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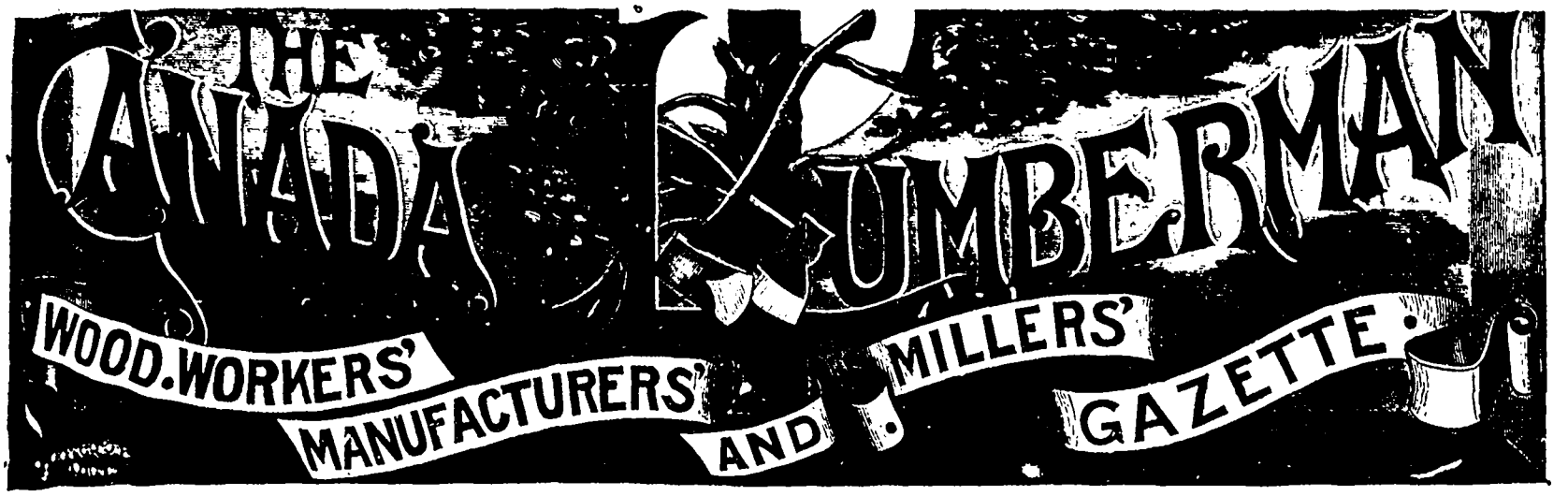

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THE CANADA LUMBERMAN

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REMINISCENCES OF THE LUMBER TRADE.

THE following historical notes on the early lumber trade of Canada were written by Hon. J. K. Ward, of Montreal, who is now 79 years of age, and who has spent 53 years of his life in the sawmilling business. He was one of the pioneers of the trade, having done much to develop the lumber industry of Canada.

Mr. Ward is about to retire from active business. He has disposed of his timber limits on the Rouge river to the Riordan Paper Mills Company, and after the present season will lease or sell his mill property.

HISTORICAL NOTES.

The first timber shipped from Canada of which we have any record was sent by Talon to Larochelle in 1667. Hocquast sent some timber and sawed lumber to Rochefort in 1735. After the conquest in 1760 the trade with Britain increased very rapidly, so much so that as many as 800 sailing ships have arrived in one year at Quebec, seeking timber cargoes. At present it is a rarity to see one, steamships almost monopolizing the trade, the character of which has changed, much less square timber being made than formerly and most of the sawed pine lumber that comes from the Ottawa being shipped from Montreal, in place of Quebec, as was once the case.

I think I can fairly claim the credit of shipping the first cargo of lumber from the St. Lawrence to South America; this was in 1866, from Three Rivers, on the bark Annie McKenzie, on account of A. & S. V. Spring, of Portland, Maine, for Buenos Ayres. I continued for many years shipping lumber to the east and west side of South America, for German and American firms, also sending many ship loads of sugar box shooks to Havana and Cardenas. The trade with South America has been a very precarious one. I have known as much as £28 per 1000 feet being paid for freight to Buenos Ayres, and have seen as low as $9 per M feet paid for same. Cargoes have also been sold for less than the charges, and abandoned by the owners.

In the early part of the present century the Montmorency mills were built by a Mr. Usborne. The late Peter Paterson, a Yorkshire man, ship's carpenter by trade, who had spent some time in Russia, became an employee of Mr. Usborne's, and finally proprietor of the property, and became one of the largest manufacturers of lumber in Canada, drawing his supply of logs largely from the Beconcour, the St. Maurice and other streams running into the St. Lawrence and Ottawa rivers.

Sir John Caldwell was largely interested in lumbering on the St. John, N.B., Rivier du Loup in Batiscan and Etchemin, but did not make a success of it financially.

The late Wm. Price, father of the Hon. J. Price, of Quebec, established mills at Chicoutimi, St. Alexis, L'Anse St. Jean, St. Ettiene, on the Saguenay, Metis, Matane, St. Thomas, Batiscan and many other places, leaving an immense business to his sons, but all is now conducted by the one above named, the others having died some years ago.

Philomene Wright, the first lumberman on the Ottawa river, came from Woburn, in the United States, arrived at the Chaudiere Falls or the Asticou, as called by the Indians as early as the year 1796. It was not until 1797 that he finally decided to make his home in Canada, and on the 20th of October, 1789, he and two companions pitched upon the site of the future city of Hull. He finally quitted Woburn for Canada on the 2nd of February, 1800. He was accompanied by five families, and had in the train fourteen horses, eight oxen and seven sleighs. The first tree was felled on the site of the homestead on the 7th of March of the same year. He brought the first square timber from the Ottawa to Quebec in the year 1807. He built the first slide on the Hull side of the river in 1829. He was elected the first member to represent the County of Ottawa in 1830. He died in 1839, and sleeps, an honored memory, in the little cemetery on the Aylmer road. Philomene Wright built his first saw and grist mills 1808, they were, unfortunately, burned down, but were rebuilt in 60 days.

About eighteen years prior to this the first saw mill on ' Ottawa had been built at Point Fortune by a Mr. Story. It boasted one upright saw, and it is recorded that when the man in charge gigged back the carriage for a fresh cut he would sit down on the log to take his dinner, and was about through by the time the cut was finished. With our present saws the same can be done in four seconds.

Among our successful lumbermen have been the late James McLaren, of Buckingham; Peter McLaren, of Perth; Bronson, Weston & Co., Perley & Pattee, J. R. Booth, Alex. Fraser, of Westmeath; W. Mackey and the late firm of Hamilton Bros., whose father was one of the first in the trade at Hawkesbury, Ont. Many others have taken an active part in the business, with more or less success.

Our shantymen, whether English or French, as a rule are as good axemen, as expert drivers and canoemen, as can be found in any country. Our people are well up in dam building, as well as in making slides and clearing away the rivers to facilitate driving. Our rivers, as a general thing, being very precipitous and rapid, require extensive improvements, especially for the running of square timber.

Mr. Hale, of Sherbrooke, gave an amusing history of a stick at the Forestry Congress in this city in 1882; "As an example of the far-reaching benefit of arboriculture, I will give the history of probably the first importation of any new variety of tree ever made into the eastern townships. Many years ago a 'solitary horseman might have been seen wending his way' from the central part of Vermont, bearing in his hand a riding stick broken from a tree as he left his home. His destination was Lennoxville, and in due course of time he arrived, and taking up his abode at a farmhouse about one mile east of the village, stuck his now useless switch into the ground. Like Aaron's rod, in due time it budded and grew apace a scion of the then unknown white willow. From this little stranger have come all the original magnificent trees for which Lennoxville and the surrounding country have been so long and so justly famous, and which have done so much towards clothing the countryside for miles around with its rich and luxuriant foliage; into many other towns and villages have they spread, until the offsprings of this embryotic willow might be numbered by the thousands."

The late Hon. Jas. Skead and his brother, Robert, were prominent lumbermen and respected citizens in their day. Ben. McConnell and his brother and many others, were all pioneers in a business that entails more hardships and excitement than but few can appreciate.

THE LATE TIMOTHY H. DUNN.

ONE of the oldest and most highly respected lumberman of Quebec recently crossed the bar, in the person of the late Mr. T. H. Dunn, whose death occurred at his summer home on the Isle of Orleans. Deceased was born at St. Ursule, Que., in 1816. In 1841 he entered the Quebec office of the great timber firm of Calvin, Cook & Counter, of Kingston, and later on became the head of the firm of Dunn, Calvin & Co. After the dissolution of that firm his business ability and success won the confidence of all those connected with the trade, and in conjunction with the late Thomas Benson, he transacted business under the name of T. H. Dunn & Co., and in 1860 formed a new partnership with the late Wm. Home, the firm being known as Dunn & Home. The firm was succeeded by his two sons, the late Logie H. Dunn and Stuart H. Dunn under the name of Dunn & Co. He was also one of the founders of St. Mary's chapel and parsonage at the Island of Orleans, and for many years was a prominent member of the Quebec Board of Trade. Mr. Dunn was always foremost in identifying himself with all local enterprises. He was one of the original promoters of the Montmorency Electric Power Co., the Cold Storage Co., also the Quebec District Railway, and was a director of the two former companies, also of the Great Northern Railway, and always looked forward to seeing the entering of the Parry Sound into Quebec. He was a director at one time of the Quebec Bank, and at the time of his death was a new director of the Merchants' Bank of Canada, Montreal, and the Standard Drain Pipe Co., of St. Johns, P.Q. He was altogether an exemplary type of man, and leaves behind a cherished memory.

ESTIMATING STANDING TIMBER.

A SUBSCRIBER of the Lumberman asks me to give him some advice about estimating standing timber. He states that his firm has occasionally a case where knowledge of the subject would be valuable to them, but "never to such an extent as to justify the employment of an expert timber estimator." He requested that I should state, "in a few short sentences," some rules for his guidance in such cases, writes "An Old Estimator" in the Northwestern Lumberman.

It is well to say at the outset that no intelligible advice can be given in any "few short sentences," for the art of estimating standing timber involves so many different questions that it is impossible to give any kind of an explanation that would be of any practical benefit, except by means of a somewhat lengthy communication.

No two estimators follow exactly the same methods, and I can only undertake to give as concise an idea of my own as possible. I would state further that these methods were learned from association with practical estimators of long and varied experience, whose estimates had been carefully checked up when the timber was cut and manufactured.

I spent a great amount of time in the woods years ago, learning the business with those men, and afterward in making estimates on my own account, on which large tracts of timber land changed hands, and I have yet to learn that any of my estimates were ever disputed.

