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Wood-Workers', Manufacturers' and Millers' Gazette

TORONTO, CANADA, JULY, 1901

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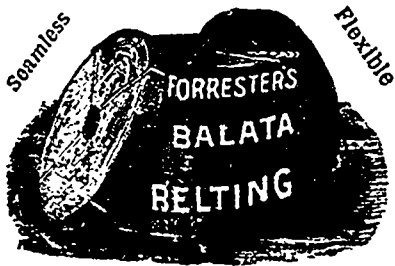
P. M. FEENY, Manager.

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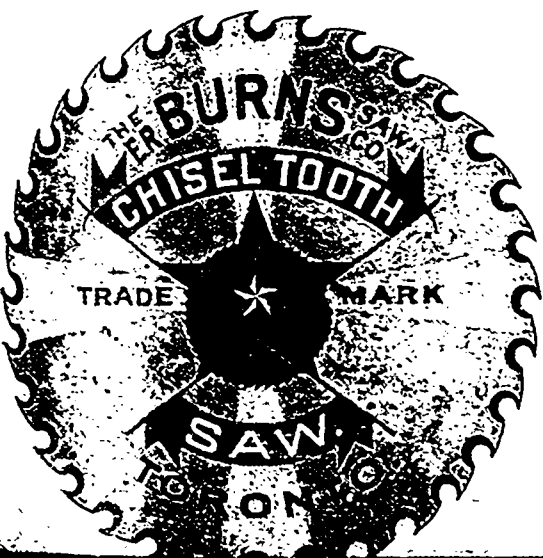
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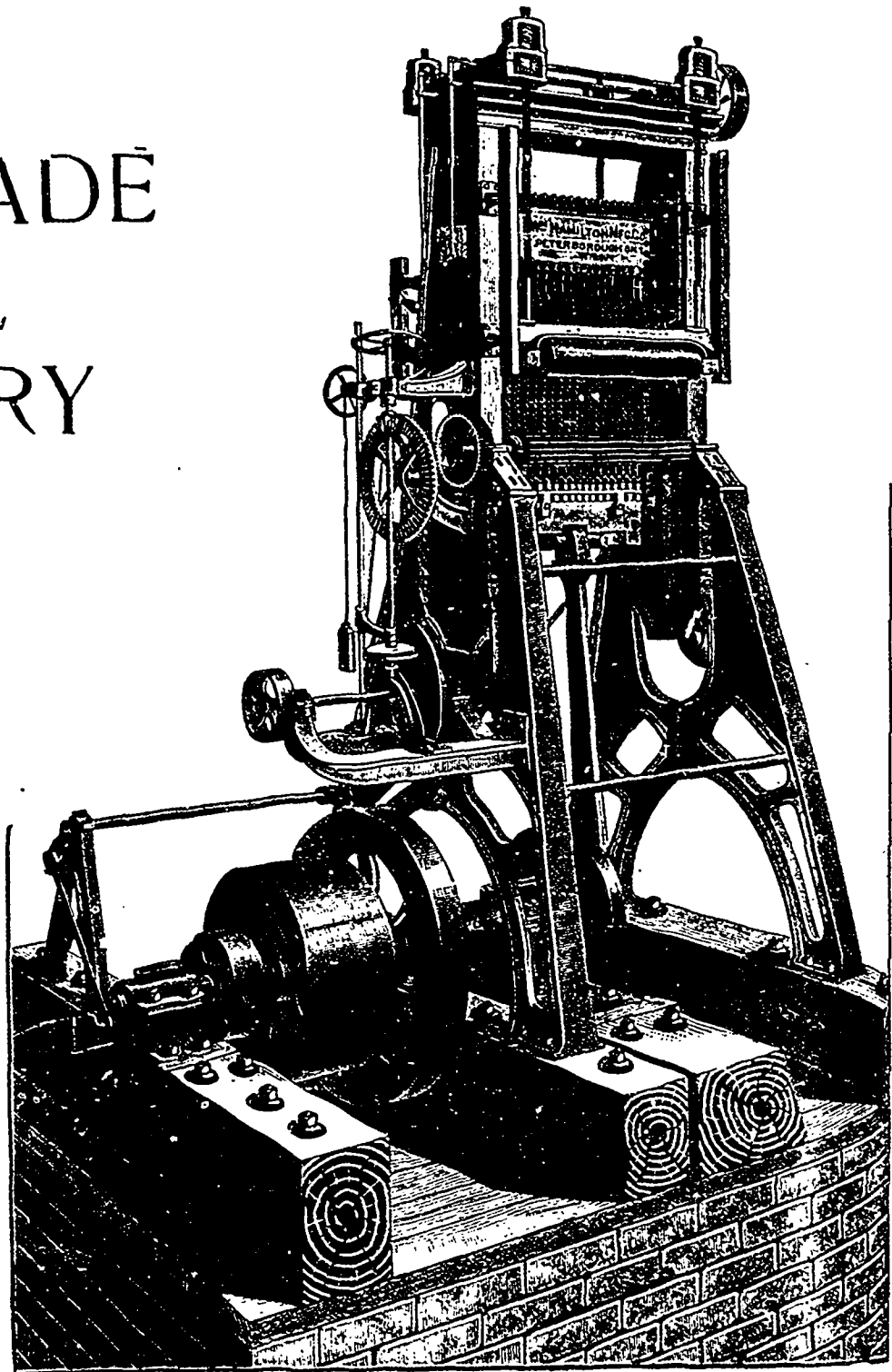
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under the

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There is no process its equal for tempering circular saws. Other makers recognize this fact, as some of them, in order to sell their goods, claim to have the same process. All such Claims are FALSE, as the patentee in the U. S. and ourselves are the only firms in the world who use it.

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Yours very truly, JAMES MCKINLAY.

CAMPBELLTON, N.B., Nov. 17th, 1894.

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DEAR SIR,—In regard to your Shingle Saws, you can say that I have been using Shingle Saws of your make (Simonds) for the past four years, and they have given good satisfaction. I am running nine machines and use a good many saws, but have never had a saw yet that did not work satisfactorily. Before using your saws I used saws of American make, which worked well, but after giving your saw a trial have continued to use yours, as they are cheaper, and in regard to working qualities are all that is needed.

Yours truly, KILGOUR SHIVES.

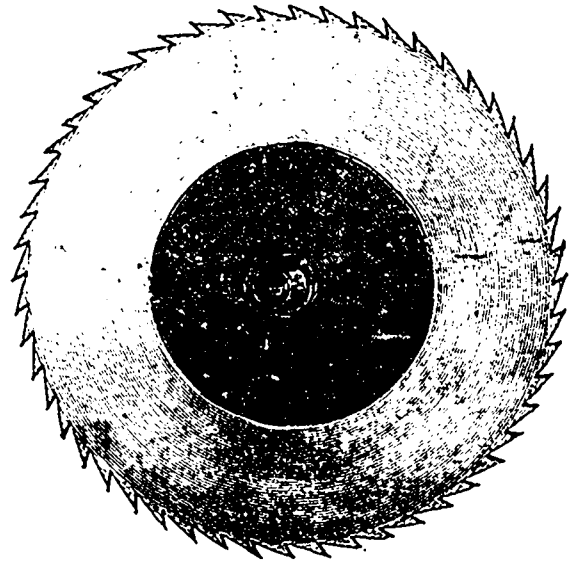
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GENTS,—In reply to your letter asking me how I liked the 62" SIMONDS Saw, I must say in all my experience I never had a saw stand up to its work like the one purchased from you last month. Having used saws for the last 22 years, and tried different makes, I can fully say it is the best saw I have ever had in my mill, and would recommend the SIMONDS' Process Saws to all mill men in need of circular saws.

Yours truly, W. G. SIMMIE.

P.S.—I am sending you my old saw to be repaired; please hammer to same speed as new one. W.G.S.



