	3	1.50	4.50
Foreman	1	5.00	5.00
Total hands	51		Total wages \$101.00

The above table stands the test of criticism fairly well for the section indicated. While various mill men might raise some salaries and lower others, and make slight changes in the apportionment, no material change is suggested except in the number of pilers. Five or six men, instead of eight should be enough to do the work. Horses for drawing lumber carts would reduce the number of wheelers, but probably not the expense.

In a certain Wisconsin Valley mill the log-scaler, who also handles the chain and kicker, gets \$2 a day; deck hands, \$1.50; setters, \$3; other carriage men, \$1.72 to \$2; sawyers on the rotary \$5, band \$4.50; two edger men get \$2.75 each; trimmer men, \$2 each; slasher men, \$1.66 each; four lumber-cart drivers, who also care for the horses, \$1.75 each; six pilers, \$1.75 to \$2.25 each; circular saw filer \$6, band filer \$7, the two getting \$13 a day, against \$9 for three given in the table. Wages in other positions are the same. It will be seen that the result in this mill does not differ materially from that shown by the table, what is lost in some things being gained in others.

Where material changes would be made in the above table is in other sections of the country. In the South \$1 a day is the price paid for common labor. But in many southern mills more men are required to handle the lumber from the trimmer chains to the piles. The results shown by the table, therefore, are not greatly modified even there.

It may be assumed, therefore, that in the average modern double decked mill the labor cost is about \$100 per day; making a saw bill of \$1 a thousand, if the product is 100,000 feet a day, and \$1.33 if the output is 75,000 feet, though with that capacity the number of hands would be slightly reduced. Still we come back to the fact that some mills show better results than these. In the table the daily product per man is about 2,000 feet, whereas in some mills it is from 2,500 to 3,000. Looking at the other extreme, there are mills—and many of them—where the output is not much over 1,000 feet for each hand employed.

With these considerations in view it seems safe to say that modern machinery has done but little to increase the per capita product. In the days of the sash saw two or three men would get out from 3,000 to 6,000 a day. It may be admitted, however, that within the last ten years there has been a distinct advance in the way of labor saving appliances. For many years increase in capacity meant a corresponding increase of men, but of late there seems to have been a distinct gain in economy.

We do not wish to be understood to overlook the fact that many more items must be added to those in the table in order to determine the cost of manufacture. The table gives labor items only, and to those must be added insurance, repairs, interest, office expenses, etc.

MARKING TOOLS.

FIRST cover the article to be marked with a thin coating of beeswax, and with a sharp instrument write the name in the wax; fill the letters with nitric acid; let it remain for five minutes, then dip in clean water and rub off, and the name will be etched into the steel or iron.

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Lumbermen

Having made a specialty for years of supplying **Lumber** and **Mining Camps** with Groceries, Flour, Feed and Smoked, Dried and Green Meats, etc., we solicit inquiries from you for your various camps.

SPECIAL:—

Write us for Catalogue and quotations.

Send us your address and we will quote the market from time to time.

EBY, BLAIN & CO.

WHOLESALE GROCERS - TORONTO, ONT.

EAST INDIAN WALNUT.

EDGAR THURSTON, official reporter on economic products to the government of India, has written the following report: The siris tree (albizzia lebbek), whose timber is called East Indian walnut in the English market, is a large, deciduous, spreading tree, belonging to the natural order leguminosae atalie, found wild and cultivated in most parts of India; growing in the evergreen forests in the sub-Himalayan tract from the Indus eastward, in Bengal, central and southern India, Burma, and the Andaman islands, and ascending to 5,000 feet in altitude.

The following account of the wood is given by Gamble in his "Manual of Indian Timbers:"—"Sapwood large, white; heartwood dark brown, hard, shining, mottled with deeper colored, longitudinal streaks. The annual rings in trees grown in the Punjab are marked by a distinct line. Pores large, not numerous, often subdivided and enclosed in patches of softer whitish tissue, which are frequently arranged in short bands. Pores prominent on a longitudinal section. Medullary rays fine, very numerous."