As I learned the business of timber estimating, I formulated for myself a sort of system, which may be outlined briefly as follows, leaving out many of the minor details, which one in the business must learn to fit special conditions:

When undertaking to estimate the timber on a given tract, my first work, after establishing a headquarters camp on the land or near by, was to carefully go around its entire boundaries and make an outline map on a blank with which I was always provided. On it were laid out townships, sections, quarters and eighths, with the numbers and fractions to be filled up as required; hills, valleys, streams, etc., to be drawn in as found by actual examination. After outlining the body of timber I made careful notes of the lay of the land on each and every side, and the character of the standing timber closely adjoining it.

My next move was always to carefully cross and recross the tract in every direction, making my lines of crossing so near that I could observe correctly the kind and character of the timber between the lines I made, and also to observe the character of the ground, its actual topography, the hills, valleys and streams which crossed it. I made these preliminary explorations in both directions, practically marking the tract off like a checker board, making copious notes as I went. By this means I got a general photograph in my mind of the appearance of the entire tract.

My next move was to go over the ground carefully, pacing distances closely, following the compass always, and sometimes using the surveyor's chain where especial exactness was required, and from these second explorations I filled in as perfect a topographical map as could be made, showing every stream, if there were any, in its actual position, its comparative size, and any branches that it might have, also in actual position. Every hill or elevation, and every valley was drawn exactly, though roughly, of course, but so as to allow all the difficulties in the way of getting out the timber, and the direction in which it would have to be hauled to get it to a stream, or railroad, or any other landing. It often happened that a copy of this topographical map would go a long way toward determining the cost of logging the tract, which, in its turn, would have a great bearing upon the value of the timber.

After making my map my next step was usually to divide the tract into smaller ones, according to the size of the whole, the density of the timber, and the roughness or smoothness of the ground, rough ground or dense timber requiring smaller divisions. These divisions were made by careful pacing and by blazing the lines, or by otherwise marking them, where there is much underbrush, by cutting enough to mark paths. My next step was to take one of these small subdivisions, go carefully over it, count the number of trees on an average acre, or two or more acres, from which to draw an average. At first I used a tape measure to obtain the girth of trees, which once obtained, with a careful estimate of the height, would give me a scale by any of the commonly used log rules, mentally cutting the tree into logs of merchantable length, and lowering the scale, which any scaler will understand, from the butt log up, as is done in measuring long logs.

Where the land was thinly timbered and there were but one or two species, it was an easy matter to determine the amount of timber of each species in each subdivision, and when the first examination has discovered little variation in the quality of the timber over different parts of the tract, it will usually only be necessary to estimate two or three of these small subdivisions to be sure of a fair average, when a total can be struck. But where, as in the case of hardwoods, there may be a number of species unevenly distributed, and where the land is unevenly forested, no accurate estimate can be obtained without going over every one of the subdivisions as a unit, carefully classifying the quality of the timber of each species and the proportion of each species in each subdivision.

When I had this work all done, if especial accuracy was required and the timber much mixed, and the quality variable under different sections of the tract, I usually retraced my work of actual estimating, with my first figures in my pocket, not to be referred to until the second estimate was complete. I aimed to allow a little time to elapse between the making of these two estimates, as the mind will often work differently under reversed conditions of looking at things.

After a few years' experience in the business, and having my mind well filled with pictures of different tracts I had estimated, and of the amount of timber found on each, always bearing in mind also the results of cutting and sawing on the same tracts, and the comparison of the mill scales with my estimates, I was enabled to make very close estimates of large tracts, after my topographical map was once made, and after what I might call my preliminary explorations, perhaps repeated once or twice, without any actual counting, or actual measuring of individual trees, simply passing over the different squares of the checkerboard, as I may express it, and comparing them in my mind with pictures of other tracts, the actual figures of which I had at hand.

I was enabled, during the last years of my experience in the woods as an estimator, to make very accurate estimates on this basis, but I would not recommend it as safe for anyone but a long-time expert or one specially endowed with a natural gift for estimating things by sight.

That there is a gift in this line I must claim, for I have known men to work in the woods for years, under good instructors, and who were honest and conscientious, but who never became reliable estimators. On the other hand, I have known men who seemed to be able to estimate almost by intuition. They really had no special system, but outlined the tract they were estimating, and then walked over it back and forth until they had a fixed idea in their minds of the amount, character and species of timber on the land, and I am free to confess that these men habitually made remarkably close estimates.

I believe it is a rule with all professional landlookers or timber estimators to make some sort of a topographical map at some stage of the proceedings, some preferring to leave it until the very last. I always found the making of the map at the outset a decided help in reaching accurate conclusions as to the quantity and character of the timber on the different parts of the tract.

These rules, or suggestions, whatever the reader may be pleased to call them, apply to all kinds of timber, with certain modifications, of course. In the hardwoods it is necessary for the estimator not only to be able to scale the trees and get their contents, but to know the natural defects, whether on the surface, or apparent only by certain external signs. He should also know something of the effects of different soils and surface upon the quality of the growing timber. Without such knowledge, any estimate he may make would practically only be a gross one of scale of the timber sawed through and through. In the general run of hardwood timber such a gross estimate should be scaled down say from 25 to 40 per cent. in order not to overrun a subsequent mill tally.

It is quite an easy matter to estimate white pine on ordinary level dry pine land. But where the land is interspersed with streams with marshy borders, with swampy or boggy places, clayey hillsides, or cobbly ridges, it requires all the skill of the most wideawake man in the business to avoid making the most glaring mistakes, at least in the quality of the timber.

In the hardwoods, where the prevailing timber is white or red oak, and the land is of a generally uniform soil, and is high and dry, the work is quite easy, and there should be little or no trouble in making an almost absolutely accurate estimate of what the tract would cut in board feet. But where the land is rolling, with variable soil, as has been said of pine land, and the oak is only one of several prevailing species, there is more difficulty, and more skill is required.

I might say in conclusion that the business of timber estimating is one that cannot be learned from any book, or by any mere theoretical instruction, but preferably under a well posted teacher, and in actual field work. It is all right

to have a theory at one's tongue's end beforehand, and to have some system outlined to follow, but the real education of the timber estimator can only be obtained by actual work in the woods. Such education can be obtained without the aid of an instructor, but probably at the expense of many mistakes in regard to the quality of the timber, and at the expense of many wild guesses as to quantity.

I would say further that anyone intending to purchase any considerable tract of timber, unless well conversant with land looking and timber estimating himself, had better pay a practical estimator for his services than to undertake to estimate the timber for himself, even after carefully reading and digesting the rules I have here laid down. More purchasers have been fooled by confidence in their own ability to make an estimate of timber than would fill a page of this paper if their names were printed in the finest solid type. I am out of the business, and have no interest it it whatever, but I would say to any prospective investor in timber land, who proposes to take these rules, or any other estimator's rules (and these I affirm are as good as can be drawn up) don't do it, but hire some well known, trustworthy landlooker or estimator to do the work for you. It will be money in your pocket in the end.

QUESTIONING THE SPRUCES.

Austin Cary, forestry specialist for the United States Department of Agriculture, believes that spruces, growing under average conditions, make an annual increase of 2.3 to 3 per cent. It is evident that, in reaching this conclusion, Mr. Cary has left nothing to guesswork. He has spent nearly two years in the woods of New Hampshire and Maine, during which time he and his assistants measured more than 10,000 individual spruce logs and trees, says "Popular Science News."

While the figures thus obtained are not encouraging to men who have bought townships of young spruce for permanent investments, they afford a most potent argument in favor of scientific forest culture. During the first twenty years in the life of a young tree the growth is rapid; but as soon as the stems get big enough to be of value as poles or pulp wood, and long before they are worth cutting for timber, the per cent. of increase drops to a low figure, and holds there during the life of the forest. In dense growths, where the trees run up tall and slim in order to push their tops to the light and air, fully seventy-five per cent. perish in the struggle for existence, and stand there, while they undergo a slow decay, greatly impeding the development of living trees.

Under the present system of management, which is simply nature's way of doing things, the Northern spruces are not big enough to make mill logs until they are 100 to 120 years of age. During the time of growth ninety-five per cent. of the original seedlings have been killed from suffocation or inadequate nutrition, and about seventy-five per cent. of the wood counted in board or cubic measure has gone to waste from decay. In choppings that were culled for the best logs twenty and thirty years ago Mr. Cary found that the surviving trees had grown four, six, and sometimes ten per cent. a year, owing to the thinning.

Hence it is argued that if the landowners who are now stripping off their young spruces for pulp wood were to thin out the growths, leaving the tallest and best to grow for logs, they would get nearly as much as they do now for pulp, and still have their timber land in better condition for logs than it was before the weeding out was made. Owing to the danger from winds, no lot should be entirely thinned in one season; but the work must be done gradually, so as to enable the surviving trees to withstand the gales.

Now that spruce is gone from all the waterways and the lumbermen are pushing private railroads among the mountains to reach what still remains, the owners have learned that, by following Mr. Cary's advice they may make their townships yield good incomes from pulp wood and at the same time enhance the coming values of the trees that are left to stand. It is a case where a man may eat his cake and still keep it to eat at some future time. When it is remembered that nearly all the white paper now used is made from spruce pulp, and that about three-fourths of spruce growth in New England has been swept away during the past fifteen years, it would seem that it was time for the landowners to show some interest in what concerns them so much.

PRICES AND TERMS OF FOREIGN MARKETS.

A LUMBERMAN correspondent states that he has been quoted offers on American lumber to be delivered in European ports, at so many francs per cubic meter, and he wishes to know how to find out the value of this offer in English, in other words, in Yankee board measure and Yankee dollars and cents, says the Hardwood Record.

The French meter is 39.37 inches in length. This cubed, or multiplied into itself twice equals 61,023.37 inches, which divided by 1728, the number of cubic inches in a cubic foot English measure, gives 35.51 cubic feet, or 35.3, which is near enough for all practical purposes. Multiply this by 12 and it gives 423.75 feet board measure in a cubic meter, or 424 feet in round numbers, which is the amount used in ordinary commercial transactions of American exporters. They use this as an equivalent of the French cubic meter.

To reach the number of feet, board measure, in any number of cubic meters, therefore, simply multiply the number of cubic meters by 424, which is near enough for accuracy except in very large amounts, when 423¾ feet is almost the exact equivalent, the fraction lost being infinitesimal.

The French franc equals 19 cents and a very small fraction. It is ordinarily computed roughly at 20 cents, American money, although 19 cents is usually the nearer. The value of the franc is fixed periodically by the Treasury Department at Washington, but its fluctuations are in very small fractions of a cent, seldom reaching quite as high as 20 cents under any ordinary circumstances.