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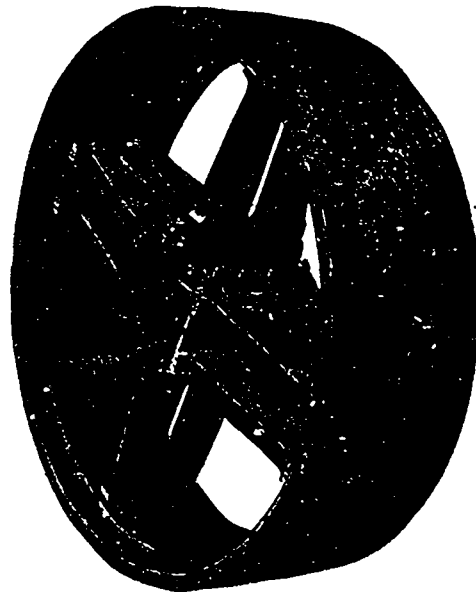
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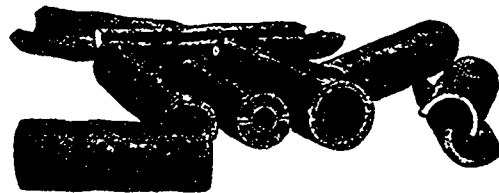
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# THE CANADA LUMBERMAN

TORONTO, CANADA, JULY, 1901

TERMS, \$1.00 PER YEAR  
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VOLUME XXI.  
NUMBER 7.

## THE TIMBER SUPPLY FOR THE BRITISH ADMIRALTY.

Only a small portion of the timber used by the British Admiralty in the construction of ships, dock-yards, etc., is home grown. The bulk is imported from Canada and the North of Europe. There are kept constantly in the employ of the British Admiralty two timber inspectors, Mr. William J. Rogers being the present inspector for Canadian timber, and Mr. C. Nichols being detailed for duty in the Baltic.

Being accorded an interview with Mr. Rogers, who is now in Quebec, the writer learned that it has been his custom since 1895 to leave England each year in the spring for Quebec, this being his seventh season. He returns to England in the fall after all the timber is shipped, and during the winter is employed in the inspection of foreign timber, such as teak, mahogany, etc. Previous to being despatched to Quebec for duty he was stationed in the Baltic for five seasons. Both Mr. Nichols and Mr. Rogers were shipwright officers previous to their appointment as timber inspectors, and were employed in H. M. dock-yards, it being considered that this experience fitted them admirably to select the timber required for building war ships.

Tenders for the timber contract, Mr. Rogers states, are usually asked for early in each year from all firms who, in the estimation of the Admiralty, are capable of executing the contract satisfactorily. This season the firm of R. R. Bobell & Company, of Quebec, were the successful tenderers.

The duties of Mr. Rogers at Quebec are to inspect the timber before it is shipped. While it is afloat it is turned over so that he may see all four sides, every facility being rendered for the proper examining, measuring and marking of the timbers. The timber is measured by caliper and the contents given in cubic feet, and is usually purchased at so much per load of 50 cubic feet. The pine and spruce deals are inspected in like manner, and although classed as first quality, may be subject to rejection on account of sap, knots, etc.

The quantity of timber included in the Canadian contract this season is as follows:

Waney Pine.....	130,000 cubic feet.
Red Pine.....	115,000 "
Rock Elm.....	15,000 "
Pine Deals, first quality	80 standards.
Spruce Deals, "	390 "

There is also obtained, from British Columbia, spruce deals for oars. These are selected at Vancouver and carried by rail to Quebec, then loaded on ship and taken to Davenport, which is the dock-yard where oars are manufactured for the British navy. The amount required annually is about 74 St. Petersburg standards. The lengths range from 9 to 18 feet; the timber must be absolutely perfect and commands a very high price.

The timber obtained from the Baltic is all of one kind, known in the trade as Dantzic fir. It is much cheaper than Canadian fir, and is used for all kinds of rough work in ship-building, such as ground blocks for building on, shores for docking, etc., very little being used in the construction. Logs are taken 12x12 inches to 18 feet and up, and average 13 inches x 14 inches x 24 feet. The quantity is about 4,000 loads. About 300,000 superficial feet of stage deals, 2 inches x 12 inches, is also required.

Teak, mahogany, sabique, greenheart and cedar

are selected generally in the London docks from shipments already landed. Teak is obtained from Moulmein and Rangoon, in Burmah, and is very suitable for steel ship-building. Being of an oily nature it does not rust when coming in contact with the steel, is very durable, and has largely superseded the use of Dantzic deck deals. The quantity used annually is about 4,000 loads. The mahogany is obtained from Belise, Honduras, and Cuba, and is used principally for furniture and cabin fittings, the quantity being about 200 loads. A very small quantity of cedar, greenheart and sabique is used.

The English timber used by the Admiralty includes oak, elm and ash, for general purposes. The inspection of this timber and converted ma-



WILLIAM A. ROGERS,  
British Admiralty Timber Inspector.

terial for foreign dock-yards at Malta, Hong Kong, Sydney, etc., keeps the timber inspectors well employed during the winter months.

## BAND VS. CIRCULAR RESAW.

By AUG. J. BRIDGES, IN THE WOOD-WORKER.

In the January number Mr. N. I. Jackson gives his opinion of the relative merits of circular and band resaws. He seems to have had considerable experience with these machines, and I heartily endorse most of his views. My own experience is that the band resawing machine is far ahead of the circular. I must, however, beg to differ with Mr. Jackson as to the feed of the band in 14-inch lumber. To cut 100 feet per minute a saw 25 feet long and running 9,000 feet per minute, in soft wood, must cut a fraction over 3 inches at each revolution. Men who can make 4 or 5-inch saws cut 100 feet per minute in 14-inch lumber are certainly "Jim Dandies." In fact they are so scarce that in an experience of eleven years as band saw filer I have never had the pleasure of meeting any of them. The circular resaw with its 40-foot feed per minute would certainly not be in it. I may be a little slow, but would like very much to see it done. The best I have been able to do is to make a 22-gage 4-inch band cut 3 inches at each revolution in 11-inch pine lumber, "large knots barred," for

about two hours; after that I have to slack up on the feed to do good work. The saw that takes the most feed stays sharp longest.

Not long since I was called to a neighboring mill to fit up the saws for a band resawing machine. The foreman looked on while I hammered the first saw. To start a conversation I asked him what makes saw teeth dull. He looked at me, but said nothing. I repeated the question and explained that I meant it. "Well," said he, slowly, "cutting the lumber, I suppose." I told him it was the friction, pointing out that all the high-speed saws with slow feed had to be sharpened often, yet only did half as much work as other saws with proper speed and fast feed. He acknowledged the fact.

I am also running a circular resaw and feed it 70 to 80 feet per minute in stock up to 8 inches wide, running the machine with a 5 inch belt. It necessarily could easily feed 100 feet per minute in same stock by using a wider belt. The largest saw used on this machine is 32 inches in diameter, 16 gage at rim.

As to accuracy in sawing we must give credit where it belongs. It is a fact well known to filers that when a board comes from the machine not evenly split the operator almost invariably blames the saw. He will go to the filing room and announce that he "can't do a thing with that saw."

Not long ago the man running the circular resaw of which I have charge came to me and said, "If I should run that saw another minute it would fly into a thousand pieces and kill seven teen men. Why, it snaked so I could see it smoke!" I asked what he was sawing. He said 10-inch dry basswood. I went with him and asked him to pick a straight board out of the pile. This he could not do. I then explained that it was the lumber, not the saw, that was to blame. The space from the feed rolls to the top edge of saw in 10-inch lumber, is about 15 inches. In this lot of basswood were boards that had crooks as short as 6 inches, and the saw, cutting a straight line, couldn't very well run in the centre where these crooks occurred. The operator didn't see any more "smoke" from that saw.