The growth of the tree, which is said to attain a height of 40 to 60 feet with a girth of 6 to 9 feet, and at times 10 to 12 feet, is exceedingly rapid during the first few years, and Brandis says, in his "Forest Flora of North-west and Central India," that trees in the Punjab have 2 3/4 feet girth in 12 years, 4 1/2 feet in 30 years, and that trees at Sakhar, in Sind, 17 years old have reached 5 to 6 feet in girth. This, is pointed out by Gamble, would give from 1 to 3 rings per inch of radius, which is very fast.

The weight of the wood is said to be 40 to 60 pounds per cubic foot. It seasons, works, and polishes well, and is fairly durable. Its value may be inferred from the fact that the Burmese government fixed a higher tax upon the felling of kuk-o (albizzia lebbek) than for teak or any other tree.

The wood is used in India for picture frames, sugar-cane crushers, oil mills, furniture, well curbs, canoes (Burma), and wheelwork; in the Andaman islands, where trees of large

size are procurable, it is utilized for building, and especially for house posts. In the Deccan the wood is considered as being of excellent quality. In northern India it is considered unlucky to employ it in house-building.

The deputy conservator of forests, Andaman islands, in reply to a circular recently issued by Mr. Ribbentrop, inspector general of forests, stated that "small quantities of koko timber have occasionally been sent to London with padouk, and have commanded a ready sale. It makes pretty furniture, having a beautifully patterned grain, and works well up when carved."

Burls of albizzia lebbek, like those of any other furniture wood, increase in value with the intricacy and rarity of the design and the size of the burl. The price of such burls, which are invariably sliced up into veneer, is frequently ten to twenty times that of the plain wood, and as much as a hundred times the value of the ordinary wood has been paid for extremely curious and unique burls.—Timber Trades Journal.

MIX THE MOVEMENTS.

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

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 27th of each month to insure insertion in the following issue.

WE WANT ALL KINDS OF HARDWOODS. Will pay cash. ROBERT THOMSON & CO., 103 Bay Street, Toronto.

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

WANTED

BASSWOOD LUMBER, BY CAR OR CARGO. Offers invited. Address "Baswood," care of CANADA LUMBERMAN.

LUMBER AND SHINGLE MILL FOR sale in the Village of Dundalk; this is good new 50-horse power mill; will run lumber and shingles at same time; plenty of stock can be bought in the locality for four or five years at a reasonable rate. Apply to JOHN IRWIN, Brampton, Ont.

WANTED SITUATION

AS BAND SAW FILER, NINE YEARS' EXPERIENCE; also thoroughly practical on Rotaries. Steady and temperate; good references. Best offer in December for next season and earliest to work, gets me.—H. HOWE, South Boardman, Mich.

SAW MILL CAPACITY 15,000 FEET

BEST WATER AND RAILWAY FACILITIES for shipping. Hard and soft wood limits in connection. Will be sold cheap. Address "W," CANADA LUMBERMAN.

COMMISSIONS

THE ADVERTISER CAN SECURE BIG prices for black ash, basswood, elm and maple in New York and surrounding markets, best of references given. Send lists of stock on hand. No shipment on consignment. Bona fide orders sent you before shipment.

Address "Commissions," care of CANADA LUMBERMAN.

LOGGING TRAMWAY FOR SALE

About three miles of 25 lb. T-Rail; 12 Logging Cars complete, and a Shay Locomotive

IN GOOD CONDITION, FOR SALE ON ADVANTAGEOUS TERMS.

For further particulars apply to

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

RAILS FOR TRAMWAYS

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

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

FOR SALE

From 5 to 6 Million Feet of First-class VIRGIN WHITE PINE SAW LOGS

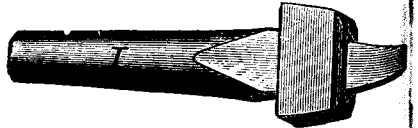
THESE LOGS ARE THE FIRST CUT FROM new timber limits; choice quality; are cut principally 16 feet long, and average from 5 to 6 logs per 1,000 feet, and can be delivered in the Georgian Bay by the 1st of June, 1894.

