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THE CANADA LUMBERMAN

Wood-Workers', Manufacturers' and Millers' Gazette

VOL. XXII. TORONTO, CANADA, MARCH, 1902 TERMS, $1.00 PER YEAR Single Copies, 10 Cents

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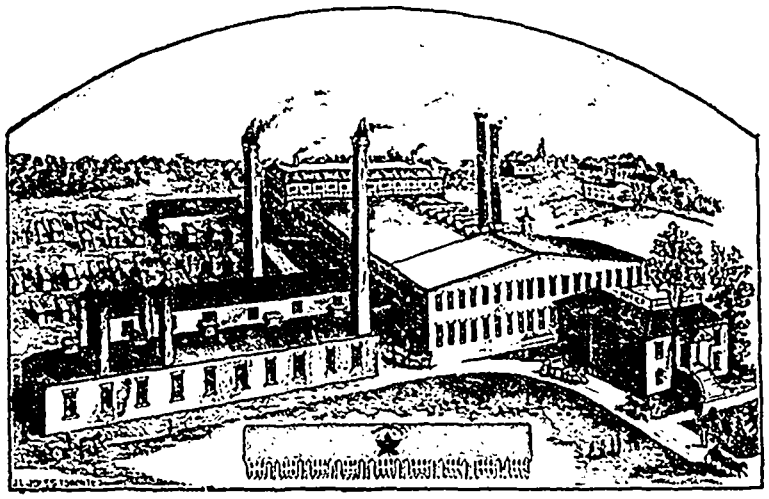

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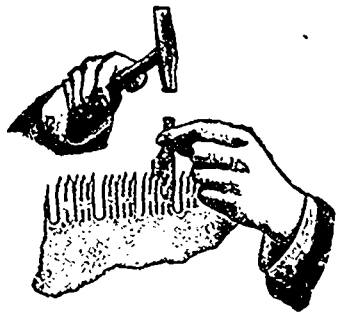

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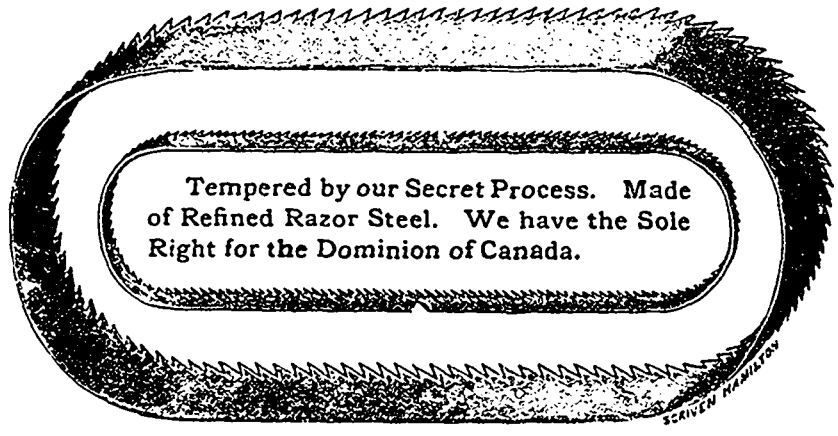

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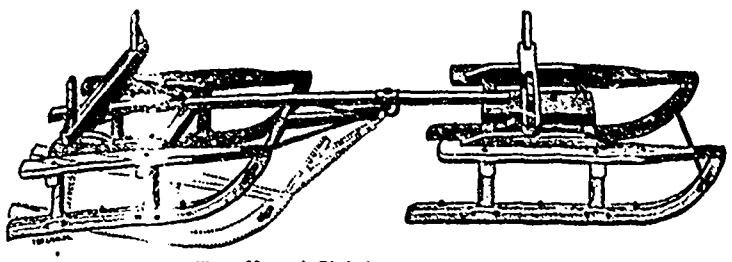

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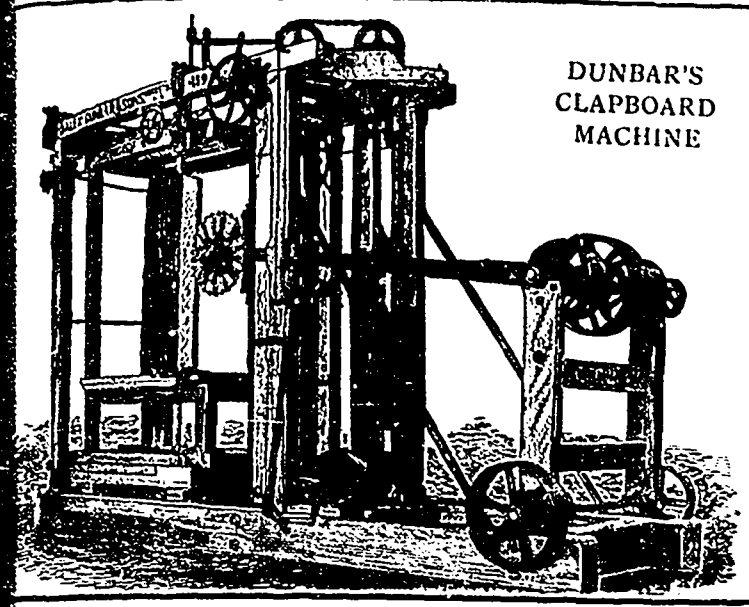

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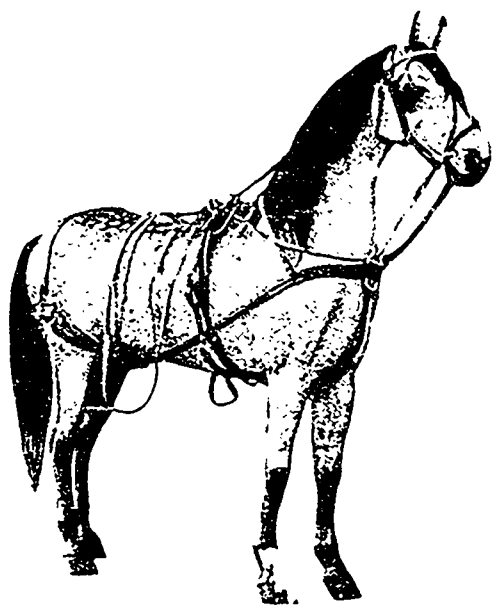

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THE CANADA LUMBERMAN

VOLUME XXII. NUMBER 3. TORONTO, CANADA, MARCH, 1902 TERMS, $1.00 PER YEAR Single Copies, 10 Cents

CAREER OF A PROMINENT LUMBERMAN.

It may be interesting for the readers of the CANADA LUMBERMAN to know something of the personal history of one of the members of the new lumbering corporation which recently started operations at Sarnia, a full description of whose plant was given in the January issue. He is a thriving American who has come to live on Canadian soil, bringing with him Yankee hustle and push. This is truly an age of specialties, and the successful men of to-day seem to be for the most part those who devote their entire ability and attention to some one line of work, as in this case it might be said Mr. J. M. Diver has been raised in the lumber business, having spent his whole life in its different branches.

Mr. Diver was born at Cleveland, Ohio, on April 15th, 1859. He received a common school education. At the age of sixteen he left Cleveland and went to Lewiston, Ill., where he obtained employment in a combined saw and grist mill. After remaining there for a period of six months, realizing the fact that there was a saw mill in his own town, he concluded that he would return there and try and obtain employment. On his journey he stopped at Fort Wayne, Ind. The country being thickly covered by oak timber, he secured a position and went to work in the woods about twelve miles from that city, where he remained until the following June.

Still clinging to the thought of the saw mill being in his native town, and being urged by his father, Mr. Diver returned to Cleveland on June 6th, 1876, going direct to the saw mill owned by the Cleveland Saw Mill and Lumber Company and asking for employment. He was given a place and went to work as a slab carrier. In the course of a few weeks he was put to work on the lath mill, where he continued for a period of some three months, being then called into the office by Mr. R. K. Hawley, then president of the company, to act in the capacity of office boy. The following spring he was put into the yard to tally lumber under an inspector's eye, where he soon learned the value of lumber and was given a position as inspector. In the year 1880 he was asked to come back to the office and act as assistant book-keeper, which position he held until in 1881 he was given entire charge of the books and made secretary and treasurer of the company. This position he held for some eleven years, when he was advanced to secretary and general manager of the company.

In the year 1900, the company had the misfortune to lose a large raft of logs on Lake Huron, which raft finally went ashore near Goderich, Ont. Mr Diver took the train to Port Huron, Mich., crossing over to Sarnia on July 12 of that year en route to Goderich to superintend the wrecking of this raft. While at Sarnia his attention was called to Sarnia Bay as being an ideal place for a saw mill. He looked over the bay and proceeded on his journey. He had always been told that the Canadian pine was scrubby, that is to say, that the limbs were from the ground up on the trees and that there was no long bodied timber in Canada. After he had reached Goderich and had made arrangements to wreck the raft, he concluded that he would go north in the pine regions of Canada and

MR. J. M. DIVER,
Manager Cleveland Sarnia Saw Mills Company.

see for himself the quality of timber the Dominion contained. He went north in the Algoma district and spent some four weeks in tramping timber lands, and, needless to say he saw some excellent timber. Getting into a very fine tract and finding the owner, he went directly to Bay City and closed a contract for a winter's output of some thirty million feet.

Returning to Cleveland after fixing up the regular routine of business in his office, Mr. Diver went to Sarnia to secure options on booming grounds and a site for a saw mill. These options were closed in the forepart of April, 1901, and on April 15th of that year the company, under his direction, began the erection of the plant already described in this journal.

In the meantime Mr. Diver has secured options on several tracts of timber, which the company have taken up. The company have purchased thousands of acres of timber lands, and the plant for which the ground was broken, so to speak, on April 15th, is now in commission and turning out daily in the neighborhood of 100,000 feet. Mr. Diver moved to Sarnia on August 1st, 1901, and is giving the operations in hand close attention.

If a thorough knowledge of the work in hand, combined with untiring effort, merits success, surely a bright future may be predicted for him and the company with which he is associated.

TESTS OF DOUGLAS FIR.

Builders are familiar with the fact that Douglas fir is among the strongest woods in the world, but figures such as have been prepared for the British Columbia Mills, Timber & Trading Co., of Vancouver, are of especia value to those interested in the subject. This company sent five fir logs to the testing and experimental works of David Kirkaldy & Son, of London, England, to be subjected to the severest bending and thrusting tests, and full data to be returned. The results show in detail that fir is in every respect satisfactory to those who have always insisted that it was one of the best varieties of wood.

The specimens give the bending test 12x15 and 16 inches in dimensions, cut to a length of 13½ feet, with a distance of 12 feet between the supports and the load applied at the center. The mean total stress in pounds and deflection in inches are shown in the following table:

Weight.	Deflection.	Weight.	Deflection.	Weight	Deflection
10,000	.027	34,000	.365	58,000	.663
14,000	.119	38,000	.414	62,000	.726
18,000	.170	42,000	.461	66,000	.804
22,000	.219	46,000	.511	70,000	.911
26,000	.269	50,000	.561	74,000	1.070
30,000	.317	54,000	.613	*78,000	1.203

*Only three pieces were given this strain.

The ultimate weight borne by the pieces was 78,714 pounds, or 35.1 tons, which was equivalent upon the beam of 93,162 pounds, or 41.6 tons. The timbers were beat to a deflection of five inches and removed.

Those tested to ascertain the resistance to depression were 12x12 and 100 inches long, with the ends faced true in a lathe. The total stress in pounds and depression in inches were as follows:

Weight.	Depression	Weight	Depression.	Weight	Depression
40,000	.027	220,000	.114	400,000	.195
60,000	.038	240,000	.122	420,000	.205
80,000	.048	260,000	.130	440,000	.214
100,000	.059	280,000	.139	460,000	.225
120,000	.069	300,000	.149	480,000	.243
140,000	.078	320,000	.157	*500,000	.238
160,000	.088	340,000	.165	*520,000	.253
180,000	.097	360,000	.175	**540,000	.250
200,000	.106	380,000	.184	**560,000	.267

*Only three pieces subjected to this strain **Only two pieces subjected to this strain.

The average ultimate strain of the five pieces before they were crushed was 531,656 pounds, or 3,680 pounds to the square inch, although two of the pieces withstood a stress of more than 4,000 pounds to the square inch.

THE LUMBERMEN'S ASSOCIATION OF ONTARIO.

The annual meeting of the Lumbermen's Association of Ontario was held at McConkey's Restaurant, Toronto, on Wednesday, February 12th. Preceding the business meeting an excellent luncheon, provided through the hospitality of the President and Board of Management, was partaken of.

The members in attendance included Messrs. John Waldie, president, Toronto; Robert Watt, second vice-president, Wiarton; W. B. Tindall, secretary, Toronto; W. B. McLean, J. B. Miller, W. P. Bull, Robert Laidlaw, Walter Laidlaw, Toronto; William Laking, Hamilton; George Chew, Midland; C. Beck, Penetanguishene; N. Dyment, Barrie; M. Boyd, Bobcaygeon; George Thomson, Goderich; R. Cook, South River; D. G. Lummis, Spragg. The guests were Messrs. T. G. Brough, manager Dominion Bank; Aubrey White, Assistant Commissioner of Crown Lands; Thomas Southworth, Chief Ontario Bureau of Forestry, and T. S. Young, representing the CANADA LUMBERMAN.