The band saw has a great advantage at this point, because it stands close up to the feed roller and the lumber has no chance to shift. A band can also be run with less power than a circular, because it takes less saw kerf. In resawing with both machines, say 75 feet per minute, each sawing same width and grade of stock, it would require about one-third more power to run a circular, even were the circular taking the same kerf as the band it would require more power, on account of side friction, which is much greater than with the band saw.

I will take off my hat every time I meet a man that makes a 4 or 5-inch band saw split 14-inch lumber at the rate of 100 feet per minute.

An interesting experiment is being made under the auspices of the Dominion Department of Marine and Fisheries, in connection with reforestation. Over 81,000 trees have been planted on Sable Island, and their progress in the shifting sand to be found there will be watched with interest. If the planting should prove successful the island will become more visible from sea, and the soil will be rendered more cohesive.



**MR. ALEX. LUMSDEN, M.P.P.**

A gentleman holding large interests in and having a thorough knowledge of the lumber industry of Ottawa and the Ottawa Valley is Mr. Alex. Lumsden, M.P.P. Since 1882 Mr. Lumsden has held the exclusive contract of driving the logs down the Ottawa river from the Temiscaming lake to DeJoachin Falls, a point about 42 miles above Pembroke. From the latter place the logs are hauled by the Upper Ottawa Improvement Company, which conveys them to the Ottawa mills. In 1882, when Mr. Lumsden started in the business with about 100 men, he handled 800,000 pieces of timber, ties and logs. During the past season over 2,000,000 pieces were handled, including a large amount of pulp wood, dimension timber and ties. No less than 340 men were employed, with 10 steamers, from April to December of last year.

The lumbering industry centering in Ottawa, Mr. Lumsden states, is good for many years to come. Despite the fact that a largely increased area of limits has been cut over, there is no apparent decrease in the volume of business done in the river driving. During the past season a large amount of dimension timber was floated down. Nearly all this was red pine, for which there is at present a good demand in the English market. Another feature of the business is the marked increase in the amount of pulp wood handled. This season about 6,000 cords were handled for the E. B. Eddy Company alone. Last season only a few hundred cords were handled.

Mr. Lumsden looks for a continued large increase in this particular branch of his business. Next season it is understood Mr. J. R. Booth will have considerable pulp wood forwarded, as he will cut a quantity during the winter months.

Since Mr. Lumsden started driving logs, the lumbering operations have been extended a distance of about 150 miles further back. Saw logs are now being cut, where in former years square timber was taken out, and the adoption of structural steel in ship-building, railway work, mining etc., has, according to Mr. Lumsden, dealt a severe blow to the square timber industry, which on this account can never approach its former great dimensions. About the only square timber now handled is that of the smaller dimensions and highest quality used for ship decking.

The principal streams on which Mr. Lumsden works are the Ottawa at Quinze, the Blanche, Ottawa and Montreal rivers, Gordon Creek, Kippewa lake, Lake Temiscaming, Mattawa, Magnicippi and Dumoine rivers. Logs are handled for the following firms: J. R. Booth and W. C. Edwards, Ottawa; E. B. Eddy & Company, Hull; McLachlin Bros., Arnprior; Gillies Bros., Braeside; J. & B. Grier, St. Annes; Hull Lumber Company; McLaurin & McLaren, East Templeton; the Hawkesbury Lumber Company; the Pembroke Lumber Company and A. & P. White, of Pembroke. Mr. Lumsden also operates a large saw mill at Lumsden's Mills, on the Ottawa. His steamers are engaged extensively in carrying freight and passengers

on the Upper Ottawa as well as in towing and handling logs. Many of the latter are brought over a stretch of 200 miles of river and lake.

The objective point is Lake Temiscaming, which is 142 miles above Pembroke. The logs are floated loose through the rivers, but are brought together in booms in the lakes, some of which are over 60 miles in length.

Mr. Lumsden has expended a large capital on improvements made necessary by his extensive business. Over \$150,000 was spent on Gordon Creek alone, this being an artificial outlet from the south end of Lake Kippewa. The creek is about eight miles long and connects several small lakes. By its improvement a saving of nearly 60 miles is effected in the transportation of the logs. Mr. Lumsden also has shipyards on both the Kippewa and Temiscaming lakes, where he builds his own steamers. He has built docks, piers and booms along the lakes and rivers he traverses, representing an outlay of over \$250,000; this includes steamers also.

During the season, which lasts as long as there is open water, operations are carried forward. A patrol is established the entire length of the waterways and the men are constantly engaged keeping the logs on the move. The largest tows handled by steamers take in about 35,000 logs. The past season was one of the best Mr. Lumsden has experienced, but in 1896 he also had a large run of logs numbering over 2,000,000. The capital represented by the past season's drive will total on a conservative estimate over \$2,000,000.

Mr. Lumsden is the only son of the late John Lumsden, well known to early residents of Ottawa. He was born 57 years ago and was educated in the public schools and Grammar School at Ottawa. In 1863, at the age of 20, he started in the lumber business. For 17 years he was engaged by Currier & Co., the well known lumber firm, first measuring logs on the Gatineau limits, and afterwards as shipper at the saw mills in Ottawa now operated by W. C. Edwards & Company. Before he severed his connection, Mr. Lumsden had risen to the position of general manager of the business. Associated with Currier & Company, at this time, was another well known lumber firm, McLaren & Company.

Mr. Lumsden has always been eminently successful in his business affairs, and at present he is identified with several of the leading enterprises, including the Ottawa Electric Co., the Electric Railway Company and the Ottawa Car Company.

In 1896 Mr. Lumsden was elected by his fellow citizens as one of the Capital's representatives in the Provincial Parliament at Toronto. Mr. Lumsden succeeded the late Hon. E. H. Bronson in the Liberal interests and has made in the legislative halls a mark equally as high as that he gained in the business world. Mr. Lumsden occupies a well appointed residence on Stanley Ave., Ottawa, overlooking the Rideau river. On the spot he was born in the old family homestead. As a man of sound successful business methods he is esteemed throughout the Ottawa Valley.

**TESTS OF BOILER PLATES.**

General mill machinists, mechanical and steam engineers are frequently required to test boiler plates. The only way to have any surety in the matter is to test the plate thoroughly. In regard to the brands, the same name or mark on boiler plates may mean a very different quality with different makers. Strength is not the only quality to be sought in a boiler plate, it must be tough and yet ductile, in order to stand the variation in strains to which it will be subjected while in use. Many plates which show a high strength are not suitable for use in a boiler, on account of being brittle and, therefore, not able to undergo the changes in dimensions which a plate must go through, owing to expansion and contraction, and, moreover, such plate would, in case of accident, give way very suddenly with no warning. A very good method is as follows: Support the plate, horizontally, at its four corners and strew the upper surface with fine sand. Tap the plate lightly on the under side; where there are defects the plate will not vibrate and the sand will remain stationary. Tests of this nature, however, cannot be relied upon to bring out many defects which are quite sure to become known in the working.

**YUKON TIMBER REGULATIONS**

With a view to prevent a large area of timbered lands in the Yukon Territory being acquired for speculative purposes, provision was made in the Timber Regulations, established by the Governor-General in Council on February 28th, 1898, that not more than five berths of five square miles each should be granted to any one person or company. Some of the persons and companies who have obtained five berths have now applied for additional berths, from which to cut timber to be manufactured at their saw mills, which applications, under the existing regulations, cannot be granted. To meet the situation, it has been decided that when an applicant who has acquired five berths can show that he actually requires additional timber for manufacturing purposes at his mill or mills, the provision restricting the granting of more than five berths to one applicant will be waived.