There are various terms used in connection with the shipment of lumber to Europe, which are somewhat enigmatical to the average shipper. For instance, the correspondent mentioned states that he has the offer of so many francs per cubic meter for cottonwood, delivered C. I. F. These calibilistic letters C. I. F. are somewhat of the nature of our letters F. O. B., and mean simply cost, insurance and freight, or, in other words, that the lumber is to be delivered at the European port for so many francs per cubic foot, including original cost, insurance and all freight charges. Shippers are advised to be careful about signing contracts including anything more than the letters C. F., as the question of insurance is not always a readily known quantity and certain restrictions should be placed upon the scope of the word freight, as, for instance, whether it should include freight from the mill to the seaboard and the straight ocean freight only, or whether it should include charges that might occur from moving the lumber from really the exterior port of delivery to some exterior point, as through the Kiel or Manchester canals. These minor things ought to be well understood by the shipper before signing a contract with all these calibilistic letters and provisos.

To reduce any number of feet, board measure, to cubic meters, divide the amount by 424, number of feet, board measure, in a cubic meter, and vice versa. To reduce American money to francs reduce it to cents and divide by 19½, which will be near enough for practical purposes.

Another correspondent inquires with regard to certain English measurements which have been explained several times in the Record and other lumber papers, but it will do no harm to explain them briefly again. In English measurement a "load" is 50 cubic feet, or 600 feet board measure. This is a term quite commonly used in the English timber trade. The term "standard" is probably used more often, and it means what is commonly termed the St. Petersburg standard, which is equal to 1,980 feet, board measure. The Irish standard is sometimes used, but not often, and it is equivalent to 3,240 feet, board measure. When this latter is used it is sufficiently designated, and there is seldom any chance for a mistake as to which is which, for unless otherwise specified the term "standard" means St. Petersburg standard of 1,980 feet.

The whole timber and lumber business in England is carried on in a regular old pedauger fashion, and it is a wonder the English people do not rebel and adopt some more common-sense system of measuring lumber, and in connection with it, some more common-sense coinage, or rather, a more common-sense money system. Both systems, the measurement of timber or lumber, and the denominations of currency, are cumbersome, inconvenient and provincial. The only common-sense system for either is a decimal one, and many of the English people are already of that opinion. There is no reason why a decimal money system should not have been adopted years ago, as well as the decimal system for the measurement of timber, except the one reason which the Englishman usually gives, a dislike to change, and perhaps a dislike also to concede anything to the notions or wishes of other nations with whom the English people do business.

The Winnipeg branch of the Waterous Engine Works Co. have supplied a saw-mill and shingle mill plant to the Indian Department, to be set up at the Edmonton Indian Agency. The Shuswap Milling Co., of Kamloops, B.C., have purchased a new boiler for their saw mill from the same company.

CANADA LUMBERMAN
WOOD WORKERS' MANUFACTURERS AND MILLERS' GAZETTE

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

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

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

Advertisers will receive careful attention and liberal treatment. We need not point out that for many the CANADA LUMBERMAN, with its special class of readers, is not only an exceptionally good medium for securing publicity, but is indispensable for those who would bring themselves before the notice of that class. Special attention is directed to "WANTED" and "FOR SALE" advertisements, which will be inserted in a conspicuous position at the uniform price of 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.

TO VISITING LUMBERMEN.

Lumbermen visiting Toronto are invited to use the office of the CANADA LUMBERMAN as their own. We shall take pleasure in supplying them with every convenience for receiving and answering their correspondence, and hold ourselves at their service in any other way they may desire.

UNIFORM INSPECTION RULES WANTED.

MORE than once we have pointed out in this journal the necessity of the lumber trade of Canada adopting some uniform system for the grading of lumber, and it affords us at least some satisfaction to learn that the movement in favor of so doing is spreading. A faint hope may be indulged that at some time in the future there will be inaugurated a system of classifying lumber which will be recognized by the trade as the standard.

Even in the Ottawa valley, where the trade is known to be very conservative, there is quite a strong feeling in favor of standard inspection. True, the foremost advocates are the dealers, the large manufacturers having conducted their business along the one line for so many years as to be loath to court any change; but it is not believed that they would offer any opposition, but would gradually fall into line.

That we have no proper inspection rules does not speak well for the Canadian lumber trade. Every centre in the United States has a set of rules upon which the business is transacted, and now an effort is being made by the hardwood lumbermen to secure the adoption of a national inspection for hardwoods. The movement has so far met with success, although some difficulty has been experienced in deciding upon the rules which would serve all the markets to the best advantage.

The question may be asked why some steps have not been taken in this direction in Canada. One reason is that our lumbermen have depended too much upon the United States inspection. Indifference and lack of organization may be cited as another cause. Now that we have an association of lumbermen in Ontario, let this question be brought forward and carried to its ultimate conclusion. We feel free to state that, among our hardwood mill men and dealers at least, there is no lack of appreciation of the necessity of taking action to secure the adoption of standard rules. The trade realize the benefits to be derived therefrom, and if an earnest move was made in the matter it would surely receive a hearty support.

LABOR IN SAW MILLS.

THE recent strike of workmen in some of the saw mills of the Ottawa valley has, perhaps, created an impression in the minds of the public hat employees of lumbermen are subject to extraordinary hardships, and that they receive from their employers very unfair treatment. Certainly only circumstances such as these should cause a general uprising of workmen against the person or persons who, by their enterprise, are furnishing necessary employment to hundreds of men. But unfortunately, these disturbances are too often the result of thoughtless agitation by a few individuals who pose as friends of the laboring man, and give little or no consideration to the justice of their demands. Many men are thus forced to become identified with strikes against the dictates of their own consciences.

That saw mill hands are underpaid is not generally believed by those who have a knowledge of the lumbering industry and know the inner working of the business. The question of wages will always be governed by the law of supply and demand, and cannot be fixed by labor organizations.

We believe that the misapprehension exists in the minds of many, and particularly mill employees, that immense profits have been and are being made by saw mill owners. Because large industries have been established, the inference is drawn that the business is a particularly remunerative one, and that the proprietors have accumulated great personal wealth. Generally, this is not true. Considering the amount of capital invested, the profits in the saw milling business are no greater, if as great, as in other lines of industry. Indeed, we could point to numerous instances in which the promoters of saw milling enterprises have suffered the total destruction of their capital, owing to the precarious nature of the trade. It is admitted that by speculation in timber limits considerable sums of money have been made, but in the process of sawing and marketing lumber the profits have been none too substantial. Heavy losses have been met with by many lumbermen in late years, owing to the general depression in the trade. These losses may have rendered a reduction in wages necessary, in order that the business might be continued, and in this the workmen should feel jointly interested with the proprietors.

In comparison with earlier years, the position of men working in saw mills is much improved. Their remuneration is quite as great, while the ten-hour day has been adopted almost universally. When working eleven hours per day, they are paid for the extra hour.

It is very desirable that employers and employees should work in harmony; otherwise the interests of both are likely to suffer. The usual result of strikes is anything but favorable to the participants, hence this method of securing a settlement of difficulties should be discouraged.

HARDWOOD FLOORS.

CANADIAN white maple, when properly seasoned, makes a good durable floor if care is taken in laying it, and placing it where it will not be exposed to damp, or likely to be soaked with water at any time. Where possible, the material used should be weather seasoned, as maple that has been kiln dried is apt to swell with the least possible moisture, such as being washed, or by absorbing the damp from newly plastered walls, and expands to such an extent that injury may result. Weather seasoned maple does not swell so readily nor so much when moist, and experience has proven that its lasting qualities are greater than when kiln dried. As of maple, so of black birch, that which is weather seasoned is, in many respects, better than when kiln dried. In weather seasoning maple, birch, cherry and beech, it should be so placed that neither rain or sun will get on it, as the first will be sure to doze it, while the second will crack, split or warp it. If intended for flooring, warping does not much matter, as it will be ripped into strips less than three inches in width, so that when it is run through the flooring machine the warping will be pretty well taken out of it. Beech makes a very handsome floor, and if used in a room where it is intended there will be no carpet, it may be waxed or polished, and will have a fine metallic lustre. Red beech, of course, is the wood intended. Cherry, while one of the handsomest of woods, is not very well adapted for flooring, as it is rather soft, and shoes with sharp angles, or having metal nails in them, would be apt to mark it if the floor was left bare and polished. Perhaps, after all, there is no wood grown in Canada that so well fills the requirements needed for a good floor as our white oak. This wood makes at once a handsome, durable and lasting floor; and if quarter sawn and wisely selected, is superior in appearance, when properly finished, to any other wood grown. A quartered oak floor, laid in a room where all the woodwork is quartered oak finished, is a sight that is sure to impress everyone who sees it with an idea of solidity and worth, that never obtains in the use of other woods. It is not a very good method to mix maple and birch together in the one floor. They do not last equally, neither do they wear equally, and when a floor wears out in one part, the whole of it must come up, the worn and the unworn, whereas, if it had been of one kind of material it would have worn evenly, and throughout. Another reprehensible custom is that of laying flooring in dark and light strips alternately. By so doing it gives the floor a sort of "cheap John" appearance, and every joint is so empha-

sized, that what would not be noticed if the boards were all of one color, will be sure to attract the eye when the joint is defined by a change of color. The flooring should be selected for color as well as for widths, and all that of one color should be laid together.

EDITORIAL NOTES.

Referring to the paragraph in our July issue concerning the relations between lumbermen and the Canadian railway companies, we desire to say a few words in explanation of our remarks. We do not contend that the lumbermen as a body complain of discourteous treatment from the railway companies, nor that they have ground for such complaint. There are instances, however, where friction has arisen between lumbermen and the railway companies, over the question of damages or other points in dispute, and where the former claim to have been treated unfairly, while, possibly, the railway authorities have acted according to their best judgment. It is very desirable that instances of this character should be reduced to the minimum, in order that no incentive may be given Canadian dealers to purchase lumber in the United States. Points upon which we believe the lumbermen agree collectively are that the freight rate on hardwoods should be made the same as that on pine, and that some sections are entitled to more favorable rates, as pointed out in our previous article.

Of the many improvements that have been made in saw mill machinery, few have attracted greater attention than the double-acting band saw which has been put in operation in a Minneapolis mill. For a number of years such a thing as a band saw that would cut upon the return as well as the forward movement has been known, but lumbermen have been inclined to doubt that it would ever prove a success in practical operation. Mr. F. S. Farr is one lumberman at least who does not hold this view, he having invented and tested such a saw with very satisfactory results. The saws used are fourteen inches wide and have teeth on both sides. In connection therewith, several new inventions have been added. A scheme has been worked out for the raising and lowering of the whole mechanism of a band mill, thus doing away with the guide, and by bringing the upper wheel down close to the log, the saw is made more rigid at that point. The live rolls have been extended back through the saw and along the lower edge of the log deck, while extended arms keep the log over the rolls on their way to the carriage. The setter on the carriage occupies a position on the other end, so that he can see the sawyer when the return trip is started. The inventor believes that he can saw one-third more lumber than by an ordinary single band saw.