For particulars apply to

J. D. SHIER, Bracebridge.

Buy the Best

The "WHITING" Saw-Set FOR CROSS-CUTS ONLY WARRANTED



The only SWAGE SET made

SAMPLE BY MAIL, PREPAID, 85c.

R. DILLON OSHAWA, ONT.

Rochester Bros.

: : COMMISSION AGENTS

Limits bought and sold on commission. Limits offered and carefully prepared. Estimates given. Some first-class berths on the North Shore of Lake Huron and on the Upper Ottawa now in our hands for sale.

Communications confidential. References given.

36 Rochester St. Ottawa

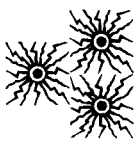
OAK TANNED BELTING

TORONTO 20 FRONT ST EAST TELEPHONE 475

THE J.C.McLAREN BELTING CO MONTREAL

B.R. Mowry & Son

MANUFACTURERS OF



SAW MILL AND SHINGLE MILL MACHINERY

Shingle Machinery a Specialty

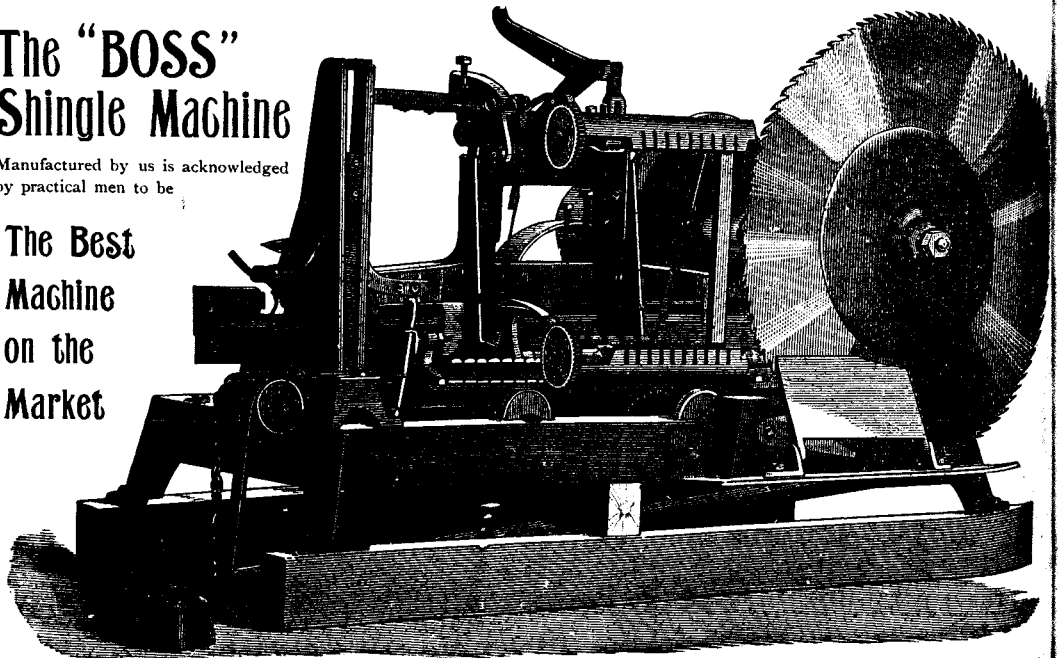
REPAIRING PROMPTLY AND CAREFULLY EXECUTED

Gravenhurst, Ont.

The "BOSS" Shingle Machine

Manufactured by us is acknowledged by practical men to be

The Best Machine on the Market



STEAM BOILER INSPECTION AND INSURANCE DEPARTMENT OF THE STEAM BOILER AND PLATE GLASS INSURANCE COMPANY

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AUTHORIZED CAPITAL, \$500,000 SUBSCRIBED CAPITAL, \$200,000

FULL GOVERNMENT DEPOSIT.

When were your Boilers last inspected by a competent engineer? Do you know what pressure your Boilers can safely stand? Is your Steam Gauge registering the correct pressure? Are your Water Gauges free and in good working order? Is your Safety Valve working properly?

Do not trust to luck; the unexpected generally happens. Avoid the calamity of an explosion. Protect life and property by taking out one of our Inspection and Insurance Policies.