**ERRATA.**

By a typographical error the paper on "Chemical Wood Pulp," which appeared in the last issue of the "Lumberman," was credited to J. A. McCew. The author of the paper was J. A. DeCew, of Fenelon Falls, Ont. He spent last winter in post graduate work at the School of Practical Science studying the chemistry of woods in general, including destructible distillation. Mr. DeCew is desirous of obtaining further practical experience along the above lines.

A belt made up of too many pieces is rather doubtful economy. Loss of initial power, increased risk of damaging breakdowns, and lost time from repairs, make it cost more than a new belt.

The Nipegon Pulp & Paper Company have decided upon a site for their pulp mill. It will be located about ten miles up the Nipegon river.

FOREIGN MARKETS FOR LUMBER.

The following extracts are taken from the annual report of the High Commissioner for Canada :

SPOOL WOOD.

I have had a letter from a firm which imports spool wood largely, and they tell me that on the whole the quality of the imports last year was poorer than usual. They seem to think that the trade might be developed considerably if the producers would take the trouble to satisfy the requirements of the importers, from whom better prices might, in those circumstances, be obtained. The following is an extract from a letter on the subject :—

'A serious drawback is the want of up-to-date loading appliances, which, on account of the uncertain weather experienced by ships at roadstead anchorages, leads to claims for demurrage. Importers naturally decline to render themselves liable for such risks. If a few steam lighters or barges, capable of loading 100, 150 or 200 tons at a time were available by shippers at a reasonable rent or freight, the method of loading would be vastly improved, or if even a few steam tugs were available to tow the shipper's boats from shore to ship at moderate cost, a larger trade would be eventually developed. The steam barge or lighter would be preferable to the tug boat because of the charges for the services of the latter in the St. Lawrence.'

CASEBOARDS AND BOX SHOOKS.

As showing the opening that must exist for a greatly extended business in this class of manufactured timber, I may again quote the terms of a letter that reached me in the autumn from an important firm of explosive manufacturers, who use large quantities of such goods for their packing cases :—

'We observe in the 'Board of Trade Journal' of the 13th ultimo an enquiry from a firm in Nova Scotia who are prepared to quote for box shooks. We are users of these goods, and we beg to give you the following particulars of our requirements which we shall be obliged if you will kindly communicate to the firm in question, and ask them to be good enough to send us their lowest quotations per case, delivered free at Glasgow, or preferably, through to Stevenston, Ayrshire. Our friends, the Hamilton Powder Company, 103 Xavier Street, Montreal, have samples of our caseboards beside them, and, if the firm in Nova Scotia will kindly communicate with them, they will receive further information which will guide them as to the nature of the goods we want.

'The particulars of our requirements are as follows, namely :

Number.—The probable total number of caseboards in shook form required per annum will be such as will make 120,000 to 140,000 cases, but without guarantee.

Material.—The caseboards may be of white or red pine, or Quebec spruce, but must be thoroughly seasoned, and of good, sound quality, free from cracks, shakes, loose knots, or other defects.

Note Well. The wood must be clean sawn, and there must not be any so-called outside wood, which is always rough, discoloured or dirty. The edges must be square.

Thickness.—The tops, bottoms, sides and

ends are each to be delivered  $\frac{5}{8}$  in. of an English inch thick. At the same time the company are prepared to consider also an offer for 'nominal' thickness, which impression is understood to mean not less than nine-sixteenths of an inch.

Tops.—The tops to be all in one piece ; or, alternatively, of two pieces of the same kind of wood, well jointed in the same way as the bottoms, and made perfectly flat so as to receive equally the Company's brand.

Bottoms (Sample Joint).—The bottoms may be made of two pieces, with a well made and substantial feather-and-groove joint not less than  $\frac{3}{8}$ -in. deep, carefully glued all through ; the proportion and thickness of feather-and-groove to be as per sample pieces herewith.

These parts are not to be made from pieces of two different kinds of wood ; thus, red pine should be joined to red pine, and white pine to white pine.

The pieces used for tops or bottoms must all be uniform thickness, parallel, and joined exactly, so as to get a plane surface without a ridge caused by one piece being slightly above the other at the joint.

Shrinkage.—To allow for shrinkage in the boards when stored for a length of time, the tops and bottoms must be supplied  $\frac{1}{4}$  in. wider than is necessary for the specified size of the case.

Sides and ends.—The sides and ends to be each in one piece without joints.

In all pieces the best side of the wood to be the outside, but the inside must be smooth to obviate injury to the india-rubber lining that is placed inside the finished case.

Dovetailing.—The sides and ends must be well and carefully dovetailed, so that any two ends will fit into any two sides.

There are to be six dovetailed pins, and these so spaced that there will be a full width pin at any top or bottom corner, as half-width pins break away in closing.

The end wood of all the dovetails must be as nearly as possible flush with the surface of the pieces they go into.

Without Dovetailing.—Alternative offers are desired for the sides and ends cut plain at the edges and not dovetailed.

Size of Case.—The measurements of the plain boards are to be as follows :—Tops and bottoms 29 in. x 11 in. ; sides, 29 in. x  $6\frac{7}{8}$  in. ; and ends,  $10\frac{3}{4}$  in. x  $6\frac{7}{8}$  in. ; so that after dovetailing and when all the parts are put together, they should form a case  $27\frac{3}{4}$  in. long,  $9\frac{1}{2}$  in. broad, and  $6\frac{7}{8}$  in. deep, inside measurement and in English inches.

The detailed sizes of tops and bottoms stated above allow for the extra  $\frac{1}{4}$  in. width referred to under "Shrinkage."

The above detailed sizes are for wood  $\frac{5}{8}$  in. thick. If wood of only  $\frac{2}{10}$  in. thick or nominal thickness used, the sizes will then be as follows :—Tops and bottoms,  $27\frac{7}{8}$  in. x  $10\frac{7}{8}$  in. ; sides,  $28\frac{7}{8}$  in. x  $6\frac{7}{8}$  in. ; ends  $10\frac{5}{8}$  in. x  $6\frac{7}{8}$  in.

Sample with Tenders.—Offerers to submit one set of caseboards, as samples of what they quote for.

MAPLE ROLLERS.

At the request of a correspondent in Ontario,

I made some further investigations in regard to these goods. The following are the sizes required by one important firm of buyers :

26 x $5\frac{1}{4}$	Square or $5\frac{1}{4}$ diameter round or octagon.
22 x $5\frac{1}{4}$	" " " "
29 x $6\frac{1}{2}$	" " " "
22 x $6\frac{1}{2}$	" " " "

These may be in lengths 2 or more times 26 inches, etc., as most convenient to the mill, and must be delivered sound on the quay and free from heart or knots. The opinion has been expressed by a large manufacturer of washing machines that the trade in Canadian rollers could only be satisfactorily done by the exporter having an agent on the spot to look after his interests here. In many cases the rollers are examined before they leave the docks, and the importer invariably rejects those that for certain reasons are considered defective. It often happens that 20, 30 or 40 or even 50 per cent. of the blocks are rejected as worthless after careful selection has been made on the other side. The price varies from about 1s 4d to 1s 7d, but the number of rejected pieces makes the ultimate result of a consignment exceedingly problematical.

COMMERCIAL WEIGHT OF WOODS.

A QUESTION of very great importance to lumber shippers as well as to railroads, is the commercial weight of certain woods. It is frequently the case in loading cars that persons who are unacquainted with these things, will overload cars. When the over weight is discovered in time, the railroad will refuse to haul cars that are loaded beyond their registered capacity, but, as is often the case, the overweight is not discovered until the car, or cars, are far from the shipping point, and then the railroads proceed to shift a part of the carload to another car. This entails loss of time and considerable expense. The National Hardwood Lumber Association, at its last meeting in May, 1901, adopted the following as the standard or commercial weights to be observed by the railroads, and themselves as shippers.

ESTIMATED WEIGHTS OF LUMBER PER 1,000 FEET.