Certain lumbermen in the state of Maine are up in arms against the Treasury Department at Washington on account of a decision given in connection with the duty on lumber. The Dingley bill provides that lumber manufactured by American workmen in the province of New Brunswick, from logs obtained from the state of Maine and owned by American citizens, may be shipped back into the United States free of duty. This provision was made to protect the property of some United States lumbermen who have extensive saw mills at St. John, and who obtain their log supply from limits on the St. John and St. Croix rivers and their tributaries. Messrs. Stetson, Cutler & Co. are among these. Recently they imported from New Brunswick 12,000 feet of spruce scantling, planed on one edge, on which the collector at Boston levied a duty of two dollars per thousand feet as lumber, and in addition 50 cents per thousand feet for being planed on one side, under the provision of paragraph 195 of the act. The importers contended that this was unfair, and that if any duty was imposed on the lumber, it should only be for the planing of one edge. The decision was, however, upheld by the Treasury Department, the authorities pointing out that provision was made only for the free entry of sawed and hewed lumber. We fail to see from what standpoint the ruling could be called in question, as it is undoubtedly the correct interpretation of the tariff.

SELECTION, HANDLING AND CARE OF BELTS.

Nearly every engineer of a saw mill has one or more belts under his care, and from the condition many of them are in it would seem that a word of advice as to their selection and care would not be amiss, writes Charles H. Garlick, in Lumber.

If, when in need of a belt, the engineer would, instead of simply ordering a certain number of feet of a certain width and thickness, try the experiment of personally selecting the same for the work which he wishes to have the belt do, and then use the same care in placing the belt in use that he does in starting any other piece of new work or new machine, much better results would be obtained than is usually the case. There are many, very many, rules and formulæ for ascertaining the width of belt necessary for transmitting a certain amount of power. No two of these rules agree, because there are so many conditions that enter into the problem that no hard and fast rule can be used.

From the writer's experience he prefers to use the following formula, which in ordinary cases will be found nearly correct :

$$W = \frac{\text{H.P.} \times 5{,}500}{\text{Velocity} \times \text{contact in feet.}}$$

This is single thickness. For double thickness belts :

$$W = \frac{\text{H.P.} \times 3{,}600}{\text{Velocity} \times \text{contact in feet.}}$$

Or the width of the belt can be found by multiplying horse power to be transmitted by 3,000, and dividing the product by the number of feet of the belt that will pass over the pulley per minute, multiplied by the number of feet of belt in contact with the driving pulley. A very good "rule of thumb" for single belts is : Belting 1 inch wide having a velocity of 600 feet per minute, will transmit 1 horse-power.

It should be borne in mind, however, that the width of the belt necessary to transmit a certain horse power depends on several conditions, one of which is the tension of the belt. When a belt is too tight there is a constant waste in journal friction, and when too loose a great loss in efficiency from "slip." A belt should be procured that will deliver the power required in a fairly slack condition.

Between a slow speed and a wide belt and high speed and a narrow belt, choose high speed and narrow belt wherever practicable, in designing for the transmission of power. A velocity of belt up to a mile a minute is practicable and advantageous.

In taking lengths for belts, where it is not convenient to measure with a tape-line the length required, this rule will be found of service : Add the diameters of the two pulleys together, divide the result by 2, and multiply the quotient by $3\frac{1}{4}$; add the product to twice the distance between the centres of shafting, and you have the length required, very nearly.

In buying, be sure that the leather is oak tanned, has a smooth, polished surface and a fine fiber. It is a good idea to have the belt unrolled and examine it to see that laps are thoroughly made and fastened. Note whether the belt is of the same uniform thickness throughout its entire length, also that the belt is pliable and not harsh and brittle. Note if possible whether the hides which make up the belts are of uniform thickness, or whether the thickness of belt is obtained by splitting the hides, and if the latter is the case reject it.

As to whether you purchase single or double belts, it may be said that single belts can be used successfully up to twelve or fourteen inches in width, but where more power is required than a belt of this width will transmit under the conditions that exist in your plant, belts of double thickness should be used. With single belts, care should be taken to have them of ample width, so that there need be no necessity of having them tight. Double belts should be used when a great strain is to be put on the leather, or for slow speed, or when a belt is to be run at one-fourth turn ; belts which you are called upon to shift frequently, or which are to run on vertical shafts, should be double.

As to the respective value of rubber or leather belts : Rubber belts do not cost as much as leather, nor do they, under favorable conditions, last as long. They cannot be used in places where the belt rubs, nor where it becomes necessary to shift often ; neither can they, as a rule, be run successfully as cross belts. They should not be used where oil is likely to drop on them, nor where they will freeze. They usually last longer than leather belts in damp localities. Rubber belts will adhere to pulleys better than leather. When a rubber belt commences to wear out it is almost impossible to do anything to repair it. Having purchased a new leather belt, it should, if time will permit, be stretched before being placed in work. This can be done in a variety of ways, depending on the width and length of belt and the time at the engineer's disposal. One way is to stretch it over two pulleys placed some distance apart, and attach weights to either end of the belt. During the stretching period a little oil should be applied to the leather.

Belting for electric lighting machinery must have some characteristics all its own. For ordinary machines a positive steady motion is not absolutely necessary, but with an electric plant it is different. It is necessary for the belt to be endless and of a uniform thickness. Even so small a thing as uneven laps will cause a slight but constant jumping or flickering of lamps. With most dynamos as built to-day provision is made for the purpose of taking up any stretch that may

occur in a properly-constructed, designed and well-stretched belt. Yet, should it become necessary to shorten one of these belts, it may be done by using clamps. Care should be taken and the laps made as long as possible, and sufficient time given the work before removing the clamps.

While endless belts are to be preferred for almost all work, yet in many places the time, care and experience required to join them is such that recourse is had to the more convenient method of lacing or fastening with clamps or hooks, and of all the different methods the writer has been more successful with and prefers lacing. But even such a simple piece of work as that of joining a belt by means of lace—a narrow strip of rawhide—is sometimes done in a manner to very materially reduce the life of the belt, and very seldom is sufficient time or care given to this work. The ends of the belts should be cut exactly square, using an ordinary tri-square for this purpose. Punch the holes exactly opposite each other in the two ends of the belt to be joined. It is best to use an oval punch for this purpose, the longest diameter of holes being parallel with the belt. Two rows of holes should be made in each end of the belt, the same being staggered. The edges of holes should all be at least seven-eighths of an inch from the end or side of belt; be sure and keep the belt square, and lace both ends equally tight. The laces should not be crossed on the side that runs next to the pulley, but on that side laces should run parallel with the belt. Fig. 1 shows the inside

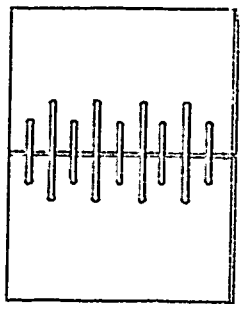

Fig. 1—Side of lacing running next to pulley.

of the lacing, or the side that should run next to the pulleys, and Fig. 2 shows the outside of the lacing, the side that is not in contact with the pulley.

In placing the belt on pulley, put it on so that pulley in slipping will run with, and not against, splice or joint. While authorities differ as to which side of the belt should be placed next to the pulley, the writer's experience has been that

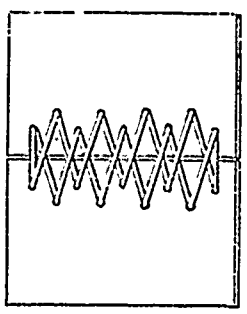

Fig. 2—Outside of lacing.

the best results are obtained when the grain side is placed next to the pulley. Experience has proven that it will drive more than when the flesh side is in contact with the pulley, and that the belt will last longer.

If the belt is to be crossed, do not put it on in such a manner that at the places of passing joints or laps will meet and be turned up and ruined in a short time.

How to place a belt on a pulley is one of the little things one can become an adept in only by practice. If the belt is a heavy one and the pulley runs at a high speed, it is best to slow down the machine, then place the belt on the loose pulley or the pulley at rest. Secure a firm footing, and with the right hand slowly work the belt up to top of pulley, when a quick jerk down or up, according to the direction the pulley is running, will throw the belt on. When the belt is heavy, or the operator lacks experience, it is best to shut off the power, place the belt on pulley as far as possible, then take a small leather belt, or even a rope, double it, slip one end through the arms of the pulley and around the belt and rim of the pulley, and the other end through the loop formed by the double of the small belt or rope; then stand on the floor on the opposite side and draw on the small belt or rope, when the belt will be drawn to the rim of the pulley. When the machine is placed in motion, the belt may be slipped on without any trouble; then, by letting go of the small belt or rope when the belt is on the pulley, the noose will be undone and the small belt will be free.

If the belt does not stay on the pulley, do not erect guards to keep it on, as they are an eyesore, and soon wear the belt out. Besides, the guards simply cure an effect, while the cause remains. The cause may be that the pulley is not in line, or that the belt is not joined squarely, or one side is stretched more than the other. Sometimes a belt running at high speed, transmitting scarcely any power, will wave from one side of the pulley to the other, and if a load is not thrown off will eventually come off. In places where it was not convenient to either put in pulleys of larger diameter, or even wider belts, and where the use of resin, oil and other adhesive matter would not cause the belt to adhere to the pulley, the difficulty has been overcome by running a narrow belt, drawn tightly, with ends laced, over the main belt. In one place where occurred a continual slipping of a ten-inch belt, the writer took an old two-inch belt, placed it upon the ten-inch, and the two belts carried the load for years without trouble.

MACHINERY BEARINGS.

Any mechanic will inform you that the common plummer-block should be a little easy at the sides, and that the bearing should receive oil from the top. He seldom knows the reason for this rule, however, and though his ignorance does not prevent his mill shaft bearings running cool, not "knowing why" makes him experience trouble with many bearings not so simply loaded.

John Dewrance, in a paper on the subject, detailed experiments which ought to clear ideas and rectify erroneous practices.

Bearings were clamped upon a shaft so that the load upon its underside was this same clamping pressure, while on the top this was augmented by weight of brasses, clamps and springs.

An oil hole at the top refused entirely entry to oil, which could be given, however, at either side. The bearing—which ran fairly cool—ejected oil under a pressure of 2,300 lbs. per square inch through the upper oil hole. The bearing was then taken out and surface dressed in order to obtain still greater pressures; but when replaced, instead of this great positive ejecting pressure, there was a suction at the upper oil hole measured by a vacuum gauge at thirty inches; the whole still running cool and well. The blocks when taken out showed at first sight no explanation for so great a change in pressure, but close examination made the matter clear. The under side of the top brass at first was not quite flat, the central portion taking all the load; this sprung the brass and ground the central part; so, when replaced under diminished load, there was a vacant space around the oil hole, where formerly had been the greatest pressure.