The toast of "The King," and "Canada Our Country" being duly honored, the business of the meeting was proceeded with. Letters of regret were read from Messrs. James Playfair and D. L. White, Midland, John Bertram, Toronto, and W. J. Sheppard, Waubaushene.

Mr. Waldie, on behalf of the Board of Management, submitted the following report:

REPORT OF BOARD OF MANAGEMENT.

Gentlemen,—We are pleased to report that the year 1901, now completed, has proved a reasonably prosperous season. That it has not been as profitable as the two preceding years is owing in the first place to increased cost of manufacture. This, however, is not an unmixed evil, as labor has received higher wages, until Ontario to-day is occupying a premier position in affording abundance of employment at higher average wages than any other country we know of. Formerly wages were higher in the United States than in Canada. Now these conditions are changed, and to-day the workmen of Canada are better remunerated than the workmen of the United States or elsewhere.

Owing to the activity occasioned by the South African war, the year 1900 was one in which there was a large demand for red pine for the English market, but on account of the high ocean freights which prevailed in the fall of that year (owing to the immense tonnage employed in the transportation of war supplies to South Africa), it made the cost to the English buyer exceedingly high. Consequently, when a sudden cessation of the active demand occurred, the market for a time in England was rather demoralized, and many of the English buyers on arrival in this country in the spring of 1901 were so despondent that they closed out contracts at considerable loss.

The Canadian producer saw no reason to submit to any reduction in his price, and throughout the season maintained that conditions in England would soon right themselves. This anticipation is now being realized, partly owing to a reduced ocean freight rate from America to Great Britain—shipments having been made during last fall and this winter at a 50 per cent. lower freight than a year ago—and we accordingly look for an improved demand for red pine.

Our white pine has been in unusually good demand. Prices advanced steadily from June until the close of the season, and so far as the higher grades were concerned the advance was really abnormal, averaging as much as from $5 to $10 per M. feet.

We are entering the present year with limited stocks of sawn lumber at the mills, and these largely contracted for. This gives promise that the year will be a prosperous one. It is not desirable that we should seek to advance present prices on the supposition that white pine—which is the largest product of the Ontario mills—is the only wood that can be used. Further, we must realize that as population is concentrating in the large cities, where the buildings requisite for housing are largely constructed of iron, brick and cement, the great consumer of pine is the country, not the city population.

We are pleased to note the increase of self-reliance amongst the people, extending throughout the whole of Canada. This is attracting the attention of the world, and we may therefore look for a very rapid immigration into this country; and this Association through its insistance upon the Ontario Government adopting the Manufacturing Clause, has contributed its whole quota to the prosperity now existing.

The question of transportation is the most important factor in aiding or hindering the advancement of this country, and while the lumber interest suffered very seriously from the car shortage during the months of October and November, we are pleased to note that the executives of the trunk lines of railroads in Canada, realize that if they are to get the best results from the operation of their roads, they must supply additional locomotives and cars. We trust that in future they will time their betterment and ballasting to a period of the year when it will inflict the least loss upon the lumber industry. The withdrawal of a large number of flat cars in the fall of the year is a serious loss to the lumber interest of this country.

We do not think the interests of this country are forwarded by negotiations with the United States looking to a renewal of any kind of Reciprocity Treaty, nor by discussions about the "balance of trade." We serve our best interests by pressing our own Provincial and Dominion Governments to legislate for Canada alone, and it would be unwise for a member of this association to speak of any legislation that we are promoting as retaliatory. Let us act, not talk, and we as lumbermen will continue to saw wood and keep our axes sharp.

We believe the Dominion Government should put wood products on the dutiable list so that in a period of depression (aid to offset the American cut on through rates from the South) a tariff would act as a hindrance, and thus prevent Canada from becoming a slaughter market. While the theories of protection and free trade may be discussed academically, this country asks for legislation to suit the conditions that exist here. It is not a matter of theory, it is a matter of deciding what is going to presently promote the welfare of the country.

The arbitrary, perpendicular and unjustifiable increase of insurance on sawmills and lumber in yards has been the subject of discussion with the representatives of the Underwriters. They admit that the rate is unscientific as well as unjust, and we have expectation of improvement, either by reduction or by special rating, where conditions warrant same.

JOHN WALDIE, President.

The president stated that it was not thought prudent to further press the railways regarding insufficient cars owing to the inability of the roads to supply cars for all kinds of traffic, as the result of the general prosperity of the country. The question of forming a mutual insurance association for self-protection in insurance matters had, as stated in the report, been considered. The lumbermen had mutual insurance in Massachusetts, but they were only able to carry $5,000, and this amount was too limited for the members of this Association.

Mr. Dyment concurred in the statements set forth in the report. He was surprised that the prosperity in the lumber business had continued so long, but in his opinion the outlook for white pine was good, even better than twelve months ago. The large amount of lumber made last year had been worked off at very satisfactory prices.

As one of the advocates of mutual insurance Mr. Beck was asked to speak. He contended that a large amount of money in insurance premiums was each year being sent to the United States and England, and urged that if the lumbermen could now arrange among themselves to carry their own insurance, they should at least place the risk with Canadian companies. If a lumbermen's mutual insurance company could be formed it would be a check upon the present companies. He was in favor of the Lumbermen's Association of Ontario amalgamating with the Canadian Manufacturers Association, on the ground that in this way it might be possible to obtain from the Government more consideration than had been received in the past. Mr. Beck also brought up the question of labor and urged that the Government should give more attention to the importation of German settlers.

STATISTICAL REPORT.

The following statistical report was presented by the secretary:

GENTLEMEN,—Herewith I beg to submit to you the following statistical information based upon such replies as I have received from the circular letter of Jan. 3, 1902.

PRODUCTION WHITE PINE LUMBER.—The total production of mills in North-Western Ontario, which embraces all mills on the Georgian Bay, Northern Division of the G.T.R. to Callender, and C.P.R., North Bay to Rat Portage, was 351,000,000 feet in 1899, 476,000,000 feet in 1900, and 466,000,000 feet in 1901, the decrease in 1901 from that of 1900 being 10,000,000 feet, which is mainly accounted for by the output of one or two of the mills being seriously affected by fire, and also that some of the operators did not saw as much as they expected.

The stocks on hand at the mills December 31st were 120,000,000 feet in 1899, 216,349,000 feet in 1900, and 181,000,000 feet in 1901, the decrease in stocks on hand as compared with that of 1900 being 35,000,000 feet. Of the stock on hand on the 31st of December, 29,000,000 feet was sold waiting delivery in the yards and 152,000,000 feet unsold. Of this stock 50,0000,000 feet will go entirely to the Manitoba and North-West markets.

In regard to my inquiries in the circular letter as to whether it was considered that present prices should be maintained, unanimously the answer received has been that no reason can be given why the present prices should not be firmly maintained, and some look for an increase.

The trade press of the United States reports that the production of Michigan, Wisconsin and Minnesota shows a decrease in 1901 over 1900 of 112,871,000 feet, and the stocks of lumber stored at the mills also show a decrease for the same period of something like 529,229,000 feet. The stocks on hand are the lowest which statistics show since 1894, all of which must certainly make one come to the conclusion that the requirements of the market both for manufacturing and distributing purposes remain the same, that there can only be one effect, namely, firm or increased prices.

I have not been able to get satisfactory figures as to the cut of logs this winter, but understand that it will probably be about 10 per cent. less than last year.

W. B. TINDALL, Secretary.

A discussion of market conditions followed. Mr. Miller asked regarding the quantity of mill culls in the market. He had heard that the quantity was large, whereas on the other hand he had been told that in Michigan an advance of $1 per thousand on mill culls had been put into effect. The opinions given showed that while one or two concerns hold a considerable stock, the total quantity unsold is less than one year ago. Mr. Dyment stated that he found mill culls selling very satisfactorily.

A suggestion of the president that monthly luncheons be held in Toronto met with the hearty approval of the members. Mr. Dyment took occasion to point out the advantages of social intercourse, remarking that he "wanted to know what the other members of the trade knew." It was decided to meet for luncheon at McConkey's on the first Wednesday in each month, at 1 o'clock. The first luncheon will therefore be held on March 5th, when it is hoped that as many as possible of the members of the Association will arrange to be in Toronto on that day.

Mr. Watt made a brief report regarding the hardwood lumber trade. He said it was much better than six months ago, and that this winter's stock of logs was only one-half that of last year, and not more than one-third that of two years ago.

Mr. Thomson inquired as to hemlock, to which the president replied that it was difficult to estimate the quantity of hemlock in the market, as the large quantity taken out by tanners was a disturbing factor. Mr. Dyment said that the stock of hemlock was light, and that last week he had sold half a million feet of inch strips and stocks at $9.75.

As a large dealer Mr. Robert Laidlaw gave his views of the market. He had found it difficult to buy lumber either in Ontario or at Duluth or Ashland. Lumber was going west from Duluth to Kansas and Minneapolis. Mr. Waldie said that he had just made his first shipment of lumber by rail to Chicago, and that he had recently shipped a quantity of ten-inch and up inch common boards, dressed two sides, to Glasgow. This was somewhat in the nature of an experiment, but if dressed lumber could be shipped to Great Britain there would be an important saving in freight.

ELECTION OF OFFICERS.

The election of officers resulted as follows: President, John Waldie, Toronto (re-elected); first vice-president, Robert Watt, Wiarton; second vice-president, N. Dyment, Barrie; secretary, W. B. Tindall, Freehold Loan Building, Toronto; board of management, John Bertram, W. A. Charlton, M.P.P., J. B. Miller, Robert Laidlaw, Toronto; D. L. White, jr., Midland; C. Beck, Penetanguishene; J. T. Conlon, Thorold.

MEASUREMENT OF PULP WOOD.

STURGEON FALLS, January 29th, 1902.

Editor CANADA LUMBERMAN:

SIR,—I read in your monthly edition for January an article on the measurement of pulp wood and a definition of the Doyle rule for measuring saw logs, comparing it with the Quebec table. Regarding the measurement of pulp wood, it is mostly all cut 12 and 16 feet long and measured at both ends and the mean diameter taken; or when in skidways the one end of the skidway is measured butts and tops as they come inside of bark, fractional inches omitted, each piece reduced to cubic contents, and every 115 cubic feet called a cord, allowing 13 feet for bark, spaces, fractional inches, etc. This is the rule the Crown Lands Department have adopted for collecting duty, stumpage, etc., and is followed by some lumbermen when getting pulp wood cut by contract, thus getting about 1⅛ cords for every cord returned, as it takes about 100 cubic feet of wood measured that way when cut into four feet lengths and piled to make a standard cord of 128 feet.

Regarding the measurement of saw logs the Doyle rule is the only rule given where the contents of saw logs are figured out to board measure, and is not at all correct when logs are under 20 inches in diameter. The following rule how to figure out the amount of square edged boards in a saw log may be of some interest to lumbermen and scalers, it is very nearly the same as the Scribner and Quebec table, which, I believe, was compiled from the measurement of boards sawn from imperfectly measured logs. Rule. Twice the square of the radius or half the diameter less one-quarter for saw cut will give the contents in feet board measure of any log under 12 inches diameter. Example, 10 inch log, 5 × 5 = 25 × 2 = 50 ¼ = 37 feet b.m. Saw logs 10 inches in diameter up to 18 inclusive will have one board outside of the square. Example, 14 inch log, 7 × 7 49 × 2 = 98 ¼ = 74 + 4 strips 4 inches wide 16 + 74 = 90 feet b.m. Example, 24 inch log, 12 × 12 144 × 2 = 288 ¼ = 216. The square root of 288 is 17, the side of the square 17 − 4 for edging = 13. 13 × 4 = 52; the second board 13 − 4 = 9 × 4 = 36 + 52 + 216 = 304 contents b.m. The thickness of the segment is found by taking half the side of the square from the radius and allowing 2½ inches for each board. For example, 17 inches being the side of the square of 24 inch log, half of which is 8½ taken from 12, the radius will give you 3½ inches, two boards 2½ inches, leaving one inch for slab.

Yours truly,

J. C. KENNEDY.

THE BRITISH COLUMBIA EXPORT LAW.

VANCOUVER, B. C., February 10th, 1902.

Editor CANADA LUMBERMAN.

DEAR SIR,—Having been very busy for some time past it is only now that I have had time to read the December number of your valuable paper. I would like to make a few remarks with regard to your editorial on page 10, headed "The British Columbia Timber Policy." To enter into this matter fully, I will be obliged to make quotations from your article.

You say, "The two interested factors are what is known as loggers on the one side, and the lumber and shingle manufacturers on the other." This should, to be correct, read as follows: The two interested factors are the loggers, their employees, the financial institutions, business men and firms assisting them in their operations, the business houses, whether wholesale or retail, the steamboat companies or owners interested in the towing of logs and others interested directly or indirectly in the business of lumbering; the owners of timber lands, whether under lease, license or Crown grant, all are equally interested with the loggers in this question.

Again you say, "The Government very wisely considered the interests of the manufacturer in preference to those of the logger when placing on the statute book the law prohibiting the export of cedar." Does it not occur to you that this statement is a most unfair one? It endeavors to show that the logger, and all above mentioned who are interested with him in the business of lumbering, have hardly been considered. Their not being considered is exactly what took place. It was only after the passage of the Act that the Honorable Chief Commissioner of Lands and Works agreed that its enforcement should be deferred, on represensations being made to him as to the hardships that it would entail.