REAMER LUMBER CO. LTD.

WHOLESALE DEALERS IN

WHITE PINE

AND

HARDWOODS

41 Park Row New York

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
Ottawa, Ont.	Ottawa	OTTAWA LUMBER CO.	Lumber, Pine, Spruce, Hemlock, Wholesale	
Parry Sound, Ont.	Parry Sound	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	Circular, 3m
Almonte, Ont.	Almonte	Caldwell A. & Son	Sawmill, Pine, Spruce, Cedar, Hardwoods	Steam, Circular, 40m
Barrie, Ont.	Barrie	Dymont & Mickle	Saw, Shingle and Heading Mill, Pine, Cedar	
Barrow Bay, Ont.	Warton	Barrow Bay Lumber Co., Limited	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.	Waubaushe mill, stm., 200m; Pt. Severn mill, water, 120m
Barrie, Ont.	Waubaushe	Burton Bros.	Lumber, Wholesale and Retail.	
Waubaushe, Ont.	Waubaushe	Georgian Bay Consol. Lumber Co. Hd. office arcade 24 King st. w., Toronto	Pine only.	
Calabogie, Ont.	Calabogie	Carswell, Thistle & McKay	Lumber, Wholesale and Retail.	
Callander, Ont.	Callander, G.T.R.	John B. Smith & Sons	White and Red Pine Lumber, Bill Stuff, Lath and Shingles	Steam, 2 Circular, 80m
Collins Inlet, Ont.	Collins Inlet	Head Office, Strachan Ave., Toronto	Lumber, Pine, Oak, Ash, Birch, Whol. and Ret.	Steam, Cir., Saw 14m, Sh. 20m
Glamis, Ont.	Pinkerton	Collins Inlet Lumber Co.	Saw, Shingle and Lath Mill, Timber Lands, Hemlock, Pine, Lumber, Hardwoods	
Hamilton, Ont.	Hamilton	McIntyre, N. & A.	Lum., Tim., Pine, Hem., Hwds., Whol. and Ret.	
Huntsville, Ont.	Huntsville	BRADLEY, MORRIS & REID CO.	Sawmill, Pine, Spruce, Hemlock, Hardwoods	Steam, Circular, 25m
Hamilton, Ont.	Huntsville and Katrine	Heath, Tait and Turnbull	Sawmill, Pine, Spruce, Hardwoods	Steam, Circular, 4m
Keewatin, Ont.	Keewatin	Thomson, Robert & Co.	Sawmill, Pine, Hardwoods, Wholesale	Steam, Circular
Keewatin, Ont.	Keewatin	Dick, Banning & Co.	Saw, Lath, Sh. and Pl. Mill, Moving Posts, Pine	Water, Band and Circular, 100m
Lakefield, Ont.	Lakefield	Keewatin Lumber & Mfg. Co.	Lumber, Wholesale and Retail.	
Little Current, Ont.	Lakefield	Lakefield Lumber Mfg. Co.	Lumber, Wholesale and Retail.	
London, Ont.	Sudbury	Howry, J. W. & Sons.	Exp. and dlr. in Am. Hwds. made to specification	Steam, Band and Circular, 200m
London, Ont.	London	Gordon, James	Saw and Plan. Mill, Tim. Lands and Logs, Pine	Lumber, Wholesale and Retail.
Longford Mills, Ont.	Longford	Longford Lumber Co.	Hardwoods, Shingles, Lath, Handles.	Steam, Circular, 20m
Louise, Ont.	Norinan	Minnesota & Ontario Lumber Co.	Pine	80 M. per day, Stm., 2 Cir. Saws
Toronto, Ont.	Elmwood, G.T.R.	S. B. Wilson & Son	W. Pine, Lath, Shingles, Dim. Timber, Car Sills	Stm., Cir., 15m
Toronto, Ont.	Warren, C.P.R.	The Imperial Lumber Co., Limited.	Pine and Hardwood, Wholesale	
Toronto, Ont.	Cache Bay, Ont.	Davidson, Hay & Co.	Lumber, Wholesale	
Toronto, Ont.	Lakefield	S. J. Wilson & Co.	Lumber, Wholesale	
Toronto, Ont.	Toronto	F. N. Tennant	Lumber, Wholesale	
Toronto, Ont.	Toronto	Donogh & Oliver	3 Saw, Shingle and Lath Mills, White Pine, Whol.	Com. Stm., Cir., Gang and Band, 140m
Toronto, Ont.	Toronto	Victoria Harbor Lumber Co.	Lumber, Wholesale	
Toronto, Ont.	Toronto	W. N. McEachren & Co.	Lumber, Lath, Shingles, etc., Wholesale	
Toronto, Ont.	Toronto	James Tennant & Co.	Pine and Hardwood Lumber, Whol. and Retail.	
Toronto, Ont.	Toronto	DeLapante & Bowden	Ry. and Ship Timber, any required dimensions	
Toronto, Ont.	Toronto	James McBain Reid	3 Sawmills, Lumber, Barrel Heads	Stm., Wr., Cir., Port. & Sta., 10m
Warton, Ont.	Warton	Miller, B. B.	Sawmill, Pine, Spruce, Hemlock, Hdwds., Whol.	2 Stm., 2 Wat., Band, Cir., 40m
Montreal, Que.	Montreal	Dufresse, O. Jr. & Frere	Sawmills, P. Fin, Spruce, Cedar, Hardwoods	Steam, Circular, 20m
Montreal, Que.	Montreal	SHEARER & BROWN	Saw and Planing Mills, Sash, Doors and Blinds.	Steam, Gang and Circular
Montreal, Que.	Montreal	MOODYVILLE SAWMILL CO.	Fir, Cedar, Spruce, Hardwoods	
Montreal, Que.	Montreal	Brunette Sawmill Co.	Sawmill, Pine, Hardwoods	Steam, Circular, 38m
Montreal, Que.	Montreal	James Morrison & Son	5 Saw, Shgle. and Lath Mills, Pine, Spr., Hwds.	Water, Circular and Gang, 200m
Montreal, Que.	Montreal	DAVIDSON, E. D. & SONS	Pine, Spruce, Birch, Hemlock, Shingles.	Stm., Cir., 40m, Shingles, 35m, Lath, 15m
Montreal, Que.	Montreal	South River Lumber Co., Ltd.		
New Westminster, B.C.	New Westminster			
New Westminster, B.C.	New Westminster			
Canterbury, N.B.	Canterbury Stn.			
Bridgewater, N.S.	Bridgewater			
South River, Ont.	South River, G.T.R.			