In any bearing to run cool and well means that a film of oil keeps forcibly apart the sliding pieces. The total pressure on this oil must be the total load. The surface tension of the oil and capillarity alone provide the power the oil has to resist this pressure, therefore the pressure is the greatest where space between the surfaces is least. And since, moreover, oil is carried on by sliding, it follows that to keep up the supply the space must taper to the point of greatest pressure.

If we lay a flat plate on a well oiled shaft, and gauge the pressure at a hole drilled through it, as we approach the point of nearest contact pressure will rise, to fall again and fall down below zero as we pass it.

Tapering spaces must then be provided in all our bearings of this class; and oil supplied at that point where the load is least. The series of experiments referred to was first taken up in order to discover whether "brasses" of different metals differed in their capacity for bearing loads without increase or friction. As one might have anticipated, it was found that no such difference existed; so long as a sufficient film of oil remains it matters little—in this connection—what the metals are. Given that they are strong and stiff enough the one great point is that the bearing should be softer than the shaft; for then at times of failure in the oiling the shaft is coated with the scraped-off softer metal, more or less evenly around its surface. But if the shaft should be the softer of the two, its heaped-up scraping will accentuate local unevenness in the bearing.

The main point in the paper is, however, the light thrown on the simple point of oiling. In ordinary mill shaft plummer blocks this is done rightly from the top. At first our railway axle bearings were likewise—but wrongly—fed; that fault was soon detected and set right; but still mechanics' ignorance upon the subject causes much trouble with some engine bearings; and since it is a fact that pressures over one ton per square inch can be endured by properly constructed brasses, while costly troubles are often caused by far less loads, the question certainly deserves attention until our errors are set right.

Mr. John McKay, representing the Standard Dry Kiln Co., of Indianapolis, Ind., paid a short visit to Canada recently, en route to his home in Boston. Mr. McKay knows pretty nearly all about lumber drying, and claims to represent the best apparatus on the market for that purpose. His company has recently made a number of large sales on the Pacific Coast, including British Columbia, in addition to filling orders for Russia and Mexico. Mr. McKay states that his company have received a large number of enquiries as a result of their advertisement in The Canada Lumberman.

THE BY-PRODUCTS OF SAW-MILLING.

The average operator of a saw-mill relies for his profit on the good timber he is able to turn out, says a writer in the Hardwood Record. He measures the chances of loss and gain wholly by the percentage of clear stock his logs will cut, and the price of such lumber in market. The mill culls are waste anyway, and if he gets within a moderate percentage of the cost of his common and shipping culls, he congratulates himself upon his closeness in figuring and economy in operating his mill. His profits necessarily depend on his ability to get enough from his high grade lumber to cover the greater part of the cost of his logs and all his profit.

It is not difficult to figure out something ahead in this, by assorting his lumber so that it will run well to good, but such liberality not uncommonly defeats itself, for when the stock gets into market, and is inspected under the buyer's severer construction of the rules, the unlucky shipper very likely finds that he has a heavy freight to pay on much of it that will not bring cost at the delivery point. More than one saw-mill enterprise that promised fairly enough in the beginning has landed the owner in bankruptcy because the timber would not make enough clear lumber to carry it. And are they not falling around us every day for a like reason !

This result is largely due in nearly every case to the neglect of the by-products of the saw-mill. Many mill operators look upon anything but lumber as unworthy their attention, and so they run everything that will not make boards or plank or dimension stock that is fit to ship into the conveyor and up the incline, to the slab pile or refuse burner.

Thousands—yes, millions — of dollars of as good profit as was ever made has been thrown away in this fashion, and few that lost it could tell where it had gone. They may know that they got back for their lumber less than the timber and sawing cost, and that their operation as a whole was a losing one, but they do not realize that the gain which would have served to turn the scale might readily have been made out of the stuff they burned up to get out of the way.

No saw-mill man can be said to have fully mastered his business until he has learned that every cent he is able to get out of stock that will not bear shipment, or sell at a profit, is so much made. It all goes to swell the profits, because the stuff must be made in order to make the good lumber, of which it is the refuse. All the by-products of the saw-mill have this advantage, that they are the savings from what is practically worthless, and hence their cost represents only the labor put into them after they pass the saw. It is the conversion of the useless into the valuable, and so long as the bare expense of the manipulation costs less than the value of the resulting product, there is money in it.

This is a matter which has received more attention in the pine mills than among those sawing hardwoods, for one reason, because the former are larger establishments as a rule, and are operated in a more scientific way. With many hardwood producers the sole problem they undertake to solve is to get a certain quantity of logs into such shape that they are marketable, and to get the money for them. Their prime object does not seem so much to make the largest possible profit as to turn their investment into cash quickly. This is a condition made necessary sometimes by the limited capital available, but it rapidly grows into a habit, and many never get beyond it. They begin and end their career as saw-mill men without developing the scientific side of their business at all, being content with merely buying trees and logs, cutting them with more or less economy into boards and plank, and burning everything that will not make such lumber.

The notion is widely prevalent among such operators that small mills are incompatible with the requirements of economy, and that in order to take advantage of the chances for profit in the close utilization of material a big mill with all imaginable appurtenances is a necessary prerequisite. This is a mistake. The man cutting five or six thousand a day is just as able to take care of the waste as one cutting four or five times as much.

The writer has in mind now a little single circular mill, located at a place which it has practically created, and where there is no other business, cutting from six to eight thousand feet a day, where the principle of working up the waste is carried out in detail. Besides the regular outfit of machinery, it has a band saw for making felloes, a sawing table, a lathe for making chair legs and for turning wood into various irregular shapes, cross-cut saws, etc. The result is that no cull stock is shipped from this mill, and what is left of the slabs and edgings needs very little grinding to make it as fine as sawdust. The owners have no difficulty in realizing a good profit from rather inferior logs, and their books show that a good deal of it comes from what they save out of the waste.

In some large mills what is ordinarily regarded as the refuse becomes the basis of a distinct business. The waste is sold by the saw mill man at a certain price, small, of course, and the buyer takes it and works it up. Every piece big enough to make a pill box is saved and utilized, and even when the cost of the material is added a good profit remains. In many cases this plan of utilization will prove practical and economical, relieving the mill man of the details attending the working up of his refuse stock, and furnishing another man with the means of making money.

Another way is for the mill operator to furnish the machinery and the stock, and let out the job of working it up on shares or at an agreed price for the product. A shrewd, enterprising mechanic can easily be found who will gladly supply the skill, push and all needed help in keeping up the department for an interest in its results. By such methods as these and others that will suggest themselves to a practical mill man, a deal of good money may be recovered from the slab pile that now represents nothing but loss to the owner. The machinery for working up wood into small shapes is not expensive and does not require such skill in handling as to make it difficult to secure competent men to operate it.

The hardwood mill men are fortunate in having a larger variety of by-products than pine, where they are mainly lath and pickets, small pieces of pine being of little use for anything but kindling. But hardwoods of nearly all kinds can be worked up very closely, and made to yield a handsome revenue. They are used in so many shapes and so largely in small pieces, that attention to the utilization of everything about a hardwood mill becomes of first importance. All mill owners cannot adopt the same plan, of course, but all should have some method of working the refuse into by products, as they may if they will but give the subject proper study.

When everything possible has been made in the way of small articles of wood, there will still remain something of value in the residue the sawdust, bark and chips that go into the furnace or the refuse burner. All this is material, just as good as an entire tree, for the manufacture of the numerous products derived from the destructive distillation of wood.

In several places already large works are in operation turning out such things as wood alcohol, creosote, acetate of lime, pitch, ether, wood oil and other things which sell readily and bring prices that show a large profit over the cost of making. There was an exhibit of an apparatus for this work, and of its products, in the forestry building at the World's Fair, which showed that remarkable results can be obtained with a comparatively small investment and at little cost. Figures are given in connection with it which indicate a profit of $5 on the carbonization of one cord of wood, allowing $2 as the cost of it, and a further margin if the wood tar obtained is redistilled. Using the refuse of saw mills, which could be placed in the apparatus as cheaply as in a refuse burner, the margin ought to be large enough to make the process one of value to lumber dealers. Possibly all mill owners might not find it practicable or advisable to carry the utilization of their waste material to this extent, but many of them might do so to their own profit and to the general advantage of the business."

WHEN WE PLANT THE TREE.

What do we plant when we plant the trees?
We plant the ship which will cross the seas;
We plant the mast to carry the sails;
We plant the plank to withstand the gales,
The keel, and keelson, and beam and knee--
We plant the ship when we plant the tree.

What do we plant when we plant the tree?
We plant the houses for you and me;
We plant the rafters, the shingles, the floors;
We plant the studding, the laths, the doors;
The beams and siding, all parts that be
We plant the house when we plant the tree.

What do we plant when we plant the tree?
A thousand things that we daily see.
We plant the spire that outtowers the crag;
We plant the staff for our country's flag;
We plant the shade, from the hot sun free
We plant all these when we plant the tree.

—Henry Abbey.

We learn with regret of the death of Mr. James Smith, senior member of the firm of James Smith & Bro., Liverpool, England. The late Mr. Smith first became connected with the timber trade by entering the office of James Houghton. He afterwards accepted a position with Messrs. Farnworth & Jardine, afterwards carrying on a prosperous business under the style of Robert Coltart, Smith & Co. His present partners are Messrs. G. J. Harrison, C. T. Tyrer and his brother, Charles T. Smith, their offices being at 14 Canada Dock, Liverpool, England. Their Canadian representatives are Smith, Tyrer & Co., Halifax, N.S.

THE RETAILER AND Wood-Worker

CRACKS IN SMALL CIRCULAR SAWS.

After reading of the various causes of cracks in small circular saws, I am desirous of calling attention to one source of this evil not usually considered. It is found in the sensitiveness of the high grade steel to heat, and the great force with which it will expand and contract under varying temperatures. This expansion and contraction is positive in its action. For every degree of heat added there is a definite amount of expansion. The contraction, however, lags, and will stop short of its starting point. That is to say, by way of illustration, that if the expansion of a given piece of steel when heated from 60 degrees Fahrenheit to a red heat was one-fourth of an inch, the contraction, when it was cooled down again to 60 degrees, would not be quite one-fourth of an inch.

There are two ways in whic' is effect of heat on steel is manifested in circular saws besides being responsible for cracks. One can be noted in the change in the tension, which is doubtless a familiar one to most sawyers. Another can be observed in saws, especially those of heavy gauge, which have been heated to a degree which causes a dark blue or black spot. Careful examinations will show that such spots are thicker than the metal surrounding them. Further tests would show that the temper of such spots was greatly modified, and this is also involved in the expansion, as the same piece of steel is not of the same dimensions at a high and low temper.