I would also point out to you that you were wrong in using the word "cedar." The clause in the act reads as follows: "All timber cut from Provincial lands must be manufactured within the confines of the Province of British Columbia, otherwise the timber so cut may be seized and forfeited to the Crown and the lease cancelled."

You say, "It is evident that the interests of the logger will be injured by the legislation, but on the other hand, the more important industry of the manufacture of lumber and shingles will be longer perpetuated." The business of the logger has, and will continue to be injured by this legislation, unless the restriction is removed, until such times as there are more mills in this Province requiring a greater output of logs than at present, and more important still, until the mills take logs as far up the tree as is done by the mills on the American side. Not only is a severe hardship caused to the loggers by the mills only taking one, and in some cases two, logs out of one tree after he has built his camps, roads, booms, etc., and felled the tree, but the country, represented by the Government, loses the stumpage on the logs so left in the woods to either rot or add fuel to a fire which may be sweeping over that section

You say, "The logger expends a small sum for the cutting of timber and exporting it to a foreign country to be manufactured. The mill man expends an equal sum in cutting the timber, and a much greater sum in manufacturing it into lumber, shingles, and other more finished products." I would state positively that the expenditure by the logger up to the time of delivering the logs at the mill is greater than that of the manufacturer. This is largely accounted for by the fact that the mills employ oriental cheap labor. Very few mills have camps of their own.

You say, "The industry now suffers by unfair competition from United States manufacturers, who are permitted to ship into the Canadian market free of duty." This is a matter that has absolutely nothing to do with the matter under discussion. It is a matter for the Dominion Government to deal with as a tariff question between the two countries.

You say "The situation in the two Provinces (referring to Ontario and British Columbia) is peculiarly similar, and there can be little doubt that the results would be as satisfactory in British Columbia as in Ontario." There is very little similarity on this question between the two Provinces. This point, as well as the others to which objections are taken in this letter, are no doubt well known to the party giving you the information for your editorial.

Another point that must not be lost sight of in selling logs on Puget Sound is the fact that a higher price per thousand feet is paid for the logs on a much more equitable scale, thus putting a much larger amount of money into circulation in British Columbia than if the logs were sold and manufactured in this province, including the manufacturing. This seems unreasonable, but it is so.

Thanking you in anticipation for publishing this letter,

Yours truly,

W. H. HIGGINS,
President B. C. Lumbermen's Association.

PERSONAL.

Mr. George Campbell, formerly with the Royal City Mills, Vancouver, B.C., has returned to that city after an extended visit to Winnipeg.

Mr. H. DePencier, of the North Pacific Lumber Company and the Vancouver Sash and Door Factory, has recently returned to Vancouver from a trip to Australia in the interests of his firm.

General sympathy was expressed with Mr. W. A. Charlton, M.P.P., upon the death of his eldest son, Mr. William Andrew Charlton, which occurred in Toronto late in January, after a lingering illness.

There passed away in Toronto on January 31st Mr. N. W. Belding, who for many years conducted a lumber business in Barrie, but fifteen years ago removed to Toronto. He was 78 years of age.

Mr. Robert Hamilton, who has for some time been located at Vancouver, B. C., as western representative for the William Hamilton Manufacturing Company, of Peterborough, Ont., has been removed to the head office, and will probably act as sales agent for Ontario and the east. His successor at Vancouver is Mr. C. N. Cornell.

Hon. J. B. Snowball, the well known lumberman of Chatham, N. B., has been sworn in as Lieutenant-Governor of New Brunswick. Senator Snowball is 64 years of age and the son of Rev. John Snowball, a minister of the Methodist church. He is with one exception the largest manufacturing exporter of lumber in the province, his shipments being about 40,000,000 feet annually. He has under lease or control about 600 square miles of timber limits. About two years ago the business of which he is at the head was converted into a joint stock concern, under the style of the J. B. Snowball Company, Limited, which it composed of members of Mr. Snowball's family.

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ADVERTISING RATES ON APPLICATION.

THE CANADA LUMBERMAN is published in the interests of the lumber trade and 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 in which it can rely in its operations.

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.

BRITISH DUTY ON TIMBER.

The necessity of the British Government raising revenue to meet the expenses of the South African war is responsible for a rumor that the Chancellor of the Exchequer proposes to re-impose the duty on timber, which has been abolished for some thirty-five years. In well informed circles it is not believed that such action will be taken, but on the other hand the fact remains that it is absolutely necessary to raise the additional revenue in some manner, and a light tax upon timber is regarded as one of the feasible methods. The proposition has been freely discussed by the timber merchants, who are, we are told, feeling a little uncomfortable over the prospect of such a duty.

Just how seriously the idea has been considered by the Chancellor of the Exchequer is not known, but it is stated that the custom authorities at some of the east coast ports have been requested to send in full statistics of the wood goods imported to their districts. This is at least sufficient ground for believing that the matter is under consideration. The statement is also made that an insurance for twelve months against the imposition of the tax has already been effected by Lloyd's.

It is estimated that a tax of 25 cents per load on soft timber would bring in about $2,250,000 per annum. This is exclusive of any duty on hardwoods.

In connection with this matter the question arises whether a duty would be imposed on timber imported from the British Colonies. The advocates of Imperial Federation would no doubt strongly oppose such a move, and if an exception was made in the case of Colonial timber, the revenue obtainable would be reduced by nearly one-quarter.

The imposition of a duty on timber imported into Great Britain would be of little benefit so far as fostering the home trade, as the available supply in England is of little account. It would seem, therefore, that the tax would fall upon the consumer, and if no preferential duty was provided for, the quantity of timber imported from the different countries would not be lessened thereby. A proposition which meets with much greater favor in England is the taxing of manufactured timber products, as this would assist the manufacturing industries of the country.

HOME MANUFACTURE OF TIMBER.

The departure made by the Ontario Government in the year 1898 by passing legislation compelling the manufacture within the province of all timber cut on Crown lands was at the time favorably received, representing as it did preponderance of public sentiment. There were, however, opponents to the legislation. The law has now been in force over three years, in which time many converts to the measure have been made, and it is safe to say that the opposition has become an almost invisible quantity. The reason for this is clearly understood by everyone acquainted with the conditions. As a result of the legislation we can point to a great expansion of the lumber industry, an increased population, more employment for the working man, a larger demand for Canadian machinery, and other advantages of more or less importance.

The experiment, if it might be so termed, has demonstrated two things—first, that the time has come for Canada to legislate in the interests of Canadians; and secondly, that the raw material will attract the manufacturer. Within four years towns and villages along the Georgian Bay shore which had become nearly extinct while the logs were being rafted to Michigan, have grown to be thriving settlements; machine shops have been working to their full capacity on mill repairs, etc., and the country at large has prospered. As figures are perhaps more convincing than mere statements, we give below the names of Michigan firms which, to our knowledge, have established mills in Ontario subsequent to and as the direct result of the prohibitory legislation. The annual capacity for day run only is given:

	Feet.
W. & A. McArthur Company, Little Current	25,000,000
Holland & Graves, Byng Inlet	40,000,000
Eddy Bros., Blind River,	25,000,000
Michigan Land & Lumber Co., Blind River	20,000,000
Moulthrop Lumber Co., John's Island	15,000,000
Mr. Loveland and associates at Cutler	25,000,000
J. & T. Charlton, Collingwood	20,000,000
Edmund Hall, Sarnia	25,000,000
Cleveland-Sarnia Saw Mill Co., Sarnia	25,000,000
Saginaw Lumber & Salt Co., Sandwich	25,000,000
Pitts & Charlton, Victoria Harbor	20,000,000

Some of the above firms built new mills; others remodelled mills that had been idle for years. The operation of these mills means an increased capacity in Ontario of upwards of 250,000,000 feet of lumber annually. This amount represents the logs that were formerly cut in Ontario and rafted to Michigan. It will be seen that the quantity of lumber placed on the market is no greater, but that which was formerly sawn in Michigan from Canadian timber is now sawn in the Province by Canadian workmen.

In addition to the increased mill capacity above referred to, contra[cts] have been given by Amer[ican] dian manufacturers, who [have] and otherwise increased th[eir] capacity

Some of the opponents [of] legislation were owners of [timber] has proven that their ju[dgment] At the Government sales t[he] ment of the law exceptiona[l] paid for limits, and [has] continued ever since.

The Legislature of Br[itish] placed on its Statute books [a] that of Ontario, to take [effect] From a non-partisan stand[point] to be commended as sh[owing] spirit—the encouragement [of] the country. That the pro[vince] benefit thereby, as was the [case] almost a foregone conclus[ion]. What argument can be advanced, in these days of a declining timber supply, in favor of allowing our timber to be exported as the raw material to build up manufacturing establishments in the United States? Just as sure as the mills were removed from Michigan to Ontario, so will they be removed from Washington to British Columbia.

An association of loggers has been formed in British Columbia with the object of inducing the Government to repeal the Act prohibiting the export of timber. Mr. Higgins, the president of the association, in a letter published in this number, undertakes to show that certain statements made in the CANADA LUMBERMAN were unfair. We fail to see that Mr. Higgins makes one point in favor of the repeal of the law. His first complaint is that no mention was made of the various interests that are associated with the loggers, such as the employees, financial institutions, owners of timber lands, etc. With the manufacturers also are associated their employees, financial institutions, and timber limit owners, and in addition the Canadian manufacturers of mill machinery and supplies. What is to become of our industries if the raw material is exported to and manufactured in a foreign country? His second contention is that it was unfair to state that the Government considered the interests of the manufacturer in preference to those of the logger. It is not unfair to point out the wisdom of the Government in taking such action as will prevent the removal of the manufacturing industries of the province to the United States. Mr. Higgins points out that the law includes all timber and not cedar alone. To this correction we submit, but wherein is the significance? Next he contends that the business of the logger will temporarily be injured, and that the Washington mills take timber further up the tree than the Canadian mills. If such is the case, when more mills are established on the Canadian side, as they doubtless will be, the consequent competition should provide a remedy, but if not, it is in the power of the Government to bring about the desired change. The question of expenditure answers itself. If the timber is manufactured into lumber and shingles within the province, the amount of money expended must

be considerably greater than if the timber is simply taken out of the woods and exported. We fail to see any dissimilarity between the situation in British Columbia and in Ontario, nor has Mr. Higgins given us any evidence to the contrary.

CARE IN MANUFACTURING LUMBER.

The tendency among lumbermen to sacrifice quality to quantity in the manufacture of lumber is, we are glad to say, not as common as it was a few years ago. Many who are inclined towards a large output have so designed and equipped their mills as to accomplish this without injury to the product; for there are no better mills in the world than some of the large white pine establishments to be found in Canada. Nevertheless, the evil of poorly manufactured lumber still exists to some extent, and particularly in the case of the moderate size and small mill. In order to make a large daily output, crowding of the saws is resorted to with the result that the lumber is roughly and unevenly sawn and cannot be classed as a good grade. The loss from this source, as well as from a lack of proper and efficient machinery for trimming, edging, etc., is much greater than is generally supposed by the manufacturer who turns out this class of lumber. Careless piling is also responsible for much unnecessary injury to lumber.

With our timber each year running more to low grade as the supply is cut away, it is very necessary that the quantity of low grade lumber should not be decreased through defective manufacture; on the contrary, it should be the aim of lumbermen to obtain the greatest possible quantity of high grade stock out of the log.

The large mill has doubtless an advantage over the small mill in this particular, as the larger revenue enables the owner to employ the most experienced help, such as sawyers, filers, etc., but with a little effort and care the product of the average small mill may be greatly improved.

One or two instances which have recently come to our notice of the loss resulting from badly manufactured lumber will show the folly of crowding a mill and of endeavoring to get along with inadequate equipment of an obsolete character. A carload of pine cuts and better was recently shipped to a dealer in Toronto. This lumber should have brought $35 per thousand. Owing to the fact that it was not trimmed, the dealer was obliged to accept $30 per thousand for the stock. An expenditure by the manufacturer of a small sum for a trimmer would have made the lumber much more valuable and saleable. A trimmer occupies but little room and is a valuable adjunct to the equipment of a mill.

Another carload of lumber recently arrived in Toronto which in many respects was of excellent quality, but contained a few boards that were unevenly sawn, being too thin at one end. Probable buyers inspected the stock, but refused to make what was considered a reasonable offer owing to the uneven boards which it contained. The quantity of uneven stock was not above 2 per cent., yet it was sufficient to condemn the entire carload. This may be taken as an illustration of the necessity of uniformity and of having every board properly manufactured. The buyer notices a board or two of imperfect manufacture and often refuses to examine the stock further.

The employment of cheap labor is responsible for much of the inferior lumber that is placed on the market. An incompetent sawyer or filer is unprofitable at any price, as is well illustrated by the experience of an Ontario mill owner a short time ago. The owner contracted to saw a considerable quantity of logs for a certain firm. A saw fitter was engaged at $5 per day, and during the first month a large quantity of high grade lumber was manufactured. When scrutinizing the expenses of the month, the owner decided to cut down the wage bill, and accordingly gave the position of fitter to an applicant who claimed to have little or no experience and who accepted the position at $1.50 per day. The result may easily be guessed. The party for whom the logs were being sawn refused to accept a large percentage of the lumber, which was charged against the owner of the mill. In addition to the damaged lumber, several saws were destroyed by improper hammering. It is needless to say that the owner recognized the situation and resolved to again engage an expert for the position of fitter. Some lumbermen do not fully appreciate the fact that band saws are more delicate and require greater care than circular saws; if they are not properly hammered they will not cut even lumber.