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The Montreal Car Wheel Co.

.... MANUFACTURERS OF

Charcoal Iron Gilled

RAILROAD WHEELS

OFFICES:

NEW YORK LIFE INSURANCE BUILDING, MONTREAL

WORKS: LACHINE, QUEBEC

We make a specialty of Wheels suitable for the requirements of Lumbermen and Street Car Service, and can supply them Bored, Finished and Balanced.

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Mineral Wool Pipe and Boiler Covering

If you want to save fuel
 " " dry steam at long distance
 " " to prevent condensation
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 " " " freezing

USE
 MINERAL WOOL
 SECTIONAL
 COVERING

THE best non-conductor is the cheapest covering. Mineral Wool heads the list as a fire-proof non-conductor. Hard pressed coverings are poor non-conductors, and are therefore the most expensive in the end. A good pipe covering is one of your best investments. It is false economy to have uncovered pipes, as you are just paying the coal man what the covering man should have, and only ashes to shew for it. Give the matter your consideration, it means money to you. We also carry full lines of Asbestos Goods, and Mineral Wool for fire-proofing, deadening of sound, insulation, etc., etc. Send for Pamphlet.

CANADIAN MINERAL WOOL CO. LTD., 126 BAY ST., TORONTO

Best Box Metal
Extant
 Stands any Gait,
 Weight or Motion

COPPERINE

Holds the best
 TESTIMONIALS
 from the largest machinery manufacturers, owners and users in the country

Four Grades
 do all your work
 with economy

No HOT BOXES

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 SOLE MANUFACTURER
 PORT HOPE, ONT.