But to return to the subject of cracking. How much heat is developed in a saw while cutting is problematical, but under some circumstances it no doubt reaches 400 degrees Fahrenheit. Cross-cut saws give the most trouble by cracking. As we shall see, they are under special provocation to do so. If the rim of a cut-off saw becomes heated during a cut, or a series of cuts, made in close succession, what occurs as soon as it is out of the cut? It begins to cool off, rapidly at the teeth, much more slowly just below. It is a well established principle that heat escapes from any projecting points on a metal body much more freely than it can from a plain surface, and especially a bright-polished surface. The teeth rushing through the air lose their heat faster than the plate just below their base. This unequal cooling sets up a severe strain in the saw blade. The fast cooling teeth are contracting over a plate which is expanded beyond its normal dimensions. This contraction proceeds, in many instances, with such force that small checks are made at the sharp corners at the bottom of the teeth. These sharp corners render the steel less resisting at these points, on the same principle that nicking a bar of iron all round with a cold chisel weakens it so that it may be easily broken.

These small checks, when first made, are sometimes so fine that they escape notice, but the labor of sawing soon extends them into the body of the plate. Where one crack is developed in a saw and a hole is drilled at the bottom of it, the strain when heated again may be concentrated at the bottom of the first crack and cause it to extend further into the body of the plate.

Rip saws seldom show cracks due to heating. There are several reasons for this, based upon the size and shape of the teeth, and the manner of use. – St. Louis Lumberman.

MANUFACTURE OF WOOD NOVELTIES IN MAINE.

The manufacture of wood novelties in Maine, according to the Industrial Journal, of Bangor, has become one of the important industries of the state. The growth of the industry covers a period extending back as far as 1857, and it has now assumed very large proportions. In the term "wood novelties" is included a large variety of small articles turned from wood. Closely allied to the wood-novelty industry, and often included under that head, is the production of fruit boxes and veneers. The average annual output of wood novelties in Maine, including these allied industries, has a value of over a million dollars, and the number of firms in the state engaged in the business proper is seventeen, in orange-box making four, and in veneer manufacture one.

One of the most interesting branches of the industry is the manufacture of wood rims for bicycles. The Maine plant is one of but three factories of this kind in the country. The average daily output is about 1,800 rims, and the value of the yearly product is about $120,000. The rims are made of rock maple, and each is composed of three pieces, glued and pressed together with such force and nicety that the rim appears like one piece, and only the most searching examination can detect the joints.

The tooth-pick industry in the state was established in 1857. There are two plants now in operation, one producing 525,000,000 tooth-picks per year, and the other about six billion. The annual product of these two mills has an average value of about $40,000. Another mill is to be opened soon, and operated by a newly-formed company in Androscoggin county.

A large plant in South Paris is devoted to the manufacture of children's carts, wagons and wheelbarrows, school desks, sleds, swings and similar articles. The name "wood novelty" is, in short, a very inclusive term, and the articles embraced are practically without end. Almost all kinds of wood found in the state are utilized in these plants in one way or another. In the orange-box factories, yellow birch, maple and beech woods are used.

The real benefit of the wood-working industries to Maine can be appreciated when it is remembered that before spool and wood-novelty making, and orange-box and wood veneer manufacture were introduced into the state, the raw material they now use was considered worthless except as fuel. This wood has now become a product of great value, and the sale of the articles manufactured in these mills brings into the state each year a large amount of money.

AUTOMATIC BOX MACHINE.

A marvellous piece of automatic machinery for the purpose of making boxes has been invented by W. T. McRae, of Philadelphia, Penn., and recently set up for a practical test, after working five years on its perfection, says the Philadelphia Record. It is known as the Eureka, and is novel in its design, and does its work in an entirely new way as compared to the old machines designed for this work. It is fed from four sides with boards which have been previously cut the desired size, and a box is turned out at every revolution of the machine, the wooden cubes being thrown off at an astonishing rate. A single operator, who need not be a skilled person by any means, can work off 1000 boxes an hour, the work of the attendant being only to feed the press with the wood. The machine may be readily adjusted in a few minutes to make a box of any size within reasonable limits. One press, for instance, is made to take in all the various sizes of cigar boxes, while for larger ones another size machine is made. After the machine is started its action is automatic, and at each revolution a box is shot out, one following the other so rapidly that the question of carrying them off becomes an embarrassing one. The box is turned out complete, with the exception of the lid. Lock corner boxes are as readily handled as straight-edged ones, the hammers used in nailing them being taken off and plates substituted, which squeeze the parts together instead of nailing them. The capacity of this machine is said to be nearly ten times that of the box-making machines now in use.

No matter in what part of the Dominion you are situated, an expression of your views on any subject relative to the lumber trade is solicited by the publisher of this journal. No reader should wait for a personal invitation. Assistance thus rendered, as well as suggestions for making this journal more valuable to subscribers, will be much appreciated.

A very good rule for the power that a belt will transmit is as follows: Multiply the number of square inches in contact with the smallest pulley by the speed in feet per minute and divide by 36,000. The result will be the horse power that may be transmitted, by a double belt, under the most favorable conditions. Deductions must be made according to the judgment of the engineer, for with a single belt under poor conditions but one-half of the above will be realized in practice.

When we have tight and loose pulleys and a belt to ship we naturally put the belt shipper as near the driven pulleys on the countershaft as possible. There are many mechanics who have never thought of putting the shipper anywhere else and who probably could only with difficulty be persuaded to do so. As a matter of fact there are many cases in which, where the tight and loose pulleys are of the same diameter, with straight faces, and where very quick and frequent shipping of the belt is not required, it is much better to place the shipper near the driving pulley on the lineshaft, to operate on the belt as it approaches that pulley.—American Machinist.

WOOD PULP DEPARTMENT

BRITISH IMPORT OF PULP AND PAPER.

Some interesting statistics relative to the import of pulp and paper by Great Britain are found in a recent issue of Paper and Pulp, of London, Eng. These statistics are particularly valuable, inasmuch as heretofore there has been an absence of detailed information of this character.

The following figures show the quantity and value of pulp imported into Great Britain during the years named :

	Quantity in Tons.	Value.
1893	215,920	£1,184,265
1894	279,765	1,432,400
1895	297,095	1,574,302
1896	327,080	1,684,647
1897	388,304	1,939,761

The above quantities were obtained from the different countries in the following proportions :

From	Norway. Tons.	Sweden. Tons.	Germany. Tons.	United States. Tons.	Canada. Tons.
1893	125,889	48,049	11,056	5,569	7,870
1894	162,346	51,998	7,422	13,191	23,751
1895	173,898	83,704	4,835	976	16,768
1896	205,677	94,917	4,379	847	2,714
1897	239,133	93,620	5,686	7,148	25,873

It will be observed that in four years the import of pulp into Great Britain has increased over seventy-five per cent., and that while Norway, Sweden and Canada are capturing the bulk of the trade, Germany and the United States are showing signs of decline.

Turning to paper, the imports by Great Britain for five years are given as follows :

	Quantity in Cwts.	Value.
1893	2,922,882	£2,347,080
1894	3,381,732	2,654,070
1895	3,690,562	2,845,730
1896	4,040,892	2,138,438
1897	4,845,021	3,480,574

These figures show that the paper trade of that country is also expanding, and that the market is worthy of the cultivation of our paper makers, who have abundance of the raw material spruce. The figures showing the imports of paper from different countries may prove interesting :

		United States.	Germany.	Sweden.	Norway.
1893	Cwts.	37,174	594,505	333,455	277,190
1894	"	113,053	775,001	438,805	293,117
1895	"	112,928	746,528	468,477	392,162
1896	"	127,459	756,033	541,759	454,828
1897	"	641,340	726,263	578,323	607,043
		Canada.	Holland.	Belgium.	Russia.
1893	Cwts.	53	1,225,672	220,022	126,281
1894	"	1,325	1,281,943	236,955	146,926
1895	"	2,440	1,476,835	242,882	141,311
1896	"	3,481	1,509,034	313,683	138,034
1897	"	18,833	1,719,270	281,892	136,671

France also contributed, but very lightly, to the british supply of paper.

PROPOSED PULP MILL AT HAWKESBURY.

It is expected that work will shortly be commenced on the erection of a new pulp mill at Hawkesbury, Ont. Messrs. Riordan & Co., of St. Catharines, Ont., are the promoters of the scheme. They have purchased from Hon. J. K. Ward extensive spruce limits on the River Rouge, whose outlet is about 7 miles above Hawkesbury. The Canada Atlantic Railway Co. is putting in a spur, or siding, from their present station to where the pulp mills are to be erected. The town has voted a bonus of $7,500, to be paid the Canada Atlantic Railway to put in this spur.

Hawkesbury is situated on the Ottawa river, at the head of the Longue Sault, where the Hawkesbury Lumber Co. have their mills, which are run by water power. This place is half way between Ottawa and Montreal, and goods can be shipped by water or by rail. The Canadian Pacific Railway is recognizing the advantages of Hawkesbury for freight and passengers, and proposes putting in an extension from their present line to that place. It will therefore be seen that Messrs. Riordan & Co. have made a very judicious choice in locating there.

The Great Northwestern has been again communicating with the town council there with regard to their line which will cross the Ottawa river at Hawkesbury, and which is to be worked in connection with Mr. Booth's line, forming another outlet for his Parry Sound Railway to Quebec and other intermediate points.

PAPER FLOORS.

Paper floors are increasing in popularity, which is readily explained by the many advantages they possess over wooden flooring. An important advantage consists in the absence of joints, whereby accumulations of dust, vermin and fungi dangerous to health are done away with. The new paper floors are bad conductors of heat and sound, and, in spite of their hardness, have a linoleum-like, soft feel to the foot. The cost is considerably lower than that of floors made of hardwood. The paper mass receives a small addition of cement as binder and is shipped in bags in powder form. The mass is stirred into stiff paste, spread out on the floor, pressed down by means of rollers and painted with oadwood, nutwood or mahogany color after drying.

THE UNITED STATES DEPENDENT ON CANADA.