The quantity of lumber manufactured by small mills is considerable. If the product of these mills can be improved and the quantity of high grade lumber increased, it will have a material effect upon the market and at the same time bring greater returns to the manufacturer. The National Hardwood Lumber Association of the United States have taken a decided stand against lumber of inferior manufacture, the rules stating that all defectively sawn lumber shall be classed as culls.

QUESTIONS AND ANSWERS.

"W.A.S." writes: Will you kindly answer the following questions: (1) What is a fair number of shingles sawn and jointed by one man, using a Dunbar machine, in a day of 11 hours? (2) What thickness should a shingle be? (3) How much lumber is necessary to make 30,000 shingles?

ANSWER.—(1) The quantity of shingles which can be manufactured in a given time depends largely upon the character of the timber. On the Pacific Coast, where the lumber is sound throughout, 30,000 shingles is a fair average for 11 hours; in New Brunswick and Maine, where the centre of the log is often decayed, the average is about 15,000. (2) A shingle should be nearly one-half inch thick; in other words, a bunch composed of 24 shingles should be 10 inches across the end of the bunch. (3) Three thousand superficial feet of New Brunswick cedar will make 30,000 shingles, all grades. On the Pacific Coast the quantity of timber required to make the same number of shingles would, of course, be considerably less.

POWER AND ITS ECONOMICAL TRANSMISSION.

The important subject of "Power and its Economical Transmission" was discussed in an able manner by Mr. Henry Souther, consulting metallurgical engineer and state chemist, of Hartford, Conn., in a lecture delivered in the rotunda of the Board of Trade Building, Toronto, on January 16th, under the auspices of the Canadian Manufacturers' Association. Having the benefit of both practical and theoretical experience, Mr. Souther may be regarded as an authority on the subject. He treated briefly with the generation of power and then in more detail on sub-divisions. His remarks in part are given below:

Naturally the first thing to consider in connection with the subject before us is the source of power in an industrial establishment, and to determine the best source of power the only basis of comparison in these commercial days is that of cost.

The only power we can obtain for practically nothing is that from falling water. The cost of harnessing is considerable, but after that there is nothing to compare with water power for small cost. I expect to see the time—or at least I believe there will be a time, if I do not see it—when every waterfall will be utilized. This is becoming more and more possible with every addition to our knowledge of electricity. It is now not necessary as of old for a factory to actually overhang the stream from which the power is obtained; on the contrary, it is often better for it to be at a reasonable distance with only the generating machines at the canal or flume. Other things being equal, therefore, water power is best, for it is cheapest.

The only other commercial source of power is heat from coal or oil. The common form of reciprocating steam engine in its many forms of single and multiple expansion is at present almost universal, but it seems to me that a change from the reciprocating to the rotary is coming, our now popular type will become absolete, and the rotary type universally used.

This movement has made considerable headway in Europe and is beginning on this continent. The electric light company of my own city has put in the largest Parson's turbine (3,000 h. p.), which is running well and very economically as compared with the best reciprocating engines. Turbines of the De Laval type are creeping in very fast for small units of power, being better adapted to many small uses than any other machine. They are economical at all powers within their own maximum. The coming power, however, in my opinion, is that obtained from liquid fuel (oils) direct, perhaps from solid powdered fuel as well, or from either one gasified. We obtain power now in this way by so-called gas engines, more properly speaking combustion or explosive engines. As yet they are not always successful, but tremendous strides are being made in perfecting these engines and the number in actual use is now very large. All things considered, however, the best engine or other source of power for any given place or installation is not determined by its economy, its cost or the type, but rather by the combination of points that will contribute most to lessening the cost of production of a given article.

In the future we may look forward to the storing of power from the heat of the sun. This is now experimentally possible and is being accomplished in the sunny climate of California; but I do not think that any of you gentlemen would undertake to equip a new plant just at present and in this climate with its only source of power the sun. Many things more wonderful have been accomplished lately, but this scheme will wait until the commercial necessity for it arises, although it looks to me as if the present rise in the price of coal would hasten its coming.

Then, again, the man who professes to multiply power indefinitely by intricate systems of gearing or some other equally impossible scheme is not yet dead; I fear we must jolly him along, however, and let him down easy without counting him as a serious proposition. He is ingenious and interesting, but not profitable.

Having the power, how shall it be most economically distributed to the producing point? Means for doing this are multiplying fast through the development of electricity, gas engines and the use of compressed air.

The various possible systems are in part as follows:

Steam engine driving shafting by gearing, spur or bevel.

Steam engine driving shafting by belts or ropes.

Steam engine driving electric generator transmitting power over a plant with but few, if any, belts or gear drives.

Steam engine driving compressor of air and transmitting power in pipes over a plant to many forms of tools and lifts.

Gas engines transmitting power by belt or otherwise.

Central gas generating plant distributing gas over a plant in pipes to many engines of small units.

Every engineer or factory manager has his own ideas about these methods, and I dare say every one is much in the right as to his own particular case, in regard to which he is necessarily well informed. No one of the methods is best for all cases. Each particular one must be studied carefully. Conditions are also changing rapidly, what may be best one decade may not be best the next. How rapid this change is is well illustrated by the following quotation from a most eminent engineer, made as recently as 1867, William Fairbairn. In discussing transmission, he said, in part referring to belt drive, at that time new and mostly used in America, while the gear drive was almost universal in Europe, "the advantages of straps (belts) are the smoothness and noiselessness of the motion, their disadvantages are cumbrousness, the expense of their renewal and necessity of frequent repairs. They are inapplicable where the motion must be in a constant ratio, because, as the straps wear slack, they tend to slip over the pulleys and thus lose time."

How little these things seem to bother us now, and how few gears there are as compared with belts, notwithstanding the faults of the belts, as expressed by Mr. Fairbairn. It is almost useless, it seems to me, to talk on such subjects as these, inasmuch as what one says becomes obsolete so soon. All one can do is to act quickly in establishing a plant; take that which is most applicable at the time, and charge off each year enough from the machine account to buy all new in ten years at the longest. Above all things, in laying out a plant, no matter how small, do not proceed by rule of thumb, but think the entire arrangement out and plan it to scale on paper, determining the speed and position of every shaft and pulley; providing for everything beforehand. By other methods much work is repeated, and never as well done as it it might be.

The most lively discussion has always followed when the question of electric transmission has come up for consideration in all our engineering societies. Its exclusive use is advocated by some. By others it is absolutely condemned. The intermediate course will be the final one adopted. For certain work it is incomparable. For example, the large printing presses of to-day may be better manipulated by separate motor than by belt drive from main shaft. Entire independence of speed, reverse, repeated trials of the print, stopping and starting, and finally the cleanliness, make the motor drive directly connected, almost essential. The government printing office at Washington has materially reduced the expense and increased the product by the adoption of the motor drive throughout the place.

All machines served by overhead cranes should be motor driven so that the crane shall not meet the interference of belts. The printing press is one of these. All shops where groups of machines are run independently of other groups should be equipped with motors for each group. As a rule it is well to equip all heavy machine tools with independent motors, inasmuch as such tools stand idle much of the time. The plants in cotton and woollen mills need not be equipped with motors, unless perhaps, certain floors and departments are often run alone or are frequently shut down when the remainder of the mill is in operation. Anything that will do away with heavy and long belts will prove a commercial advantage. One case that came to my knowledge was a long belt that drove machinery in another building and around a corner. Some thirty horse-power was consumed in driving the other department. A separate motor was installed for a trial. A ten horse-power motor did the work and consumed only about six horse-power doing it. The trial became a permanent fixture.

How far to carry the idea is hard to determine. The first cost may be heavy, and yet such savings result that this cost is wiped out in a year. Convenience in a shop, rather than the cost of the motor or the power to run it, is most often the determining factor. Assuming that by introducing electric motors generally throughout a shop, the cost of all things considered were the same, it is quite possible to imagine such conditions that increased convenience would save 50% of the cost of the product. First cost and power might be disregarded under these conditions. Every case should be carefully considered by one familiar with all the conditions. If in doubt, a few motors should be tried, but nothing under five horse-power units should be used except in rare cases. The smaller units are expensive and not efficient, and machines should be grouped to get the five horse-power. Below two horse-power the electric motor is not efficient.

Competent and careful investigators have repeatedly found the losses of transmission due to driving or transmission devices to vary from 5 per cent. to 90 per cent. of the total power consumed. Here, then, in these days of small margins and close competition is the chance to save an annuity that will amount to a fair profit in most cases. The question of using copper or aluminum for transmisssion purposes is one worthy of consideration. In the case of a 9 mile transmission plant in my state, aluminum has been used. At the time of installation copper was selling at 17 cents per pound, and aluminum at 41 cents, yet the reduced weight of the latter made it the cheaper of the two. The average loss of transmission for the cotton mill and flax mill is 60 per cent., and for the woollen mill 40 per cent. In heavy iron working plants the loss is about 15 per cent. In any small mill or workshop the matter of friction is of the greatest importance, and, if I am not greatly mistaken, it is in the small mill that one generally finds the greatest neglect in such matters. In the large organizations such things are in the hands of some particular person, whereas in the small mill it is no one's business, and is neglected. Friction in mills is subject to great variations. Probably half the friction in the small mill is caused by lubricated surfaces. A change in temperature with improper lubricants, such as heavy animal oils, may increase or diminish friction to a considerable extent. Prof. Thurston estimates the friction of shafting in general, including the total belts and bearings, and varying with the size and load, at from 33 horse power to 1.5 horse-power per 100 feet. Prof. Benjamin, by careful investigation in many shops and with every precaution for practical and at the same time accurate results, found that in six machine shops, where heavy machine work was done, an average of 62.3 per cent. of the power produced was used in driving the shafting alone. In one case it was 80 per cent. This was explained by the fact that the shafting had to be built large enough for tools that are often idle, and necessarily the shafting must be kept running. In this item the tension of belts is a serious matter. A belt should be just tight enough to do its maximum work. Many belts, if not most of them, are much tighter than is necessary. No easy means is at hand to ascertain how tight a belt may be, and the belt mechanic sets it firm and tight to make sure that it shall not slip. Then when a wet day comes, a shop full of moderately tight belts makes a heavy drain on the coal pile. In this same investigation it was determined that the busiest of tools was only in operation 80 per cent. of the time, and the average tool about 33 per cent. of the time.

The argument has been made by those opposed constitutionally to nice work toward economy of any kind that the power amounts to little or nothing in the cost of a product. As a matter of fact the cost in percentage is small in machine shops, being from 1½% to 2%. This seems small indeed when stated this way; but looked at as an annuity it takes on another aspect. Supposing for example the product costs a million per year, one per cent. means ten thousand dollars.

Another class of losses occurs in the bearings of the machines themselves. It has been found by test with motors, for the driving power, that printing presses, and other heavy machine tools, consume twice the power running idle that they should. Investigation disclosed the fact that the loss was in the bearings, and that they were very tightly adjusted. There is no means of telling how tight a bearing is when it is one of many in a train; and had the machines in the cases mentioned been belt driven from a shaft, the friction would have continued until heating occurred or until the bearings wore loose. Again, to offset the argument that power saving is in any case only a small factor, we must consider that where there is friction there is wear, and that cost of repairs is increased by friction. This is a serious matter in the case of line shafting and counters. It means a mechanic at the works many Sundays in the year, to overhaul bearings and loose pulleys. The following general principles have been laid down by Prof. Benjamin to save friction losses in manufacturing establishments. There are none better and I quote:

1. Use pulleys of large diameter on counter shafts and narrow fast running belts.

2. Use the best oil for the purpose, and enough of it, catching the drip and purifying it for repeated use.

3. Have everything oiled regularly, and do not depend too much on even the best of oiling devices.

4. Inspect line shafts to see if in line and will turn easily.

Neglected shafting, both in respect to alignment and lubrication, is the cause of tremendous friction. Anything that will do away with both of these evils at once deserves earnest consideration. A good so-called "frictionless" bearing will do this, as lubrication is practically unnecessary, and heavy pressures produced by lack of alignment count but little. More of this later. Samuel Webber sub-divides the friction in a mill as follows: To run loose pulleys and their belts, 10 per cent.; to run main shafting, 20 per cent.—the engine itself takes but 6 per cent. He puts overtight belting and consequent bending of shafting with resulting heavy journal friction as the chief cause of transmission losses. I think the average manager does not look at it in this light. Even this source of friction may be avoided. If managers of factories would only take the pains to measure their idle load once in a while, they would find the information gained both instructive and surprising. Comparatively few do it.

Some noon hour, or some evening at six o'clock, turn off all work on all machin... and see wh... engine indicates; it is som... g any of y... gineers can do if furnished w... an indicator... am sure you will feel repaid Nine times o... you will overhaul a considerab... umber of thi...

Is it not true that in almost ... shop, if the... does not get heated, if it do... ot make a ... it does not stop the mill and no... dy kicks, th... is not much thought about it?