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Proved by actual and thorough tests to be the best fire-proofing material in use.
 Unequalled for making buildings, vermin, heat, cold and noise proof.
 For partitions, costs no more than brick; weight, one-third that of brick.

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MANUFACTURER OF

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THOS. MCGRAKEN

(Member Toronto Stock Exchange)

BROKER & FINANCIAL AGENT

DEALS SPECIALLY IN TIMBER LIMITS

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F. REDDAWAY & CO.
 MANUFACTURERS OF



BREAKING STRAIN 6 IN. "CAMEL" HAIR BELT ----- 14,181 lbs.
 " " 6 IN. ENGLISH OAK DOUBLE LEATHER ----- 7,522 "

ALSO MANUFACTURERS OF LINEN FIRE HOSE

MANCHESTER, ENGLAND. } 57 ST. FRAS. XAVIER ST, MONTREAL

HARD-MOUTHED HORSES

AND PULLERS CONTROLLED WITH ABSOLUTE EASE.
 RUNAWAYS IMPOSSIBLE.

This statement is now repeated by thousands who have purchased

BRITT'S AUTOMATIC SAFETY BIT.

SAFETY GUARANTEED
 This Bit, by an automatic device, closes the horse's nostrils. HE CANNOT BREATHE, AND MUST STOP.

SAFETY FROM RUNAWAYS ABSOLUTELY GUARANTEED WITH THIS BIT
 Any horse is liable to run, and should be driven with it. By its use ladies and children drive horses men could not hold with the old style bits.

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The only bit in the world that is endorsed, advocated, used and sold by the Society for the Prevention of Cruelty to Animals, *The Highest Authority.*

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H. P. ECKARDT & CO. WHOLESALE GROCERS

Lumbermen's Supplies a specialty.....

..... Correspondence solicited

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WHY BAND SAWS BREAK

SIXTEEN REASONS,

AND HOW TO

AVOID THEM

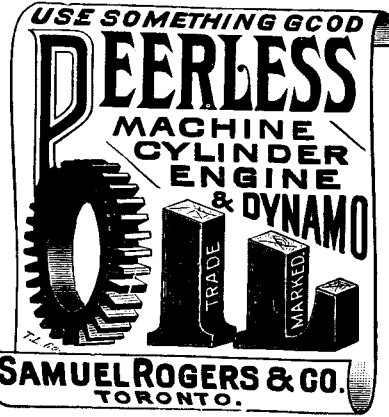


Being instructions to filers on the care of large band saw blades used in manufacture of lumber.

A book filled with valuable information on the care of band saws. Giving reasons for breaking; analyzing each reason; giving instructions to dispense with causes as laid down in each reason; and full details on filing and brazing. The proper styles of hammers to use are illustrated and described, and views of blades showing the blows of the different styles of hammers form an important part of the illustrations. Improper and unequal tension are then treated, and the manner of properly setting irregular teeth is described. In connection with the treatise is a history of the invention, manufacture and use of the saw from its origin to the present time. The work in whole makes an accumulation of information such as has never before been published.

The book is printed on fine paper, good clear type, and is handsomely and substantially bound in cloth. It will be sent to any address on receipt of the price ONE DOLLAR.

Address— CANADA LUMBERMAN, Toronto, Ont.



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SUPPLIED
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High Grade ...

... Heavy Quality

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Doors, Sash, Blinds, Stairs

And all kinds of House-Finishing Materials

VENEERED DOORS a specialty

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PATENTS CAVEATS and TRADE MARKS

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Lumbermen

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Its use is authorized by Province of Ontario and Toronto City Engineers.

Quality GUARANTEED, and always the same.

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GALT MACHINE KNIFE WORKS



MACHINE KNIVES
OF EVERY DESCRIPTION FOR
Planing, Moulding and Stave Cutting
—Send for Price List—

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Sail, Tent and Awning Maker ..
251 George St. and 154 King St.
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Canvas, Yacht and Boat Sails made to order. Perfect Fit Guaranteed.
Every description of Lumbermen's Supplies and Water-tight Clothing.