	Dry. Lbs.	Green. Lbs.
Black Ash.....	3,300	4,500
White Ash.....	3,500	4,500
Beech.....	4,000	6,000
Basswood.....	2,400	4,000
Birch.....	4,000	5,500
Butternut.....	2,500	4,000
Cherry.....	3,800	5,000
Chestnut.....	2,800	5,000
Cypress.....	3,000	5,000
Cottonwood.....	2,800	4,500
Rock Elm.....	4,000	5,500
Soft Elm.....	3,000	4,500
Gum.....	3,300	5,500
Hickory.....	4,500	6,000
Mahogany.....	3,500	4,500
Maple.....	4,000	5,500
Oak.....	4,000	5,500
Poplar.....	2,800	3,800
Sycamore.....	3,000	4,750
Walnut.....	3,800	4,800
Yellow Pine.....	3,200	4,300

Of course the commercial world does not know absolutely dry lumber, and these weights are not absolute but intended only as a fair average.

The Ottawa & Gatineau Valley Railway Company have been refused an amendment to their charter to permit of engaging in the manufacture of pulp.



## CANADIAN EXHIBITORS AT GLASGOW.

In the Canadian Pavilion at the Glasgow Exhibition there are 38 exhibitors of timber and timber products, which may be classified as follows: Timber, 12; joinery, bobbins, etc., 17; carriages, wood rims for cycles, etc., 6; canoes and boats, 3. In the Timber Trades Journal we find the following reference to the individual exhibits, as well as the accompanying illustration:

The W. C. Edwards Company, Limited, of Ottawa, Ont., and Rockland, Ont., have a very well arranged collection of parqueterie flooring, deals and materials for sashes, doors, mantels, &c., and good specimens of sawn pine, moulding and joinery. The head of this extensive business is Mr. W. C. Edwards, M.P.

The Canadian Office and School Furniture Company, Limited, of Preston, Ont., displays a good assortment of hardwood panels.

W. H. Marcon, Parry Sound, Ont., shows cloth boards and some very beautiful veneers.

Ker & Harcourt, Parry Sound, Ont., have an interesting collection of spools, bobbins, turned boxes, etc.

John H. Groat & Company, of Grimsby, Ont., show on their stand fruit baskets, boxes and admirably worked walnut veneers.

The Lachute Shuttle Co., Lachute, Que., an extensive assortment of spools, bobbins, etc.

Adam Beck, London, Ont., combines an interesting collection of cigar boxes and cigar box stock, with some beautiful specimens of oak flooring.

The Columbia Handle & Lumber Co., of St. Thomas, Ont., show large quantities of hockey sticks, golf clubs, and kindred specialties. The British agents for this firm are Messrs. Lindsay & Campbell, Broomielaw, Glasgow.

John Harrison & Co., Owen Sound, Ont., exhibit butchers' skewers.

The Hawkesbury Lumber Co., Hawkesbury, Ont., whose shipments are well and favorably known in British markets, have a representative collection of square timber, deals, section saw logs, etc.

Colin Reid & Bros., of Bothwell, Ont., in addition to lumber, have some very good specimens of handicraft in the shape of turned goods.

J. H. Still, St. Thomas, Ont., has a comprehensive lot of handles and whiffletrees.

The North American Bent Chair Company, Owen Sound, Ont., display a good collection of products of the forest and forest industries, and a variety of chair seats, backs, handles, &c. Their British agents are F. A. Lightbody & Co., 8 Gordon street, Glasgow.

J. S. Findlay, Owen Sound, Ont., maple rollers and blocks, and wood specialties.

The Sutherland-Innes Co., Ltd., Chatham,

Ont., whose London and Liverpool agents are Sieveking, Podmore & Co., has a large collection of staves and hoops.

Scott, Taylor & Co., of Toronto, Ont., display brooms, whisks, washboards, &c.

T. S. Simms & Co., Limited, St. John, N.B., show corn brooms.

Dobell, Beckett & Co., of Quebec, Montreal, and Ottawa, display well assorted specimens of timber. This prominent firm of shippers has for local Scotch agents the firm of Singleton, Dunn & Co., of Union street, Glasgow, whilst their shipments are generally disposed of by their London house of R. R. Dobell & Co., of 110 Cannon street, London.

Gilmour & Company, of Trenton, Ont., also have a fine collection of timber specimens. Their agents for sales in the United Kingdom are Walcot, Limited, 17 Gracechurch street, London. A specialty recently introduced to the British market is a patent lumber, consisting of a thick veneer of hardwood worked on to a softwood core. This produces a beautiful effect of an extremely durable nature,



EXHIBIT OF TIMBER PRODUCTS IN CANADIAN PAVILION, GLASGOW EXHIBITION.

much admired in doors, panelling, and interior house finishing.

Joseph Paquette, Montreal, Que., has an admirable exhibit of ornamental joinery, stair-casing, balustrading and mouldings, together with some very perfectly finished specimens of joinery in the shape of Venetian doors and windows.

The McClary Manufacturing Company, London, Ont., exhibits desks and school furniture of admirable design and workmanship.

The Dodge Wood Split Pulley Company, of Toronto, Ont., has an interesting collection of wooden pulleys, made of all diameters and generally in from six to eight rings. The output of this company is as much as 200 pulleys daily.

Monsieur Henri Menier, of Paris, France, sends a representative collection of deals and trees from Anticosti, of which island he is owner. Probably the most reliable estimate of the average number of trees suitable for timber or pulp wood growing on the heavily wooded areas of Quebec would be that based on the figures supplied by M. Menier's survey-

ors and engineers in reference to this island. M. Menier's estimates of the area of forest land on Anticosti amount to 1,800,000 acres, and the average number of trees to 900 per acre. These figures are the result of an actual count on a great number of carefully measured acres, and as the Anticosti forests differ in no essential from those of Quebec and Ontario, M. Menier's careful surveys should be of considerable assistance in estimating outputs from the eastern provinces in specified areas.

In carriages, the firms of the Canada Carriage Company, of Brockville, Ont., the M'Laughlin Carriage Co., Oshawa, Ont., and J. B. Armstrong Manufacturing Co., Limited, of Guelph, Ont., all have very high-class exhibits of carriages such as are in ordinary use in the Dominion; a noticeable point is that though there are plenty of covered, there are no closed carriages shown.

In wheels, spokes and hubs R. Scott & Sons, of Galt, Ont., have a well-made lot of specimens.

In wood rims for cycles the Boston Wood Rim Co., of Toronto, and the Clarksburg Wood Rim Co., of Clarksburg, Ont., are well represented.

The three boat-building firms exhibiting are: The Peterboro' Canoe Co., of Peterboro', Ont.; Strickland & Co., Lakefield, Ont., (English agents, G. Strickland, West Dayton, Middlesex), and William English Canoe Co., of Peterboro, Ont. These boats and canoes of birch, cedar, and other woods are the acme of the boatbuilders' art. Light to look at, feathers to lift, perfect finish and graceful lines, they whisper here in the tumult of the busy city of the glories of the great lakes, the mystery of the forest, the rush and

roar of the rapids, which accentuate the silences of the Great Lone Land.

#### QUESTIONS AND ANSWERS.

"Subscriber" writes: In the event of some student to qualify as licensed timber culler, are the chances good for getting employment as such? What kind of an existence do cullers have in the way of lodgings, etc.? Where could I procure information as to what would be required by those seeking to qualify, as well as when the examinations take place, and the wages usually paid to cullers.