My experience in such matte... as been tha... shafts may be turned by hand ... d in other ... similar dimensions a bar stuck ... rough a p... be used for a lever in order to ... e at all. Sub... test in these cases showed co... sponding loss... one or two instances I have se... oose pulleys ... shafting and waiting for Sunda... pairs.

As a matter of general inte... I thought I ... look up the origin of belts. ... doing so I m... my mind that it was prehistoric... e first belt on ... seems to be in connection with ... e fire machi... original method of starting a f... friction. A... ment or other string was wound ... out a pointed ... and pulled as in spinning a to... Then follow... use of the belt in all the vari... ways known ... It is old, but it is good, and I d... bt very much ... shall ever drop it entirely, notw...standing ele... motors. The rope is newer as a commercial fa... It serves its purpose admirably ... is an efficient ... Careful experiment has shown that when well ar... in each case, the efficiency of be... and rope is p... cally the same. The rope has one practical adva... and that is, that the tension may be exactly ... trolled by tension pulley and weight. On the ... hand, the rope is not good for small powers. ... necessary splicing and complication of manipo... n count against it and practically bar the use o... size smaller than ¼ of an inch. A rope running ... too small a pulley goes to pieces very fast, an... rope drive has suffered on account of this mistak... installing.

The following figures give an idea of the pr... relative size of rope and pully:

For a 1¼ inch rope, diameter of pulley must b... least 3 feet.

For a 1½ inch rope, diameter of pulley must b... least 4 feet.

For a 1¾ inch rope, diameter of pulley must b... least 5 feet.

For a 2 inch rope diameter of pulley must be at ... 6 feet.

These pulleys and ropes will transmit respect... per 100 revolutions per minute, 5, 8, 11, 15 horse po...

An increase of 25 per cent. over these figures is ... sible when the bottom rope is the driver and ... proper conditions. The best speed is about 3,50... per minute. Cotton and manilla are equally good ... viding long fibre cotton is obtained, and, in any c... the character of the splice is all important.

The comparative efficiency of belt and rope, as ... termined at Lisle, France, by official investigat... is as follows: Power transmitted, 162 horse-pow... taking efficiency of rope at 100 (manilla) cotto... 100.87 and leather belt 100.37. To all practical purpo... this difference is nothing.

As I have already emphasized, belt tension is ... important. It is estimated that the pull of a belt is, ... rule, at least three times that necessary to tra... the power required. The velocity of belts should ... kept at the maximum possible point, and the most ... cient velocity is given at 4,000 to 5,000 feet per mi... Data on belts is to be found anywhere, and I will ... but little, as there are branches of my subject on w... there has been absolutely nothing written or publi...

Mr. Souther spoke at considerable length on ... subject of bearings and lubricants, advocating ... greater use of the ball bearing and mineral oils.

D. H. Campbell is building a sash and door fa... at Kamloops, B. C.

Fleming & Company, of St. John, N. B., have ... nished three boilers for the box factory of Cust... Company, at that place.

The new saw mill of Thackray & Rawlins, at P... broke, Ont., made its first cut early in January, a... few days ago was wrecked by a boiler explosion.

Knight & Smith, who operated a saw mill at ... Fourth Chute, near Eganville, Ont., have disso... partnership, and the business will be continued by ... Knight.

J. McKercher, of Elko, B. C., has completed a s... mill fourteen miles from that place, on the line of ... Crow's Nest Southern Railway. The mill has a ca... city of 40,000 feet per day, and will be operated ... and night on a contract for piling, bridge timber a... ties for the Crow's Nest Southern Railway.

A meeting of the directors of the Manitoba Forest... Association was held at Winnipeg on February 2... the president, Dr. Bryce, in the chair. A resolution w... passed calling the attention of the Dominion Forest... Department to the desirability of reserving for forest... purposes all the region lying south of the main line ... the Canadian Pacific Railway in the neighborhood ... Austin, Carberry, and Sewell, that is unsuitable f... homesteading purposes. It was decided to hold the ... annual meeting of the association in Winnipeg on ... Tuesday, March 11th.

OBITUARY.

WILLIAM HAMILTON.

has removed one of the prominent citizens of rough, Ont., in the person of Mr. William n, the founder and for so many years the head illiam Hamilton Manufacturing Company, of Ten years ago Mr. Hamilton was stricken alysis, and since that time he has been an

amilton was a Scotchman and was in his 79th a 1844 he came to Canada and worked as a t in Hamilton and Cobourg. Then he went ited States, and in 1850 established a foundry ville, Ind. Leaving there in 1856, he went to ough and established the works which e grown to the large establishment conducted illiam Hamilton Manufacturing Company. By nd business talent the business was made to develop. At the present time it is one of the ressive establishments in the manufacture of nd mill machinery, water wheels, etc., the of the works being in use in mills and factories Atlantic to the Pacific coast.

e Mr. Hamilton, although often consulted, ght any public position, but always took an erest in the affairs of his town and country. man of integrity, energy and preseverance, his close attention to the interests of the of which he was the head. He was most pected by his employees, as well as by all r him. Mrs. Hamilton, five daughters and one ve, the latter being Mr. William Hamilton, and general manager of the company.

JOHN HARRISON.

n Harrison, senior member of the firm of rison & Sons Company, Limited, of Owen nt., died on February 7th, at the age of 78 Mr. Harrison was a pioneer lumberman and a resident of Owen Sound for fifty years. mercial importance of that town is due in sure to the business which he founded many and which has developed into a vast indus- prise.

rrison was born in Saffordshire, England, Canada when quite young. In 1848 he, rothers, moved to Owen Sound from Guelph ed the Harrison Bros.' grist, flour, woollen ills. Despite his large business interests, he h of his time to the town and served the corporation for some years as a councillor and school trustee. He had been president of the Board of Trade and a member of the Hospital Board. In demeanor Mr. Harrison was modest and retiring, and although on several occasions he had been nominated for Mayor, he always refused to stand for election.

WILLIAM RUSSEL.

On February 13th there passed away one of the oldest residents of Pembroke, Ont., in the person of Mr. William Russel, Crown Timber Agent at that place. Mr. Russel was a native of Scotland, having been born in Fifeshire in 1824. He came to Canada in 1840, arriving at Quebec after a stormy passage of 66 days. At Quebec he engaged with a lumberman to work on the Madawaska river, and from there he drifted to Ottawa, working for different lumber firms and also lumbering on his own account. Subsequently he engaged in the mercantile business in Pembroke, the firm name being Kennedy & Russel. In 1868 he was engaged by the Ontario Government to inaugurate a system of forest ranging in the Pembroke district. He was the first crown timber agent for the Ontario Government.

ANNUAL MEETING CANADIAN FORESTRY ASSOCIATION.

Arrangements have been completed for the third annual meeting of the Canadian Forestry Association, which will be held in the Railway Committee Room of the House of Commons, Ottawa, on March 6th and 7th. Several interesting papers have been promised, including the following:

"Eastern Forest Trees Grown at Victoria, B. C., from Seed Imported from the East," by His Honor Sir Henri Joly De Lotbiniere, Lieutenant Governor of British Columbia; "Forestry in Ontario, by Thos. Southworth, Director of Forestry for Ontario, Toronto; "The Management of Wood Lots," by W. N. Hutt, Southend, Ont.; "The Forest Fires of 1901," prepared by instructions of the Board of Directors, "The Second Discovery of the West," by Professor John Macoun, Assistant Director of the Geological Survey; "Tree Planting on the Experimental Farms," by Dr. Wm. Saunders, Director of Experimental Farms; "Work of the Forestry Branch in Tree Planting on the Prairies," Norman M. Ross, Assistant Superintendent of Forestry for the Dominion; "Forestry in the Schools," by Wm. Pearce, Inspector of Surveys, Calgary, Alberta; "Forestry in Prince Edward Island," by Rev. A. E. Burke, Alberton, P. E. I.; "The Pulp Industry in Canada," by D. Lorne McGibbon, Manager Laurentide Pulp Co'y, Grand Mere, P. Q.; "The Management of Pulpwood Forests," by Austin Cary, Forester to the Berlin Mills Co'y, Brunswick, Maine, U. S. A.; "Defects of the Pulpwood Regulations of the Province of Quebec," by E. G. Joly De Lotbiniere, Quebec.

In the evening of March 6th a lecture, illustrated by stereoptican views, on "Evolution of a Forest Growth," will be given by Dr. B. E. Fernow, principal of the New York State College of Forestry, Ithaca, N. Y., in the lecture hall of the Normal school.

TRADE NOTES.

Mr. P. H. Wilby, 27½ Front street east, Toronto is sole Canadian agent for Fleming, Birkby & Goodall, manufacturers of English oak-tanned leather belting, Halifax, England. This belting is especially adapted for saw mill purposes on account of its superior weight, every lap being sewn with a glazed lace, thus protecting the laps from moisture. Mr. Wilby also handles the Capata brand of belting, made of specially hard-woven, long staple cotton canvas, bound together by an indissoluble mixture of vegetable gums which entirely permeates the fibres of the canvas while in a state of very high tension, the result being an extra suple, textile, water-proof belt, which it is claimed never hardens or becomes rigid when off work.

When the fire occurred at the Royal Electric Station in Montreal and destroyed the wide double leather belts, it was thought that there would be much delay in obtaining new ones, but such was not the case for the reason that the enterprising firm of Sadler & Haworth had men upon the ground before the fire was out, removing the damaged belts to their factory to repair as best they could, so as they could be used the same night. It was discovered, however, that the large 54-inch, 3-ply belts, which were made by the same firm about 12 years ago, could only be repaired temporarily, and under the circumstances an order was given to Sadler & Haworth for new wide belts, including a number of smaller sizes, upon condition that they would be all ready within three days To the surprise, relief and pleasure, however, of the manager of the Royal Electric Co., all the belts, including the large ones, were in position and ready to run, in 48 hours after order had been given, which goes to show that the firm of Sadler & Haworth have unusual facilities for handling large contracts in a short space of time. Had this not been the case, the city of Montreal would have been obliged to have resorted to some other method of obtaining light than from electric power.

WOOD PULP DEPARTMENT

PULP WOOD—TREATMENT OF THE RAW MATERIAL IN THE LOG AND ITS MEASUREMENT.

BY A CANADIAN PULPMAKER.

CHAPTER VI.—THE QUESTION OF YIELD, &c.

In view of the enormous demand for spruce and other woods for the manufacture of pulp, it is self-evident that the subject of supply, and its connection with the equally important question of yield, demands close attention from all those engaged in the operations of lumbering for pulp woods. The preservation of the natural resources of the forests is a subject of vital moment to the Government, which is directly interested in, and responsible for seeing that all necessary precautions are taken to prevent the extinction of such an asset and source of revenue.

Some very valuable information on this subject, written from an eminently practical standpoint, was obtained in the year 1897 by several interested experts operating in that well-known district in the States, "The Adirondacks." The results of the many observations recorded are given by Mr. Gifford Pinchot in an excellent book entitled "The Adirondack Spruce."

From this book we take the liberty of quoting one or two points which have a direct bearing on the subject of the yield of pulp wood.

Careful measurements of the stems of over 2,000 trees cut for pulp were made, and some 300 trees were cut into logs in order to furnish data for the compilation of tables showing the contents of standing trees. For this purpose tables were eventually calculated giving the number of standards, feet board measure, merchantable cubic feet, and cords. It is only with the two latter that we need concern ourselves.

The term merchantable cubic feet means that amount of wood in the tree actually used for the manufacture of pulp. The following table is given showing the contents of spruce trees for certain sizes.

VOLUME TABLE FOR SPRUCE (G. PINCHOT).

Diam. Breast High.	HEIGHT OF THE TREE FEET.								
	25	30	35	40	45	50	55	60	65
Inches.	MERCHANTABLE CUBIC FEET OF WOOD.								
5	1.1	1.2	1.3	1.4	1.5	1.6	1.7	..	..
6	1.6	1.8	2.1	2.4	2.8	3.2	3.6	4.0	..
7	2.1	2.5	3.0	3.6	4.2	4.8	5.4	6.0	6.6
8	...	3.1	3.9	4.8	5.6	6.5	7.3	8.0	8.8
9	...	3.8	4.9	5.9	6.9	8.0	9.0	9.9	11.0
10	..	...	6.0	7.2	8.4	9.6	10.9	12.2	13.5
11	...	...	7.1	8.6	10.1	11.6	13.1	14.6	16.1
12	...	...	...	10.0	11.7	13.5	15.2	17.0	18.8
13	...	...	...	....	13.4	15.4	17.3	19.4	21.5
14	...	...	...	....	15.1	17.3	19.5	21.8	24.2

The relation between the ordinary standard cord of piled wood measuring 128 cubic feet is determined by the use of a factor representing the difference between solid wood as given in the above table and the stacked wood as it would obtain in actual practice when brought into the mill for consumption.

Pinchot refers to the custom in Germany of taking this factor as 0.65, but he is inclined to think that this gives results somewhat too high. The factor selected is 0.7 as being more accurate.

Hence the conversion of the above into cords is effected by dividing the values for the respective trees by 128 and the result by 0.7.

Thus a tree 10 inches in diameter and 35 feet high would contain 0.067 cords of pulp wood.

By means of a table of this kind the extent of the operations necessary for the cutting of logs to ensure a stated quantity of pulp wood can easily be gauged.