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Manufacturers' Agent - 24 Front St. E., Toronto

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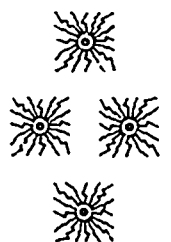
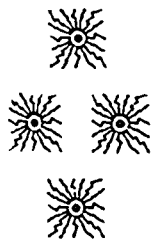
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(Sectional Ring, Rainbow Sheet and Coil Packings, Asbestos Cement)
- The Magnolia Metal Co., New York
(Endorsed by the United States and German Governments best Anti-friction Metal in Market)
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(Refined Oils in Tank Cars and Barrels, American Paraffine, Wax and Soap Stock)
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(Lace Leather, Rawhide, Russet and Calf)
- The Pennsylvania & Delaware Oil Co., New York
(American Lubricating Oils and Grease)

Oils shipped from any port on American side to suit customers.....

Before placing your Spring Order write for my prices... ..

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HAVING made arrangements with H. H. SPICER & Co., of Vancouver, B.C., for the exclusive sale in Ontario of their CELEBRATED RED CEDAR SHINGLES, I am in a position to supply the trade PROMPTLY and in LARGE QUANTITIES. To the many patrons who purchased from us last year we extend our hearty thanks, and beg a continuance of your patronage this year. To Dealers who have not yet handled these Shingles, we ask you to give them a trial, as we know that this is all that is necessary to insure a continuous trade. Write for further particulars.



F. N. TENNANT - **LUMBER MERCHANT**
No. 1, Toronto St., Toronto

F. E. DIXON & CO.
 MANUFACTURERS OF
Star Rivet Leather Belting
 WRITE FOR DISCOUNTS **70 King St. East, Toronto**

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

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MAITLAND, RIXON & CO.
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Saw Millers and Lumber Dealers
 All kinds of Building Material kept in stock
 WE MAKE A ... SPECIALTY OF LONG BILL STUFF IN ROCK ELM, PINE, CEDAR AND HEMLOCK
 Quotations furnished on application

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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 AND MANITOWOC, WIS.

The last two named are reached by the Company line of Steamships across Lake Michigan. The line thus formed is a short and direct route from **NEW YORK BUFFALO MONTREAL TORONTO** to **ST. PAUL, DULUTH and Pacific Coast points.** Write either of the undersigned for Folders, which contain Maps, Train Schedules and much information of value to those contemplating a trip to any of the above-mentioned points.

W. H. BALDWIN, JR., General Manager. **W. F. POTTER,** Gen'l. Sup't.
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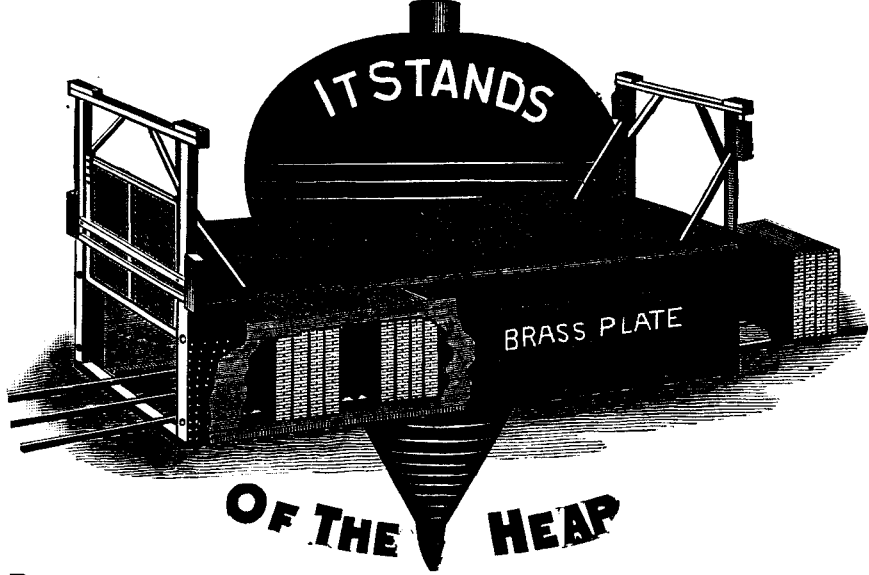
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