Ans: In the event of qualifying as a licensed culler, the chances of obtaining employment are reasonably good. It is necessary, of course, to first become a qualified culler before you can engage in the business of culling timber for the government. We believe that the board and lodging furnished in lumber camps has been greatly improved in late years, and may now be considered fairly good. Particulars regarding the qualifications necessary for an Ontario culler may be obtained from the Department of Crown Lands, Toronto. The examinations comprise a question paper and a practical test, the latter being the more important. It is necessary to have a thorough knowledge of the different kinds of logs and the quantity of lumber which can be obtained from each log, and also the proper allowance for defects. Examinations are held at regular intervals. So far this year none have been held in the province, nor have any been arranged for as yet. Last year several examinations were held, between 80 and 90 persons qualifying as cullers. The wages of Government cullers range from \$40 to \$60 per month and board.

**CARE OF BELTS, PULLEYS AND GEAR WHEELS.**

No mill foreman would willingly take a good, new rubber belt and rig up a scraper thereupon in such a manner as to wear the belt out as soon as possible. Still that very same foreman will pass through the mill day after day where this wearing out process is being done all the time on a number of belts, and he never opens his mouth to protest or to order the scrapers taken off the belts. Not long ago, being near a mill, a very strong smell of burning rubber was noticed. The smell seemed to be continuous, and was noticeable at all hours of the day and night. Day after day it was the same, the odor being driven in one direction or another according to the direction of the wind at any given time, but by going all round the mill the burnt rubber smell was to be found at any time on one side of the premises. The cause was found to be the old story of shafting out of line and a piece of plank nailed up to keep the belt from running off its pulleys. There can be only one result of a contrivance of this kind, viz., to wear out the belt as quickly as possible. As destructive and mechanical a device as this is I will wager that out of ten mills take them as they are listed, there will be nine that maintain one or more belt destroying appliances of this kind.

When a belt will not run well, instead of putting up a bit of board or plank, put up the millwright to align the shafting or to move the machine around so that the belt will run square. Failing this, and in some mills it is almost impossible to get such a thing done, put up a roll to bear against the belt, and let it run on bearings of its own (the roll), even in bits of pine wood, if there is nothing better to be had. Ten to one there is a bit of shafting in the store-room, with a couple of boxes or hangers and a pulley to fit, that can be set up to guide that belt on to the pulley. Then the millwright may be laughed at when he says he has not got time to line up the shafting, and he may be told that it is a fact that millwrights work so awfully hard (?) that a drop of sweat from one of them will kill a toad!

Just one thing more in relation to the belt business. This thing is one not to do by all means. In the case where it happened there was a friction clutch driving a centrifugal pump by means of a belt. By some means the clutch was so adjusted that it would drive the belt and pump, slowly, it is true, even after the lever had been thrown to strike the clutch out of gear. In this case, instead of having the clutch properly overhauled, the very simple and belt destroying expedient of thrusting a wedge into the space between the lower side of the pulley and the pump frame was adopted. This caused the belt to stop with a bang on the instant, and to stay stopped dead until the wedge was knocked out with a hammer or some other mass of metal.

Among the things to do is that of bushing loose pulleys, of 2 or more feet in diameter, with roller bearings. The pulley is simply bored large enough to admit a cage of rolls around the shaft, the rolls in their cage are slipped in, and a thin collar or flange plate is screwed on to prevent the rolls from coming out. Then the pulley is ready for use, and I have seen pulleys arranged thus run continuously for several years without being oiled or being repaired. The roller bearing is also a mighty good thing for shafting especially line shafting, where the rolls have a fair chance to show what they are worth. As to the roller bearing for heating engine bearings, they are undoubtedly "things to do" when they are properly made and adjusted to the bearings. I have seen engines fitted with roller bearings run for years with less power than they consumed before the roller bearing was applied. And these bearings received absolutely no attention except to be kept well oiled. In fact, they were

deluged with oil or grease, and literally were submerged beneath the surface of a body of oil all the time. The addition of roller bearings in this mill to ten beaters permitted the driving of another beater with the same power as formerly consumed by the ten originally in use.

Every machine manufacturer in the trade and every mill owner or purchasing agent should insist upon the use of the diametrical pitch in all gear wheels for the transmission of power. The age is too far advanced for either maker or purchaser to monkey with "three inch pitch," "one half inch pitch," or any of the sizes between them. Instead of all this nonsense use the terms of the diameter and the number of teeth. Thus: "One pitch, sixth pitch, &c." In this way of stating the diameter of a gear it is understood that there is a stated number of teeth to each inch in diameter of the gear. Thus, a gear of thirty-six teeth, No. 6 pitch, will be exactly 6 inches in diameter of the pitch line. If there be thirty-eight teeth, the gear will be 6 1/3 inches in diameter. The gear of No. 1 pitch will have a tooth for every inch in diameter, and will always measure even inches across the pitch or circle. This method is very convenient for the calculation of gearing, also for the duplication of any gear that may be broken or worn out. For instance, supposing that there is a space of 10 inches between the centres of two shafts and it is desired to connect them by gears of No. 6 pitch. This gear is pretty nearly one-half inch pitch by the old method, as the space per tooth would be on a gear 1 inch in diameter, divided by 6 equals 5/6 inch pretty nearly one-half. Once satisfied that a gear of this size of tooth will stand the work and that part of engineering we will not go into in this story it only remains to find how many teeth there must be on both gears to reach between the two shafts. As the distance is 10 inches, it is evident that two gears, each 10 inches in diameter, will just connect the two shafts. With a gear No. 6 pitch, 10 inches in diameter, there must be sixty teeth. Therefore, there must be 120 teeth used to connect the two shafts. Instead of dividing this evenly between two gears of equal size, it may be apportioned out in any manner desired, so that one of the shafts will run at a different speed from the other. Thus, it is only necessary to divide the total number of gear teeth by the number which represents the difference in speed of the two shafts. Thus, if the shafts are to run at equal speed, divide the 120 teeth by 2, and the answer, 60, will be the number of teeth required for each of the gears which will be equal in size. If one shaft is to run twice as fast as the other, then the gears must be in the ratio of four to one, and the total number of teeth will represent five parts, four of which are the number of teeth on the large gear, the one part being the number of teeth on the small gear. Thus: one hundred and twenty divided by five equals twenty-four. Four multiplied by twenty-four equals ninety-six, the number of teeth in each gear, so that the shafts may run four to one, and be exactly 10 inches apart. This method of gear calculation is far ahead of the old chord or circumferential pitch business, and once the paper mill man becomes accustomed to its use, he will have nothing to do with the manufacturer who clings to the old method of gear teeth calculation.

One more thing to do, and that should be done mighty quick. I refer to the high pressure simple engine which is puffing clouds of steam into the atmosphere just for the sake of helping to make rain for the world. At best only 10 per cent. of the heat contained in the coal can be transformed into work even by the best of steam engines, and where the exhaust steam is allowed to escape direct from the engine only about 6 or 7 per cent. of the heat value is made use of. There are many forms of jet condensers in the

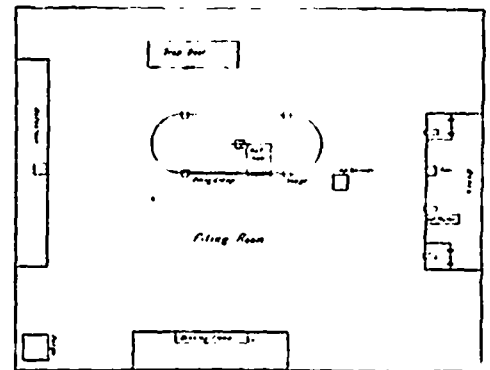
market which will enable the paper mill man to pull off one or two of the possible points between 6 and the 10 mentioned above. The exhaust jet condenser is little used in this country. It is a German institution, but can be had here. This appliance is only occasionally found in paper mills, but it is capable of adding 20 horse power to an engine of 150 horse power, with no expense whatever, provided there is a supply of water which can be drawn upon by the condenser. This appliance is really a sort of exhaust steam injector, which draws up the water with which the steam is to be condensed. It is different from the siphon condenser, for the reason that the water in that appliance is drawn up by the weight of a descending column of equal weight, while in the injector condenser the column of water is drawn up and supported by the injector action of the exhaust steam in the instrument. The condensation of a portion of the steam creates a vacuum which draws up water by removing the pressure of the atmosphere upon the top of the column, and the condensation of the same steam also draws along another portion of exhaust steam to be likewise condensed and robbed of its working power.