For example, to produce a cord of wood of merchantable quality will require ten trees of the following dimensions: 55 feet high, and 9 inches diameter at the stump. Fifty trees 6 inches . ameter at the stump and 30 feet high would have to b[e] cut to give one cord of merchantable pulp wood.

VOLUME TABLE FOR [S]PRUCE (PINCHOT).

Diam. Breast High.	HEIGHT O[F TREE] IN FEET.							
	25	30	35	40	[45]	50	55	[60] [65]
Inches.	MERCHANTABLE [CUBIC FEET] OF PULP WOOD.							
5	.012	.013	.014	.015	[.16]	.017	.019	.. ..
6	.019	.020	.023	.026	[.30]	.035	.040	.044 ..
7	.023	.028	.033	.040	[.47]	.054	.060	.066 ..
8	..	.35	.043	.054	[.62]	.072	.081	.088 ..
9	....	.042	.055	.068	[.78]	.089	.100	.110 ..
10	....	....	.067	.080	[.94]	.107	.122	.136 ..
11	....	..	.079	.096	[1.12]	.126	.145	.163 ..
12	....	....	....	.111	[1.31]	.150	.168	.189 ..
13	.. .	....	....	....	[1.49]	.171	.193	.215 ..
14	....	....	....	..	[1.68]	.193	.217	.241 ..

In all operations of this n[ature] a considerable [pro]portion of the total length of the tree has to be [waste]d and discarded as useless, viz., that part of the [tree] near the top, because this tapers very rapidly, is full of knots, and therefore cannot be handled profitably. In some cases where the cost of the wood is high, a [smaller] larger portion of the tree is utilized for pulp wood, and the tree cut to a smaller diameter than is customary. When pulp wood is plentiful the logs cut will not measure less than four or five inches at the small end, but with a scarcity of material logs of four and three inches would be accepted.

In the latter instance a greater proportion of the tree is taken for pulp wood.

The amount of pulp which can be obtained from a cord of wood is a question of some importance and one that may be referred to at this point. The yield differs considerably in various mills according to the quality of the pulp and the manner in which the raw material is treated.

When spruce is simply ground into mechanical wood pulp the yield varies from 1,600 lbs. to 1,900 lbs. for each cord of wood consumed. A usual average obtained under ordinary conditions is 1,800 lbs. The [type] of grinder employed in the manufacture has a good deal to do with the yield, as some machines are so constructed as to produce a quantity of slivers or pieces of untreated fibre, which cannot afterwards be dealt with.

When spruce is treated by the sulphite process and converted into sulphite pulp, the yield is from 1,000 lbs. to 1,300 lbs. of dry pulp from a cord of wood. Here again, there is plenty of scope for the skilful [manu]

...rer to exercise his ... rgy in the direction of keeping ...p a good precentag... yield.

...Poplar, which is ... sed almost exclusively for the ...da process, will g... about 1,000 lbs. of pulp for ...very cord of wood. ...Pine, sparingly used in limited ...antities for special ...rposes, will also yield 1,000 lbs. ...f pulp from a ... when submitted to the soda ...ocess.

...The theoretical yi... of pulp varies from 48 per cent. ...55 per cent. for th... everal kinds of the pulp wood ...mmonly employed ... the manufacture of pulp. The ...ble of precentages ... already been given.

...oncluded.)

PULP NOTES.

It is reported that the Dominion Iron & Steel Company, of Sydney, N.S., are going into the manufacture of sulphuric acid on a large scale.

It is said that American capitalists will erect a pulp mill at Lake Weedon, Wolfe county, Quebec, the municipality of Weedon having granted a bonus of $20,000 and exemption from taxation for twenty-five years.

A special meeting of the shareholders of the Sissiboo Pulp & Paper Company will be held in Montreal this week to consider a proposal to increase the capital stock of the company to $650,000.

Edgar G. Murphy, representing a New York syndicate, has purchased the timber limits and mill property of Henry V. and Frederick Dewar at St. George, N.B., and will in all probability build a large pulp mill.

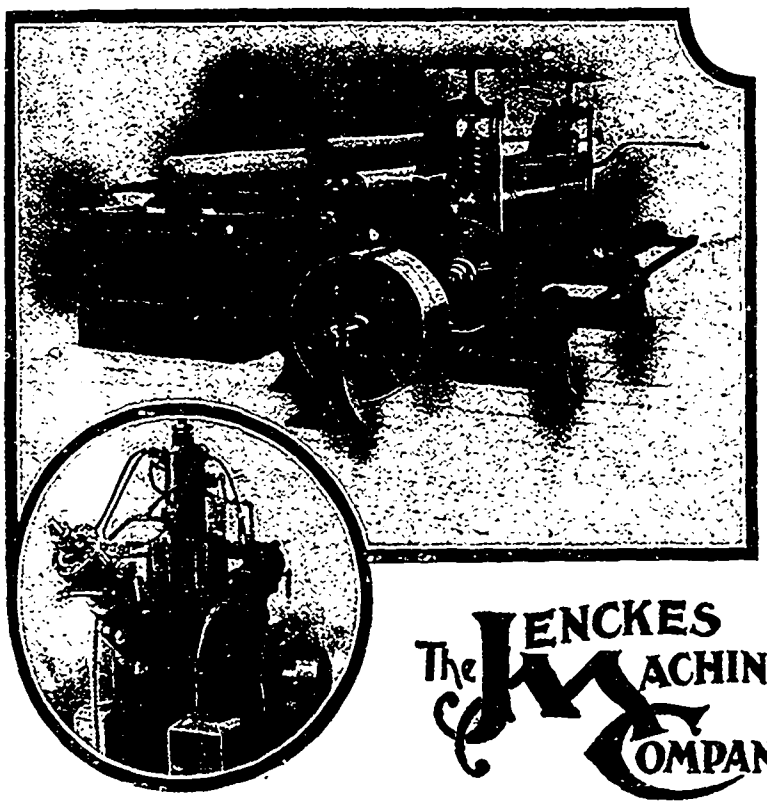
Messrs. C. S. Cameron and John Sutherland, financial agents, of Ottawa, were in Toronto recently in connection with the formation of a company to build a large pulp and paper mill in the eastern townships of the province of Quebec.

The Sissiboo Pulp and Paper Company, of Weymouth, N. S., which defaulted on its bond interest payment in October, 1901, is understood to have met the deferred interest, and is said to be rapidly getting into good shape again.

The Blanche River Pulp & Paper Company is reported to have purchased the power on the Quebec side of the Ottawa river four miles northwest of Mattawa, for $25,000, and is now ready to go on with the work of building the mill.

Last spring Mr. J. W. Munro, M.P.P., of Pembroke, took the contract of erecting the works of the Spanish River Pulp & Paper Company at Webbwood, Ont. The engineer of the works was not satisfied with the progress that was made, and in August last Mr. Munro relinquished the contract, which was turned over to Carpenter & Williams, a Connecticut firm. The new contractors did not execute the work very rapidly, however, and the contract has reverted to Mr. Munro, who, we understand, has been given a substantial bonus to complete the work. Mr. Munro is now calling for tenders for the construction of a concrete dam, for the foundation of the building, and for laying about 1,000,000 bricks.

The St. Mary's River Lumber Company's deal in Nova Scotia is now practically completed. It is understood that the American syndicate, of which A. Myers, of New York, is at the head, has secured 260,000 acres of timber land on Jordan, St. Mary's, Gaspereau and Clyde rivers, and 100,000 acres of Crown land on Clyde River, for which application has been made to the Government. The proposed site of the pulp and paper mills is on the Gaspereau river.



THE NEWS

A sash and door factory is being built at River John, N. S., by John Mitchell.

—W. E. Turner has bought the lumber and machinery business of S. G. O'Brien at Ponoka, N. W. T.

—The Montreal Lumber Company is seeking to increase its capital stock to $100,000.

—The Spencer Island Company, lumber, etc., Spencer Island, N. S., has been dissolved.

The Rat Portage Lumber Company propose building a large addition to their Rainy River mills.

—The dissolution is announced of Halstead & Quick, saw millers, Harrow, Ont., T. R. Quick continuing.

—James Ritcher, of La Riviere, Man., has left for the Rainy River country, where he has purchased a saw mill.

It is said that the Saginaw Lumber & Salt Company will erect a large salt factory near their saw mill at Sandwich, Ont.

—Anderson's saw mill at Sundridge, Ont., lately purchased by O'Neil & Shivley, is being remodelled and a new boiler installed.

—The Lake Superior Lumber Company, Limited, Windsor, Ont., has been granted a provincial charter, with a capital of $50,000.

—The Canada Wood Specialty Company, Orillia, are installing a 125 horse-power engine and 150 horse-power capacity in boilers.

—It is said that negotiations are on foot for the purchase by an American syndicate of large timber limits in the vicinity of Campbellton, N. B.

—The Chaleurs Bay Mills Company has been incorporated in the province of Quebec, with a capital of $150,000, to manufacture and trade in lumber.

—L. F. Hill has sold a lumber property at Sackville, N. B., to W. M. Mackay, and has transferred leases of the Fenerty property there to the same party.

At the annaul meeting of the Burrill Lumber Company, Shawinigan Falls, Que., William Mitchell was elected president, Jos. Patrick vice-president, and Vivian Burrill manager and secretary.

—A new veneer factory has been built by the Canada Wood Specialty Company at Orillia, Ont. It is the intention to introduce a novelty in the shape of a veneer nail keg, also to manufacture large veneer baskets.

—During the coming season George Gordon & Company, of Cache Bay, Ont., intend to operate another circular saw, for manufacturing long dimension timber. They expect that their total cut will be about 15,000,000 feet.

—The Orillia Export Lumber Company, Orillia, Ont., have decided to establish a box factory, for which purpose the old shingle mill of the Longford Lumber Company will be used and an addition built thereto. Steam power will be used.

—Thomas Southworth, of the Ontario Bureau of Forestry, recently received a letter from an American firm asking for the names of persons who can supply soft wood charcoal. The article is wanted for the manufacture of explosives.

The Broadbent Turning Company, Limited, has just been formed in Toronto, for the purpose of carrying on a timber and wood manufacturing business at Broadbent, Ont. R. H. Stewart, of Toronto, is president of the company, and J. H. Patterson manager.

—The Rideau Lumber Company, of Ottawa, manufactured last year 5,250,000 feet of lumber, 120,000 cedar ties, and 6,500,000 cedar shingles. The stock was cut by A. Hagar & Company, Plantagenet, who have sawn for the Rideau Lumber Company exclusively since the year 1898.

—The saw mill plant of William Peter at Bay City, Mich., has been purchased by the Algona Commercial Company and is being removed to Sault Ste. Marie, Ont. The new plant is to have a capacity of 130,000 feet a day and will be equipped with band saws. Peter & Company's plant at Bay City has also gone out of commission, and it is thought that the machinery will be moved to Ontario.

—It is the intention of the Hastings Shingle Manufacturing Company to erect at Coal Harbor, near Vancouver, B. C., what will probably be the largest shingle mill in Canada. It will have a capacity of over 1,000,000 shingles in 24 hours, and will cost, including site, about $100,000. This, with a small mill they recently purchased in Washington, will more than double their capacity.

NEW BRUNSWICK FOUNDRY AND MACHINE SHOPS

FREDERICTON. N. B.

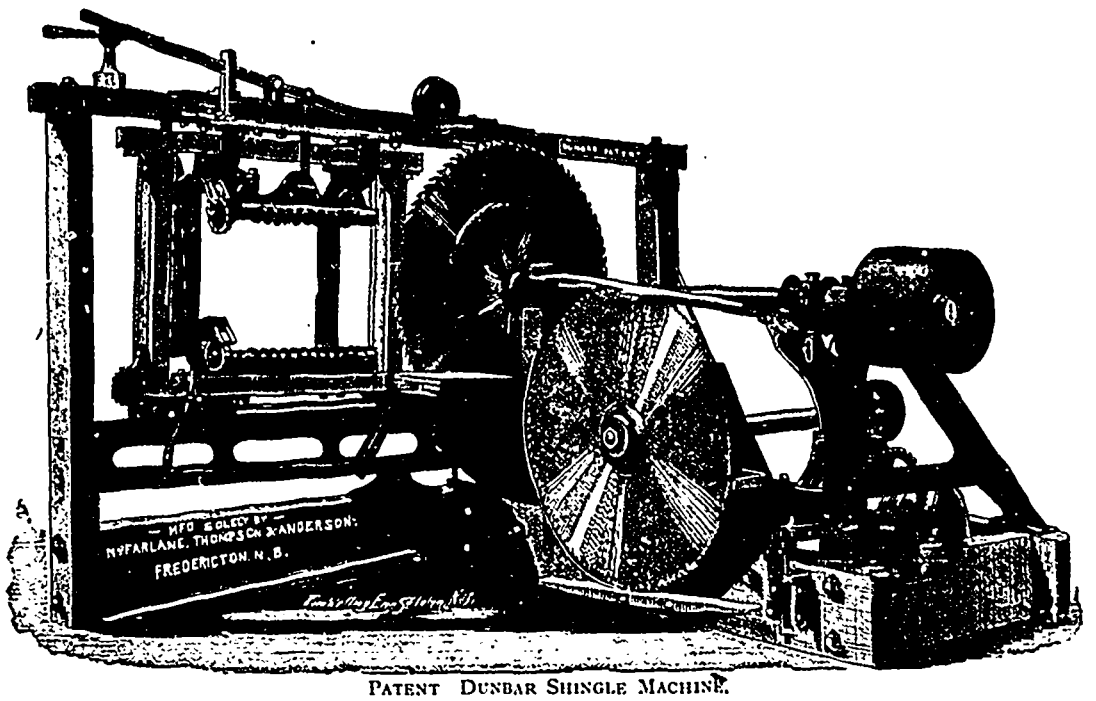
McFarlane, Thompson & Anderson

Manufacturers of the only original

PATENTED DUNBAR SHINGLE MACHINE

And Sole Proprietors of the said patent

Universally admitted as being the best machine on the market from the Atlantic to the Pacific.