Senator Warner Miller, of Nicaragua Canal fame, was in Montreal recently with his friend, Mr. Warren Curtis, treasurer and general manager of the Hudson River Pulp & Paper Co. To a representative of the Montreal Star the latter gentleman stated that they were on private business connected with the purchase of supplies of wood for their mills. "We find," he said, "Canadian spruce about the best material in the world for the manufacture of pulp and will use about 3,000 car loads of it this year. We take it all down by train, so that it arrives at our mills in a dry condition, which gives it a decided advantage over the Adirondack wood which is floated to us, and consequently comes to us thoroughly soaked. I do not understand," he went on, "why Canada is not doing more in the manufacture of paper. You have every advantage as regards material, power and cheap labor. We are shipping to-day 25 per cent. of our product to England, supplying as we do Pall Mall Gazette, World and Echo, of London. We also ship extensively to Austria, sometimes as much as 200 tons a week. As things are at present it costs 50 per cent. more to make paper in England than it does in the States, and considering the extent which we have to depend upon Canada for our supply of wood it seems as if with some enterprise Canadians ought to be able to compete with us. Paper is manufactured to-day on so close a margin that steam power cannot be used, and that is a powerful factor in favor of the makers on this side. In Canada you have plenty of water privileges ready to be utilized, and I should not be astonished to see some Englishmen establishing plants here. As regards American capital coming here for the purpose, the chances of tariff changes forms a detrimental element and makes capitalists timid, but I know that if there was any certainty that no adverse legislation would take place Americans would be quick to avail themselves of the advantages which a Canadian location of their mills would give them."

PULP NOTES.

Some particulars are furnished of the new pulp mill of the Laurentide Pulp Co. at Grand Mere, Que. The paper mill will have a daily capacity of 30 tons of paper and 30 tons of cardboard, while the daily output of the pulp mill will be 75 tons sulphite and 100 tons ground wood pulp.

The steamer Louisiana recently sailed from Chicoutimi, Que., *with the first full cargo of pulp ever exported from* Canada. The cargo consisted of 2,200 tons, of a valuation in the English market of $25,000. Another similar shipment is expected to be made this month. In the mill of the Chicoutimi Pulp Co. there are 80 hands employed day and night, the present output being 60 tons net weight.

Concerning the British market for wood-pulp, Paper and Pulp, of London, Eng., says : "There is nothing fresh to report about mechanical pulp, as there is little doing. We have not heard of any sales for next year yet, and there is not much left for this. The price for the finest qualities is about 45s. c.i.f. Manchester, and for ordinary 41s., so that it may be taken for granted that speculators are offering at 38s. or 39s. There are some extraordinary rumors abroad as to the low prices mechanical pulp can be bought at just now, but we have not been able to trace their origin. The market for sulphite for prompt and early delivery is in a depressed condition at present. Some sales have been concluded for next year, at rather lower prices than last.

CANADA'S COMMERCIAL AGENTS.

Following is the correct official list of Canada's Commercial Agents in Great Britain, British possessions and foreign countries :

J. S. Larke, Sydney, N.S.W., agent for Australasia.

G. Eustace Burke, Kingston, Jamaica, agent for Jamaica.

Robert Bryson, St. John, Antigua, agent for Antigua, Montserrat and Dominica.

S. L. Horsford, St. Kitts, agent for St. Kitts, Nevis and Virgin Islands.

Edgar Tripp, *Port of Spain, Trinidad*, agent for Trinidad and Tobago.

C. E. Sontum, Christiania, Norway, agent for Sweden and Denmark.

D. M. Rennie, Buenos Ayres, Argentine Republic, agent for Argentine Republic and Uruguay.

In addition to their other duties, the undermentioned will answer inquiries relative to trade matters, and their services are available in furthering the interests of Canadian traders.

J. G. Colmer, 17 Victoria street, London, S.W., England.

Thomas Moffat, 16 Church street, Cape Town, South Africa.

G. H. Mitchell, 15 Water street, Liverpool, England.

H. M. Murray, 40 St. Enoch Square, Glasgow, Scotland.

Harrison Watson, Curator, Imperial Institute, London, England.

It is announced that Queen Victoria has appointed as High Commissioners, to discuss the differences existing between Canada and the United States, the following gentlemen : Ex-Lord High Chancellor Baron Herschell ; the Premier of Canada, Sir Wilfrid Laurier, Sir Richard Cartwright, Minister of Trade and Commerce, and Sir Louis Davies, Minister of Marine and Fisheries.

THE NEWS.

—Senator Poirier is building a shingle mill at Sackville, N.B.

—While working in Currie's saw-mill at Fredericton, N.B., Alex. Mersereau had his left hand cut off.

—John Whitesides is erecting a shingle mill at Huntsville, Ont., upon the site of his saw-mill burned some years ago.

—A team of horses belonging to the Hull Lumber Co. were drowned in the Ottawa river near the Chaudiere last month.

—The Hawkesbury Lumber Co. are making some improvements on the Colonge river, in preparation for next season's operations.

—William Barnes had his foot crushed by the machinery in Edwards & Co.'s mill at New Edinburgh, and amputation was found necessary.

—Mr. David Richard's saw mill and lumber yard, at Campbellton, N.B., was burned on July 18th. Loss, $18,000; insurance, $10,000.

S. A. McAuley, of Lower Millstream, N. B., has added some new machinery to his saw-mill. He now employs about twenty hands.

Argue & Son, whose saw-mill is at Otter Lake, have the contract for lumber to build the spool and bobbin factory at Parry Sound for Lennox & Kerr.

—Rupert Newcombe has started an industry at Clementsville, Annapolis County, N.S., for the manufacture of coiled hoops, hardwood staves and heads.

The Holland and Emery Lumber Company are constructing a new shingle mill and placing a new pony gang in connection with their band mills at Byng Inlet, Ont.

—The Dickson Company recently started their new saw-mill at Lakefield. The mill is very complete in point of equipment, and will manufacture over 100,000 feet of lumber per day.

—Peter McArthur is putting in a mill at Lake Winnipegoosis, Man., for cutting railway ties. The plant was furnished by the Waterous Engine Works Company, through their Winnipeg branch.

—Mayor Bingham, of Ottawa, has a number of men engaged in rafting square timber on the Gatineau river. It is stated that some very fine pine was last year cut on the Upper Gatineau by Gilmour & Hughson.

—Adam Beck, of London, Ont., has purchased the business of the late William Beck at Montreal, and has opened a cigar box factory there. Mr. Beck's factory at London will supply the trade west to the coast, and his Toronto and Montreal factories the eastern trade.

—W. Harris, of Day Mills, Ont., writing to the Toronto Globe, offers free water and site and a bonus to any person who will erect a wood-working factory there. He states that there is an abundance of good timber, including pine, spruce, hemlock, oak, ash, maple and birch.

D. A. McDonald, of Trout Creek, Ont., recently cut a birch tree, which is claimed to be the largest yet found in Canada. The log is 32 feet long, and the butt end girths 10 feet 8 inches. The top end girths 8 feet 9 inches. About 36 feet from the stump, the top separated into three branches, one measuring 24 inches in diameter and another 17 inches.

—Mitchell Bros., of Berkeley, Ont., and Liverpool, Eng., are negotiating for the exportation of maple blocks from New Brunswick to England. Large quantities of these blocks are exported from Ontario via St. John, N.B., in winter, and it is thought that the opportunity is favorable for the opening up of the market for the native hardwoods of New Brunswick.

—There has recently been constructed at Portland, Oregon, by Messrs. Inman, Poulsen & Co., an immense raft of lumber containing 5,000,000 feet. This raft will be towed from the Columbia river to San Francisco. Johann Poulsen invented and superintended the construction of the raft, which will be a floating island of lumber 330 feet long, 30 feet wide and drawing 20 feet of water. The cables for towing are laid well back to the centre of the raft, and emerge in the square bow just above the water line. The promoters express every confidence in the success of the undertaking.

PRACTICAL NOTES.

It has been noticed that the heavy chains used in the log haul-ups of saw mills after a time become crystallized and it is necessary to heat them. The heating changes the particles back to their original form, breaks up the crystallization and makes the chain practically as good as new, though it would have to be hammered to put it back exactly to a new chain.

Why does it cost less to run a condensing engine than a non-condensing one with the same machinery running in the factory; Simply because the former develops less total power than the latter. The area of the card will be the same, but the average height above the vacuum line will be less in the former case, and this is what determines the total power developed at a given speed.

Owing to the scarcity of black walnut and cherry, birch is largely taking the place of each. Black birch is much the same color as cherry, and is as easy to work as either cherry or walnut, and is as suitable for nearly all the purposes that those woods are used for. When properly stained, it is nearly impossible to distinguish it from either walnut or cherry. It is susceptible to a high and beautiful polish, is considered as good as many of the best furniture woods, and is now largely used by the leading furniture manufacturers.

A United States government report says heavy wood is harder than lighter wood; the wood of the butt is therefore harder than that of the top; the darker summer wood is harder than the lighter spring wood. Moisture softens, and seasoning, therefore, hardens wood. Wood is much harder when pressed longitudinally than when pressed transversely to the fibres, and it is somewhat stronger tangentially than radially. Though harder wood resists saw and chisel more than softer wood, the working quality is not always a safe criterion of its hardness.

The Industrial Journal, Bangor, Me., says the saw mill of William Engle & Co., at Orono, Me., is run by compressed air. The air compressor, located under the mill floor, is operated by a water wheel, forcing the air into a large storage tank, whence it is distributed, through pipes, to any part of the mill desired. The pressure in the tank is kept at 95 pounds. The machines directly dependent upon the compressed air for power are the carriage, nigger, log loader, log flipper, band log saw and two cut-off saws. This is claimed to be, and probably is, the only saw mill in the world operated in this manner.

Heretofore it was generally believed that the heating capacity of hardwood was greater than that of soft wood, but according to Staats Zeitung this is not so. The greatest heating power is possessed by one of the softest woods, viz., the linden. Taking its heating capacity per unit, the second best heater is also a soft wood—fir with 0.99 heating power; next follow the elm and the pine with 0.98; willow, chestnut, larch, with 0.97; maple and spruce fir with 0.96; black poplar with 0.95; alder and white birch with 0.94 only; then comes the hard oak with 0.92; the locust and the white beech with 0.91, and the red beech with 0.90. Hence hard wood heats the least.

CEMENT FOR LEATHER BELTING.—The importance of suitable cement for making joints in leather driving belts has led the Society of Chemical Industry to endorse the following formula: First, equal parts of good hide glue and American isinglass, softened in water for 10 hours, then boiled with pure tannin until the whole mass is sticky, the surface of the joints to be roughened and the cement applied hot; second, one kilogramme of finely shredded gutta percha digested over a water bath with 10 kilogrammes of benzol until quite dissolved, when two kilogrammes of linseed oil varnish are stirred in; third, one and a half kilogrammes of finely shredded india rubber are completely dissolved in 10 kilogrammes of carbon bisulphide by heating, and while hot one kilogramme of shellac and one of turpentine are added, and the solution heated until the two latter ingredients are also dissolved; fourth, one kilogramme of best glue is dissolved at a moderate heat in one and a half kilogrammes of water, and thickened to the consistency of syrup. One hundred grammes of thick turpentine and five grains of carbolic acid are carefully stirred in while hot; the mixture to be poured into flat tin pans and allowed to cool, then cut into pieces and dried in the air. The cement is made liquid with a little vinegar and applied to the point with a brush; this being done, the two ends of the joint are properly placed together and thoroughly pressed between two iron plates heated to a temperature of about 86 deg. Fah.