And now, just one more thing: this time both to do and not to do. That thing is the use of steam in the heating coils and circulations. When it is cold there is a very great temptation to put on more steam, even to let it blow through the pipes in order to get as much heat as possible. But that is the thing not to do. There is no heat to be gotten out of steam while it is passing through pipes in that matter. A pound of water in the form of steam contains about 1,000 or 1,100 heat units. If at a temperature of 330 degrees, 1.1 of the thermal units may be drawn out while the steam is blowing through the pipes, but there is carried off with it the 976 units of latent heat of vaporization which will become of use when the steam is condensed in the radiators or circulating pipes. J. F. H., in Paper Trade Journal.

**THE FILING ROOM.**

In their little booklet entitled "Instructions on the Erection and Care of Band Saw Mills, Band Saws, Etc.," Messrs. J. A. Fay & Egan Company say regarding the filing room:

Locate the filing room, if possible, directly above the mill. The blade may then be conveniently and quickly lifted from the mill through a trap door into the filing



ARRANGEMENT OF A FILING ROOM.

room, and the blade to replace it can be easily lowered upon the wheels.

The filing room should be well lighted and free from vibration.

The sketch accompanying shows a nicely arranged filing room, 36x28 feet.

The tools deemed almost indispensable for a first-class filing room are shown in the outline in correct position, and are as follows: Saw mill, cross face hammer, round face hammer, nine inch straight edge, six foot straight edge, tension gauge, brazing frame and pads, filing clamp, automatic saw sharpener, automatic swage, small portable forge.

In addition to the above, the following can be used to excellent advantage: Automatic side shaper, automatic saw stretcher, re-toothed.

--The Rat Portage Lumber Company have just supplied the sash and doors for a new Baptist college at Brandon, Man. The order was secured in competition with the factories of Minneapolis and Winnipeg.

# THE Canada Lumberman

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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.

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

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

Advertisers will receive careful attention and liberal treatment. We need not point out that for many the CANADA LUMBERMAN, with its special class of readers, is not only an exceptionally good medium for securing publicity, but is indispensable for those who would bring themselves before the notice of that class. Special attention is directed to "WANTED" and "FOR SALE" advertisements, which will be inserted in a conspicuous position at the uniform price of 15 cents per line for each insertion. Announcements of this character will be subject to a discount of 25 per cent. if ordered for four successive issues or longer.

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

## SPRUCE TIMBER AND PULP.

The enhanced value of spruce timber lands has been clearly demonstrated by recent public sales held by the Governments of New Brunswick and Quebec. In New Brunswick \$150 per mile is frequently obtained, while at the late Quebec sale a total of \$400,000 was realized, the largest sum ever obtained by that Government on a like occasion. The competition at this latter sale would seem to foreshadow a rapid development of the lumber and pulp industries of the province. A timber berth on the Quitchouaniche River, in the Lake St. John district, commanded \$377 per mile, while the upset price was only \$100. This same berth, if it had been placed on the market a few years ago, would probably not have realized \$25 per acre, for until recently the highest figure reached was in the neighborhood of \$75. Mr. R. Lemieux, of Pembroke, purchased 1,150 miles. He is understood to be acting for an American syndicate which has in view the development on an extensive scale of the spruce thereon.

There has been a wonderful expansion of the pulp industry in the Lake St. John district, in Quebec, within recent years. The immense mills at Chicoutimi promise to be outrivalled by projects about to be commenced, and we may expect that the value of spruce limits will continue to enhance for some time to come.

It is a question how far the market will be able to absorb the product of the many new pulp mills now projected, and for this reason

capitalists should be most careful in the selection of sites, as, of course, the mills most favorably situated will meet with the greatest measure of success. It is not unlikely that the price of pulp will decline in the near future; hence also the necessity of giving careful consideration to the adoption of such methods as will cheapen the cost of production.

A report has been current that the large mills of the Sault Ste. Marie Pulp and Paper Company have lately been closed down on account of an insufficient demand. These reports, we are officially advised, have been without foundation in fact, the cessation of operations being caused by necessary dredging at the intake of the canal, which interfered with the operation of the mill.

## THE CANADIAN TIMBER POLICY.

The caption of this article might be regarded as inappropriate, for it is well known that most of the timber lands of the Dominion are owned and controlled by the Provincial Governments; yet the tendency of the regulations that are being made from time to time by the different provinces are so in accord one with the other, that a policy common to the entire Dominion may eventually be looked for. Several steps in this direction have been taken within the past two months.

The Dominion Government has decided to apply the policy of home manufacture to the pine and other timber on Indian reserves and Indian lands. Hitherto timber cut on Indian lands was not subject to the export regulations and could be shipped to the United States without restriction. The result of the Ontario law requiring timber to be manufactured within the province has been the removal of several saw mills from Michigan to Ontario. The application of a like law to Indian reserve lands will cause the removal of other mills to Ontario, all of which is in the direction of benefitting the Canadian lumber industry.

The Legislature of British Columbia has followed the example of Ontario and Quebec in restricting the exportation of timber, an amendment to the Land Act designed to accomplish this object having been passed at the last session. Some of the loggers of British Columbia felt that the legislation was a hardship to them, and found that they were unable to dispose of their logs cut for United States mills at a reasonable profit. They pointed out that large expense had been incurred in some cases in opening up roads, etc., to enable the timber to be got out, and that due notice should have been given them of the proposed law before it became effective. Representations to this end were made to the Commissioner of Lands and Works, and it is understood that arrangements have been made which will protect the loggers from financial loss.

This legislation is generally approved by the public and lumbermen of British Columbia, and if it should result, as it probably will, in bettering the position of the lumbermen of the Pacific coast province, it is to be very strongly commended. Up to the present time, we understand, no great quantity of timber has been exported from British Columbia to the United

States. The principal export has been in cedar and there are two features of that trade which make the new law very desirable; first, that first-class cedar is becoming scarce, and secondly, that cedar shingles and lumber manufactured on the Sound have been shipped to the Canadian North-West free of duty, competing against the Canadian product, while the Canadian manufacturers have been kept out of the United States market by a duty.

In late years cedar in Washington has become scarce, and the Washington mills have commenced to look to British Columbia for their future supply. Two or three firms have acquired licenses and put in camps to get cedar logs. It might be pointed out that logging operations have been conducted on much more extensive scale in Washington than in British Columbia, many of the large camps being run by log contractors who do not operate mills. Practically all the timber lands in Washington are in the hands of pine parties.

The conditions in British Columbia corresponded exactly with those existing in Ontario before the passing of the manufacturing clause—the timber was taken across the line to build up foreign industries. At Blaine, across the boarder in Washington, three mills have recently been built, the source of supply for which was intended to be British Columbia. Other mills on points on Bellingham Bay, Washington, are in the same condition. The recent legislation will doubtless be a hardship to the owners of these mills. It will also prevent the removal of other Canadian mills to Washington, or at least will prevent them from drawing their supply from British Columbia, and thus lessen the prospect of removal from the province.

One of the objects which the British Columbia Government had in view was to forestall depletion of the timber supply. While the change may inconvenience certain mills, the effect should be beneficial to the British Columbia trade, as it will, before many years, have a tendency to increase the value of timber.