PATENT DUNBAR SHINGLE MACHINE.

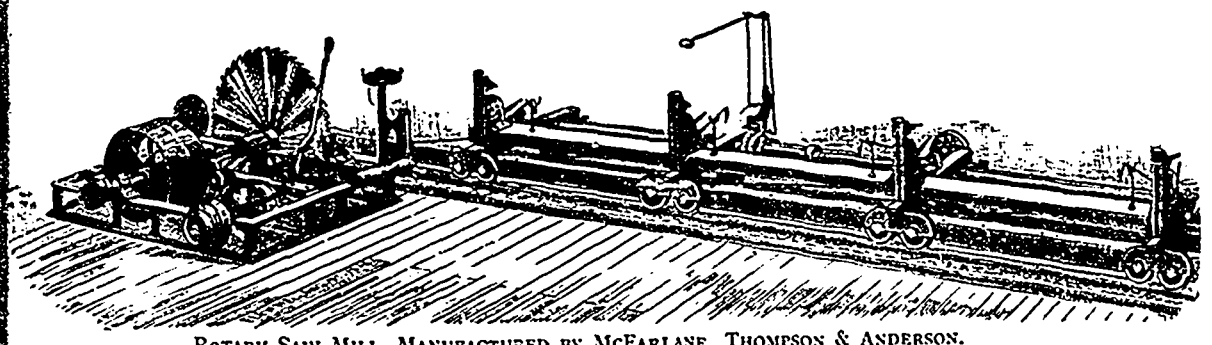
The following well known firms are a few of the many who are using the celebrated Dunbar Shingle Machine:—Metis Lumber Co., Quebec, 15 machines: John A. Morrison, Fredericton, N. B., 16 machines; Gibson R'y. & Manufacturing Co., Marysville, N.B., 10 machines; Hastings Shingle & Manufacturing Co., Vancouver, B.C., 16 machines.

The McFarlane, Thompson & Anderson Dunbar Shingle Machine is a record breaker in the west—(New Whatcom Blade, Washington State). The following may be of interest to mill operatives and others; it is we believe the best six day record ever made on this class of machine—a Dunbar upright; the bolts were taken as they came from the woods, without selection, and were a good average quality. This remarkable run was accomplished last week at the George A. Cooper mill, Chuckanut siding: Total cut for six days, 2 shifts of 10 hours each per day, 394,000 eighteen inch shingles. In the day shift, Harry A. Edison, sawyer, cut 218,000, an average cut of 36½ thousand, and the night shift, Levi Loop, sawyer, cut 176,000, an average of 29⅓ thousand of eighteen inch shingles per day.

"When all the rest fail, or are down for repairs, or are cutting shims, the

McFarlane, Thompson and Anderson's DUNBAR SHINGLE MACHINE

is still cutting the standard shingle of the world." From the Atlantic to the Pacific they all say it



ROTARY SAW MILL, MANUFACTURED BY MCFARLANE, THOMPSON & ANDERSON.

Latest Bulletin from the seat of war, October 17th, 1901—From the Metis Lumber Co., Price, Que., in reference to the 15 Shingle Machines sold them this season:

"Replying to your enquiry as to the running of the Shingle machines you sold us, would say that they have given entire satisfaction, and have run very successfully so far. We have sawn 30 million shingles in 70 days to date, and count on sawing 10 million more this season."

THE METIS LUMBER COMPANY.

We manufacture a complete line of IMPROVED ROTARY SAW MILLS, BUCKEYE AUTOMATIC CUT-OFF ENGINES and all kinds of MILL MACHINERY.

Our prices are right.

Kindly allow us to quote before purchasing.

For further particulars address

McFarlane, Thompson & Anderson

Fredericton, N. B.

THE LUMBER UNDERWRITERS.

In another part of the paper will be found an advertisement of the Lumber Underwriters, an insurance organization formed by a group of officers and prominent members of the National Wholesale Lumber Dealers Association. Many Canadian lumbermen who have lumber interests in the United States are familiar with the fact that for a number of years there has been considerable agitation of the insurance question, in the annual meetings of the National Wholesale Lumber Dealer's Association. There has long been a feeling among the lumber dealers of the country that the prevailing rates fixed by the old line, or tariff companies, on lumber risks are too high. As a result of this feeling, several prominent lumber dealers were led to form an organization for the purpose of carrying fire insurance on lumber and wood working risks only, with the intention of bringing an influence in the reduction of insurance rates.

The gentlemen who have taken up this work are Charles M. Betts and Robert C. Lippincott, of Philadelphia, Alfred Haines, and George B. Montgomery, of Buffalo, Guy Gray, of the Mills-Gray Carleton Company of Cleveland, Ohio, C. H. Prescott, of the Saginaw Bay Co., Cleveland, Ohio, and four New York men, Frederick W. Cole, F. W. Mattocks, J. J. McKelvey, General Counsel of the National Wholesale Lumber Dealer's Association, and E. F Perry, Secretary of the National Wholesale Lumber Dealer's Association. In order to carry out their plan, these men became underwriters in the Mutual Lloyd's, and on March 15th of last year commenced business, confining the lines of the company absolutely to risks of the class named. The name of the company was changed to "Lumber Underwriters," this being more distinctive.

This additional insurance facility proved of great advantage to a large number of lumber dealers of the United States, and the business has grown to large proportions, considering the carefulness and caution with which risks have been accepted. At the end of eleven months more than $1,.00,000 has been written, consisting for the most pa... scattered risks.

The methods of the co... different from those of th... except that they are in... local agents, all business ... the policy holders and the ... tion of local agents effects ... pany, so that, for this reas... to do a profitable busines... stock companies.

Owing to the recent ad... Canada, on the part of ... particularly opportune time... advantage of the decreases... ber Underwriters. The... business by mail with an o... that considering an appre... there seems no reason why ... should not avail themselv... At the same time they will ... ment to a movement which ... in ultimately reducing tariff ... well as in the States. Full ... by addressing the Lumber ... New York.

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in insurance rates ... k companies, this is ... anadian dealers to tak... ues offered by the Lu... onvenience of doing ... company is so sligh... ble saving in premiums ... arge number of dealers ... this company's offic... ding their encourage... uld have great influence ... ates in this country, ... formation can be secure... writers, 66 Broadway,

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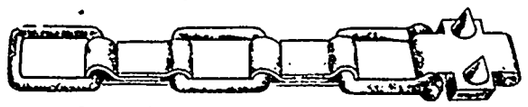
Endless Chains for Log Jacks and Bullwheel

Waterous, Brantford, Canada

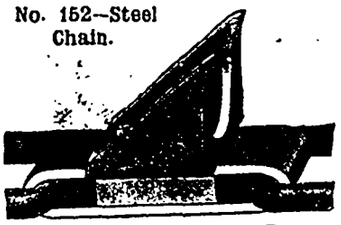
No. 357—Steel Strap and Bar Link Chain with Standard Pin, Solid Bearing full size of strap

With Log Special 2 prong or 4 prong, same as on No. 152 Chain, also special for Refuse Carrying Bar.

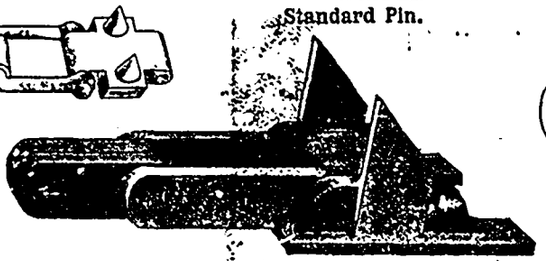
No. 105—Special Heavy Chain, 6" Pitch. Made in 3 sizes. Showing Coupler and Forged Log Spur.



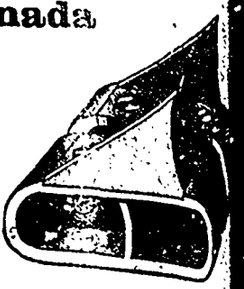
No. 152—Steel Chain.

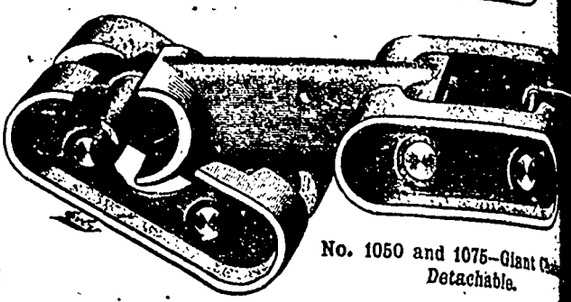


Standard Pin.



No. 175B—with Cast Steel Spurs



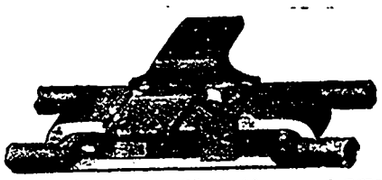


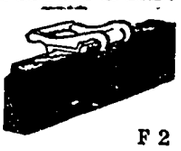
No. 1050 and 1075—Giant Chain Detachable.

Not recommended for salt water—but there is no better chain for fresh wa

Refuse and Sawdust Carrier Chains

Waterous, Brantford, Canada

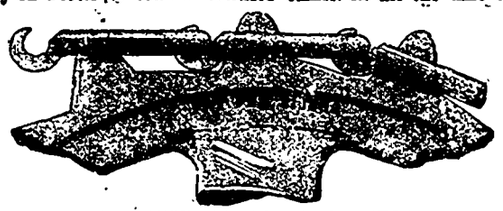




F 2
Scraper Attachment.

We carry in Stock 10 tons of RWART CHAIN in all the diffe ent sizes.

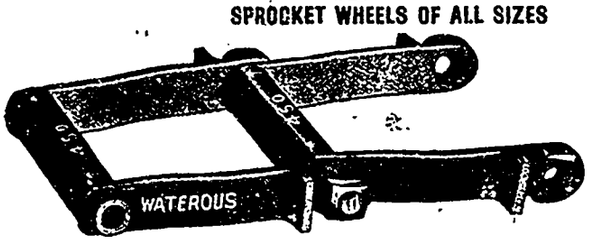
No. 500—Special detachable for Chain—strain 2,000 lbs.
(Made only in one size)



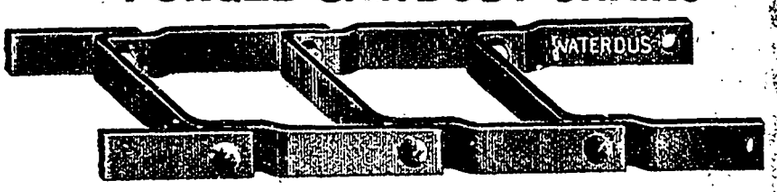
SPROCKET WHEELS OF ALL SIZES

No 550.—Special detachable Link, for Saw-dust Tan Bark, Barked Pulp Wood, Etc. A very popular Carrier.

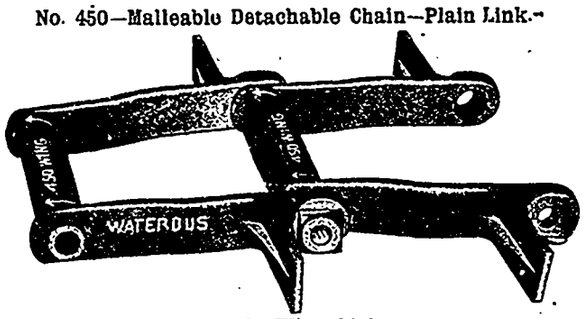
FORGED SAWDUST CHAINS



No. 450—Malleable Detachable Chain—Plain Link.

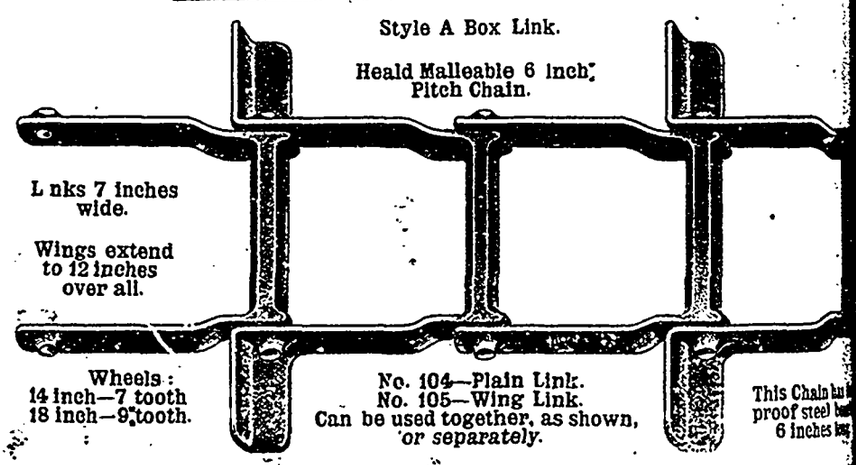


Style A Box Link.