STEAM BOILERS AND FROST.

AMONG the enemies which threaten the destruction of steam boilers, says the Journal of the Bavarian Society for the Inspection of Steam Boilers, frost is by no means the least formidable. The following two examples go to show that even boilers built of heavy plate and tested at high pressure cannot be exposed to the rigors of cold weather with impunity.

The boiler was, because of the scarcity of orders during the winter months, fired only two or three times per month, each time for several days, and was the rest of the time allowed to stand idle, filled with water. One fine day when the boiler, which consisted of upper and lower boiler, was being emptied and put in readiness for an inspection of the interior, it was found that the manhole cover in the rear head of the lower boiler had been forced out, and the rim of the manhole badly rent and bent out of shape.

Further examination revealed a cone of ice behind the damaged boiler head. The water in the upper boiler, which was at the proper level, was covered with a crust of ice about one centimeter, 0.4 inches thick. There could be no doubt that the ice cone in question had caused the damage, the mass of ice, in freezing from the outside toward the interior, having found sufficient hold on the heads of the rivets and irregularities of the flue to cause the pressure developed by the final freezing of the core of the cone to act, instead of toward the free interior, upon the head of the boiler, until the latter gave way and became rent at its weakest point—the unfortified rim of the manhole. The process of destruction was favored by the fact that the door leading from the boiler-house into the open air was only a short distance from and directly opposite the unprotected boiler head.

Another boiler, which was used only once a week, was situated in a small stone building in the middle of the farmyard.

When on a certain winter day the boiler was to be heated, it was noticed that it was rent from the mud-hole of the cross-tube along the lengthwise seam to a point beyond the fourth rivet, but that no water flowed from the rent. On opening the man-hole over the crown of the fire-box it was found that the water between the shell and fire-box, as well as in the cross-tube, had frozen, and this at once explained the cause of the damage. The cylinder of ice which had formed in the cross-tube had pressed against the shell of the boiler and had caused it to burst along the seam—its weakest spot.

These two examples demonstrate that boilers which are little used and exposed to the cold must be protected in winter against freezing, and this is effected best by discharging the water or by maintaining on cold days a light fire under the boiler or in the boiler-room.

A saw-mill near Dumbarton Station, N. B., was destroyed by fire a fortnight ago. The mill was owned by Mr. Johnston.

Kelly's saw-mill at Buckingham, Que., was destroyed by fire on July 12th. It is probable that the mill, which was valued at $5,000, will be rebuilt immediately.

The Willow Creek Gold Mining Co., of Bell City, Rainy River district, have purchased a shingle machine and planer from the Waterous Engine Works Co., Winnipeg, which is being added to the plant of the company at Bell City. Mr. E. Todd, of Brantford, is manager of this company.

SCARCITY OF STAVE AND HOOP TIMBER.

THE Sutherland, Innes Co., of Chatham, Ont., in a letter in the National Coopers' Journal, comment upon the scarcity of timber for staves and hoops. When we look even around this immediate neighborhood, what do we find? they ask. Ten years ago, for 30 or 40 miles north, east and west, and for 12 miles south, we had what were thought to be illimitable forests, and now, where are they? Gone, and in their place the garden of Canada, and perhaps the richest agricultural soil in the world. Don't let our American friends pooh-pooh this, for land that will produce 12,000 to 15,000, and even 25,000 feet of elm alone to the acre, not counting other timber, we believe is unexcelled, while the climate of this peninsula is the most equable on the North American continent east of the Rockies.

The mills that are gone used over 100,000,000 feet of elm per annum. And the mills that are left, what are they? Where a one-knife mill used to have to turn away logs every winter, or nearly so, half a million feet is a large stock now, and the larger mills are stocked in proportion, except, in a few instances, where the manufacturers are able, from their own standing timber, purchased years ago, to stock up their mills in something like the old style. A few more years, very few, and the timber around here will be a thing of the past, and it puzzles us where the mills will go.

THE J. C. McLAREN BELTING COMPANY.

THE following is the substance of a very neat folder addressed "To the Management of Electric Light and Power Stations," and distributed to the attendants at the recent convention of the Canadian Electrical Association at Montreal:

It is very gratifying to us to be able to say that we have handled the largest individual order for belting an electric plant that has so far been placed in Canada.

Doubtless you will be visiting our city shortly, when the annual convention of the Canadian Electrical Association will be in session this month.

In all probability amongst other points of interest that will be visited will be the generating station of the Montreal Street Railway system, acknowledged by all to be the best equipped on this continent, and in this connection we beg to draw your attention to the belting trasmitting the 7,000 h.p.

Our contract for this work covered the maintenance of these belts for two years from their starting up. It will surprise you to learn that the total expense to us in this connection did not amount to 1½ per cent. of the total value of the purchase.

These belts are all made from genuine English oak-tanned stock, a tannage that has properties especially adapted for the exacting work peculiar to electric plant.

So that you may better appreciate the magnitude of this contract, we give below a memo covering the number of hides and total weight of the leather, also a memo of the lengths and widths that comprised the various drives, consisting as you will note of twelve twenty-four inch double, and three fifty-four inch three ply belts.

Number of hides, 1,630; total weight of leather, 15,000 lbs.

One belt,	140	feet long,	54	inches wide,	3 ply.
"	138	"	54	"	"
"	132	"	54	"	"
"	128	"	24	"	2 ply.
"	143	"	24	"	"
"	135	"	24	"	"
"	147	"	24	"	"
"	125½	"	24	"	"
"	122	"	24	"	"
"	138½	"	24	"	"
"	125	"	24	"	"
"	136	"	24	"	"
"	178	"	24	"	"
"	136	"	24	"	"
"	124	"	24	"	"

In the saw mills of Canada many different methods are employed for doing similar work, each one, perhaps, possessing certain points of merit. Superintendents, sawyers, filers, etc., are respectfully asked to contribute to this journal their views as to the best method of doing certain mechanical work, such as lining and setting up shafting, setting up rotary and other circular saws, rules for finding out and marking off the shape of circular saw teeth for guidance in grinding and filing.

Steam pipes and wood in close contact make a combination from which fire is always liable to result. No doubt a great many dry kiln fires start from this cause. A. L. Artz, inspector for the Lumber Mutual Fire Insurance Co., of Boston, Mass., thinks the steam pipes in a dry kiln should be overhead and the ventilators below. To quote his words: "However, if steam pipes are beneath stock, and it is thought they can not well be changed, they should at least be six inches above the floor, and have the slatted floor above them made in small sections, so that it can be easily taken up and all refuse swept out frequently. It will pay in the effectiveness of operation. Steam pipes covered with dirt, dust and sticks will self-evidently not give near as much heat as clean pipes, nor will they be cleaned unless arranged so as to cleaned easily."

THE MAPLE LEAF SAW WORKS

Shurly & Dietrich GALT, ONT.

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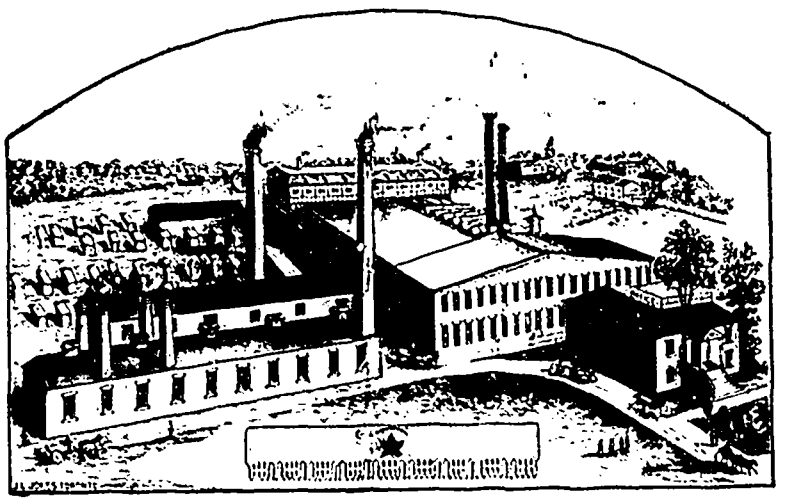
CIRCULAR SAWS
CANC SAWS
MILL SAWS
BAND SAWS
CROSS-CUT SAWS



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GROUND THIN ON BACK

Save Labor — Save Gumming
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This Saw Stands Without a Rival

AND IS THE

FASTEST CUTTING SAW IN THE WORLD!

Its Superiority consists in its Excellent Temper. It is made of "Razor Steel," which is the finest ever used in the manufacture of Saws. We have the sole control of this steel. It is tempered by our secret process, which process gives a keener cutting edge and a toughness to the steel which no other process can approach.

Maple Leaf Saw Set

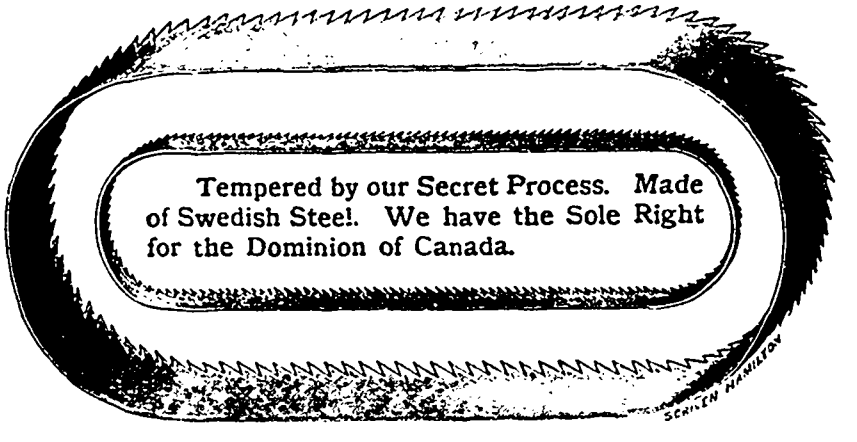
MANUFACTURED BY

SHURLY & DIETRICH, Galt, Ont.

Directions.—Place the set on the point of tooth, as shown in the accompanying cut, and strike a very light blow with a tack hammer. If you require more set, file the tooth with more bevel.

If you follow directions you cannot make a mistake. Be sure and not strike too hard a blow, and it will set the hardest saw. On receipt of 40 cents we will send one by mail.

We are the only manufacturers in the world who export Saws in large quantities to the United States.



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These Saws are made of Refined Swedish Steel imported direct, and tempered by our Secret Process; for Fine Finish and Temper are not excelled.