No. 450—Wing Link.

Heald Malleable 6 inch Pitch Chain.



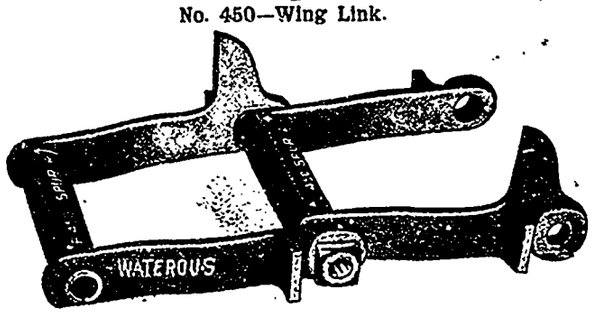
Links 7 inches wide.

Wings extend to 12 inches over all.

Wheels:
14 inch—7 tooth
18 inch—9 tooth.

No. 104—Plain Link.
No. 105—Wing Link.
Can be used together, as shown, or separately.

This Chain has proof steel bushings 6 inches long

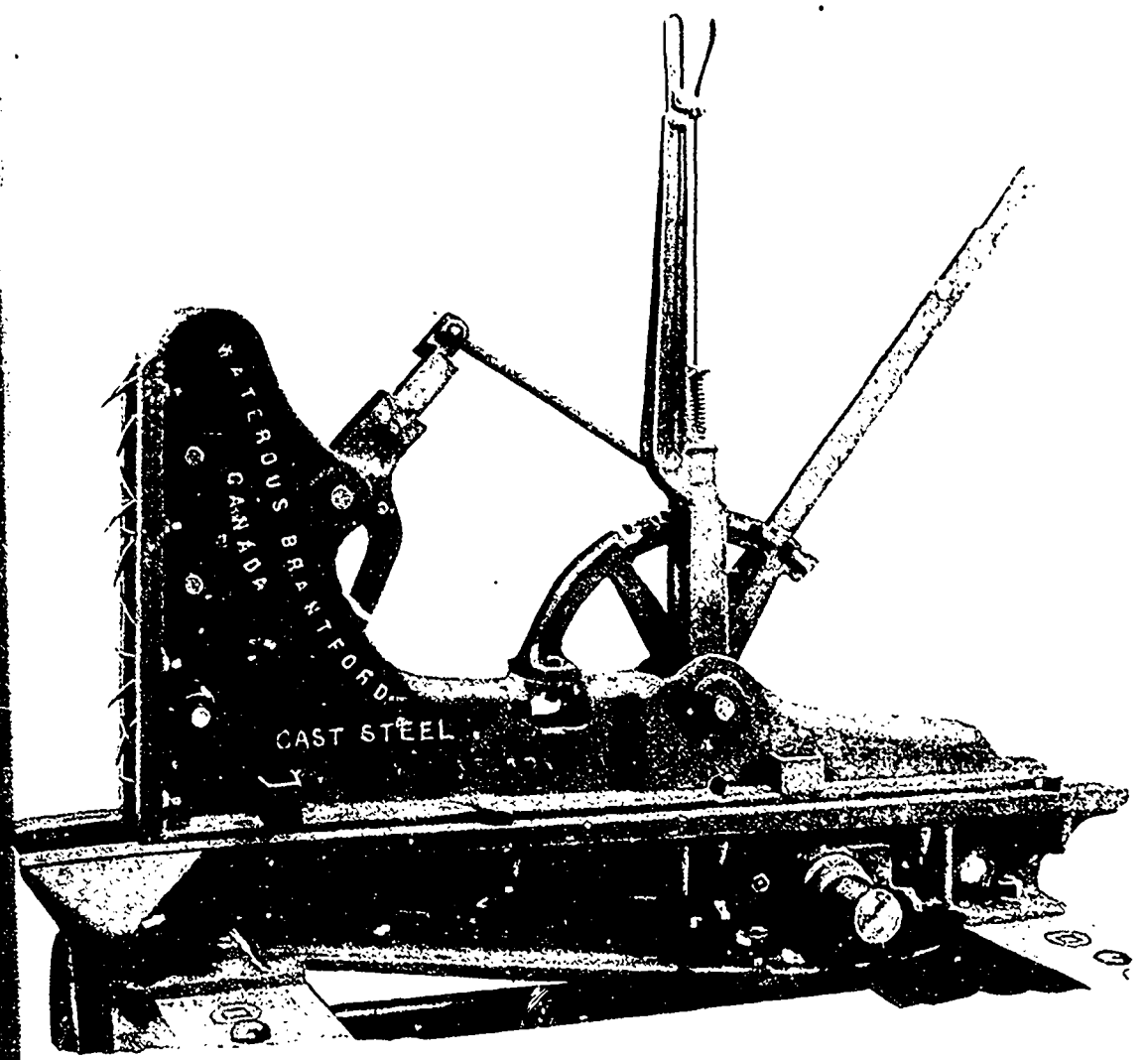


No. 450—Spur Link. (Right and Left.)

Large Facilities. Prompt Delivery. Send for Circulars and Prices

WATEROUS, BRANTFORD, CANADA

3 Saw Mill Specialties for 1902



This new Cast Steel

SAW MILL CARRIAGE

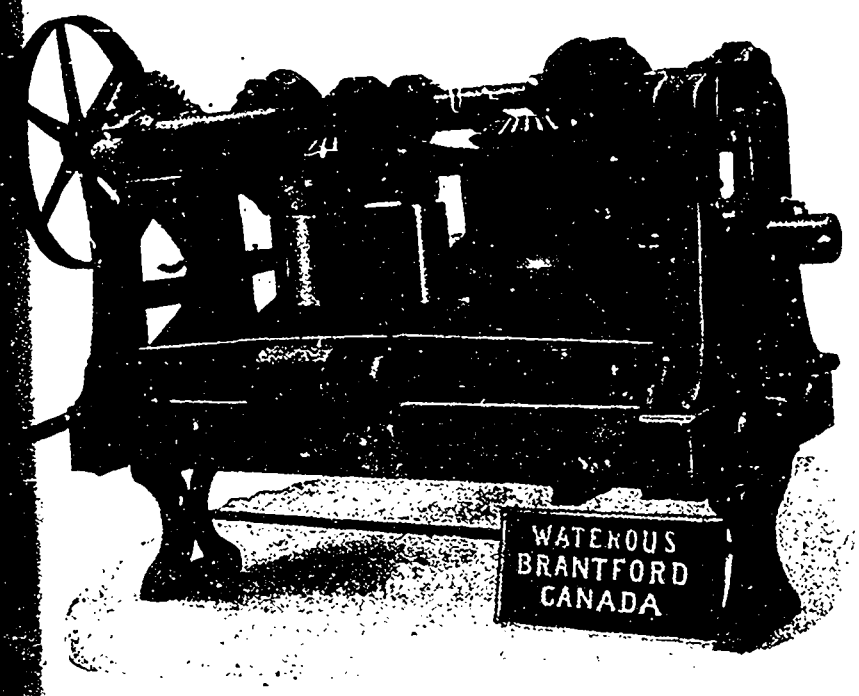
Combines Lightness and Strength

The cut illustrates No. 2 size 40 in. opening with dog lever brought to setter's hand.

Lever connection to steel segment is made at back end of segment with two steel straps and adjustable nut, making adjustment of knee quick and accurate.

Log seat is faced with 3″ x 1″ steel on each side which gibs knee down.

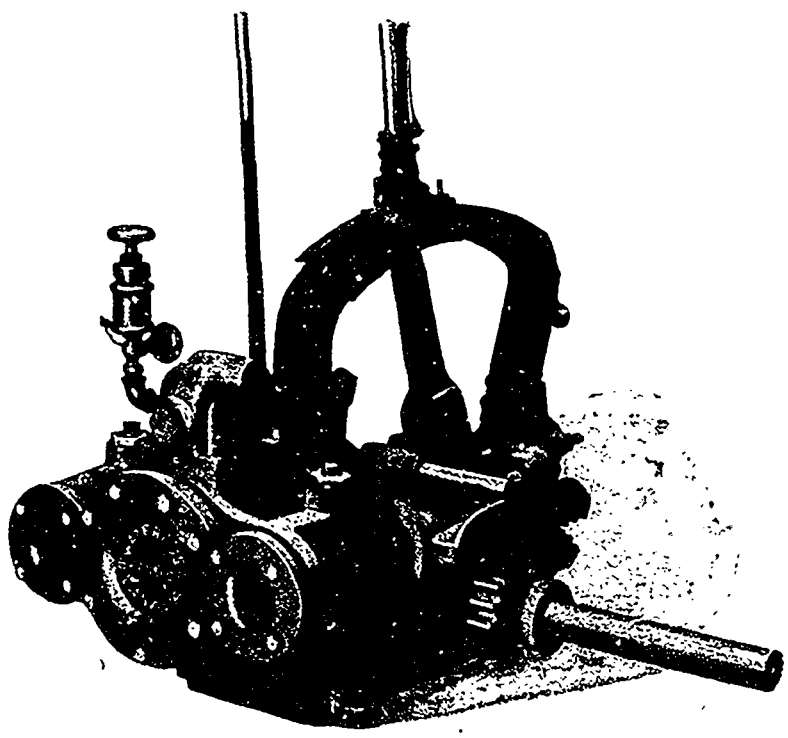
No better carriage built in America.



Canadian Agents for Corry & Baker's

Patent Steam Set

Simple, easy of attachment to any carriage; operates your set works by steam in place of muscle; never gets tired; as fresh after 50,000 as before. This machine makes setting, which is one of the hardest places in the mill, most easy, increasing cut of mill 5 to 8,000 feet per day; combined with our new 18 inch 4 inch face steel wheel set works, makes a rig unsurpassed.



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PROGRESSIVE LUMBER DRY KILN

Our Heaters and Fans are Economical with Steam and Power, are Safe as a Fire Risk. Plans and specifications furnished with each apparatus. . . . . .

Write for Prices and Particulars to

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What Others Say About It.

"The Holland (Mich.) Furniture Company Writes as follows:

"We take pleasure in stating that the two dry kilns we purchased from you last year have been operated by us in drying oak, elm, ash and basswood lumbers, with results entirely satisfactory to us. We are very much pleased with the operation of your Moist Air Kilns and consider them the best on the market."

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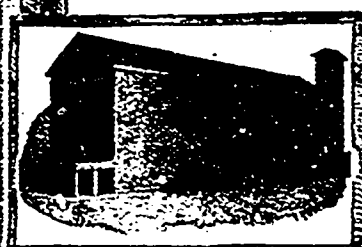

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READ THE RECORD

In so important a matter as the purchase of a drying plant, it is worth while to "*read up*" *on the subject* and learn thereby that

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has made the one record worth the reading. It has been before the public nearly fifteen years. It leads, as it always has, in improvements. It is used by more representative *concerns than all others.*

It has met with a greater degree of success than all others, consequently it has many imitators. It is not an experiment—It does not infringe on anyone's patents.

Send for Catalogue, testimonials and estimates.

OUR MOTTO. Not how cheap, but how good.

THE STANDARD DRY KILN CO.
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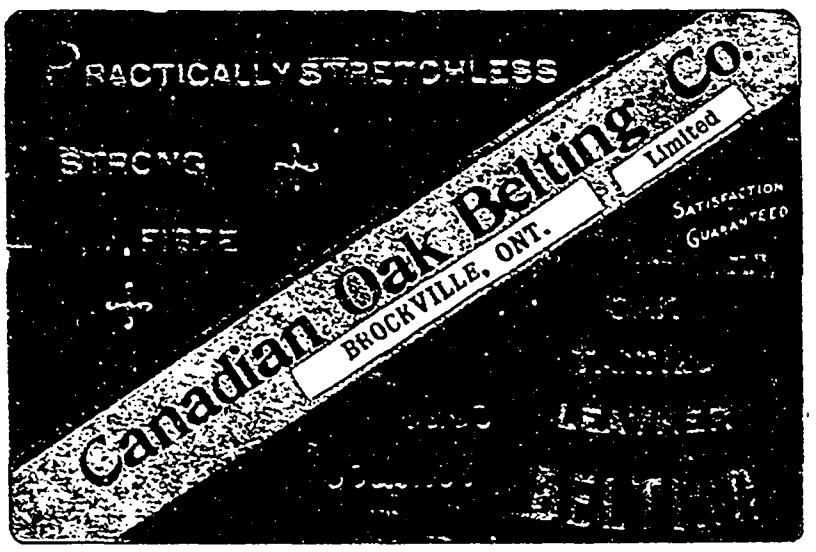

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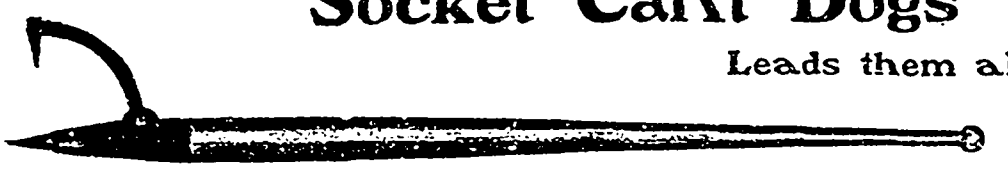
Leads them all



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