The Quebec Government has adopted a new schedule of Crown timber dues, one of the most important changes being in respect to the duty on pulp wood. A little more than a year ago the Government raised the stumpage dues on pulp wood from 40 cents to \$1.00 per cord, providing at the same time for a rebate of \$1.50 a cord upon all the pulp wood manufactured in the province, which was equivalent to an export tax of \$1.50 per cord. By the new order the stumpage tax is reduced to 25 cents per cord, a rebate of 25 cents per cord being allowed on all pulp wood manufactured at home. It is further provided, however, that a cord shall be considered as equal to 600 feet board measure, whereas heretofore 1,000 feet board measure had been regarded as a cord. While the new regulation would seem to be much more favorable to the export of pulp wood than the previous one, it may be a decided advantage to Canadians to be relieved of paying such a high stumpage fee into the hands of the Government until the rebate is made.

The above amendments to the timber law of Canada indicate that the trend of those

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change of timber lands is to frame a policy which will result in bringing the utmost benefit to Canada from the development of her timber resources. In the past our timber policy has been too lenient, and the true benefit of our great inheritance of forest wealth has not been obtained.

#### EDITORIAL NOTES.

Beech lumber, not generally considered of great use, has been selling more liberally of late. There is no reason why it should not command a more prominent position among the hardwoods of Canada, and as users become more accustomed to this wood, it will doubtless meet with a greater demand and bring correspondingly higher prices.

The driving of hardwood logs is something which has heretofore been considered as impracticable, but it is learned that last year some Maine lumbermen made the experiment of driving hardwood logs with a loss of 10 per cent. This spring 600,000 feet of logs have been driven, and the loss has been not more than from soft wood drives. This result was accomplished by cutting the logs last summer and allowing them to season, in which case they do not sink. The demonstration of the fact that hardwood logs can be driven is of much interest to the trade, and no doubt the experiment will be tried by other lumbermen.

A most successful meeting of the National Hardwood Lumber Association of the United States was held in Chicago last month. The reports submitted showed that the work of the Inspection Bureau had been most useful, while at the same time proving the great difference in the grading of the different mills under ordinary circumstances. Within the last six months over 7,000,000 feet of hardwoods were inspected by Association inspectors. Some changes were made at the meeting in the inspection rules. The percentage of cuttings in common oak was reduced to two-thirds, and bright sap was made no defect in the grade of first and second plain sawed up to one-half the width of the board on one side. The lumber surveyor, Mr. M. M. Wall, of the Buffalo Hardwood Lumber Company, is anxious that the rules of this Association should be adopted by the hardwood men of Canada, and that when shipping to the United States they should have the lumber inspected by Association inspectors.

The movement to provide travelling libraries for lumber camps is making some progress. The lumber firms which have been provided with libraries have either set apart a room in the camp or built a small apartment in which the men may read and write. The railway companies have given tangible expression of their sympathy with the movement, and McGill University, Montreal, has promised a useful donation of books. The demand for libraries is stated by the Minister of Education to be greater than the supply, and it is hoped, therefore, that the cause will receive the hearty support of the public in the direction of contributions of books and money. The employing lumbermen are co-operating in the

work in a commendable manner, and it remains for the Government to make a grant for the purpose proportionate with the extent of education and benefit which is likely to result. So far the movement has been confined to Ontario. The necessity for such libraries exists alike in every province of the Dominion.

In view of the depression which prevails in the timber trade throughout the United Kingdom, it is surprising that the higher grades of lumber have suffered very little in price. It seems that it is becoming more difficult each year to secure timber which will make first quality lumber of large dimensions. This applies to Canada as well as the north of Europe. Some complaint has been made by British timber journals as to the system of grading now employed by the Ottawa valley pine manufacturers. We doubt whether this dissatisfaction is shared by British importers, as the changes made have been very slight and brought about by the changed conditions governing the getting out of timber. As timber becomes less plentiful, the grading of the lumber will be altered, and a board which ten years ago was classed as second quality may now be passed as first quality. It is somewhat singular that the grades vary in relation to the demand; hence it is that so much is heard this season from Great Britain regarding inferior lumber. When the market is strong and everybody is anxious to buy lumber, the grades are not scrutinized to the same extent.

#### A PRESCOTT DOUBLE CUTTING MILL.

The lumber trade will be interested in learning of the success of the experiment of operating a double toothed saw on an old type of band mill. As stated in this journal some time ago, the Rat Portage Lumber Company have changed one of their Prescott band mills into a double cutter. Concerning the results accomplished Mr. Charles E. Hamilton, in writing to "The Lumberman," says: "I must say we are surprised with the results, which have been far above our expectations, both as to quantity and quality of lumber. It has turned out as we expected, a double saw cannot be operated without an adjustable guide both bottom and top, which the telescopic mill has not got. The company intend operating the mill at Norman on the telescopic. They have had some trouble, but expect to do better after they get attachments for an adjustable guide. At Rat Portage we are cutting from 65,000 to 75,000 feet of logs in ten hours, and the double cutting mill is working well. I think mill owners would do well to have Mr. J. F. McRae fit up their mills with his devices for double saws."

The annual report of the Lake St. John Railway, shows that in 1900 1,037 cars of sawn lumber and 3,112 cars of pulp and paper were hauled by the road.

Four of the largest lumber plants on the Saginaw river are about to be consolidated. They include those of W. B. Mershon & Company, William Schuette & Company, S. L. Eastman & Company, of Saginaw, and the Eddy-Sheldon Company, of Bay City. The capital of the new concern will be \$1,000,000. Only one lumber yard will be operated, located at Bay City, where there is dock room for 5,000,000 feet and storage capacity for 40,000,000 feet.

#### CUSTOMS OF THE BRITISH TRADE.

EDITED BY CANADA LUMBERMAN.

There seems to be an impression existing in Canada that England is behind the times, and while this is certainly true as regards machinery, it is altogether wrong if applied to business methods. If we were better acquainted with those business methods we would get more advantage from our superior machinery. I speak of all kinds of wooden goods, goods which Canada of all countries should be in a position to produce. Our advantage in this line does not lay any more in cheap timber than it does in our machinery and power. Birch is a drug in the English market to-day. It can be bought for \$22.00 per thousand, and the price quoted here is very little lower. On the other hand, scarcely any machine turning is done there, and when we consider the fact that nearly two million poundsworth of small turnings are imported yearly, we can have some idea of the extent of the market.

Manufacturers are willing and anxious to buy from Canada, providing we will make what they want and know what price we can make the goods for. One manufacturer remarked that he found a man in Canada who made what he wanted but did not know what price to ask, but wanted to know what price was going in England. "I quoted him a price," said the manufacturer, "but he wanted to know if I could not pay a little more. I thought he did not know his business so I dropped him."

And just here let me remark that there are many prices going in England. The commission agent pays a small price and often is not a safe man to deal with. The wholesale man is better; but the consumer is the one to reach when possible. He is a very conservative man generally, but when once you have him he will stay by you as long as you treat him right.

Another thing the Canadian exporter will have to impress on his mind. Englishmen want just the pattern they are using. They don't want any other. One man uses one pattern; it may be his father used it before him, but he will use no other. Good goods bring a good price in that market as well as any other, and when your man finds that you make a good article he will stay with you.

There are two principal ways to do business: First, by sending a man to open up a market; secondly, by employing an agent. The first plan is a good one if you are a large exporter, for it is very costly and you will have to work a long time before you will be able to secure a market, and you will have to spend a lot of money. The Diamond Lubricating Company and the Anderson Furniture Company have taken this plan, and judging by their trade there, they have made a success of it. They put out travellers who sell their goods.

The second plan is a good one for small exporters, and for anyone if you can secure the right agent. A young and pushing man will be better than an older and more conservative concern. From five to ten per cent. is paid and a good man will give you many good things which he may find in your line, but do not engage any agent until you are sure of him, for there are many who are floating about looking out for new men whom they make a business of fleecing.

Yours truly,

W. E. D.

Toronto, June 28th, 1901.

#### EXCELSIOR MACHINES.

The Elmira Agricultural Works Company, of Elmira, Ont., have placed on the market a machine for the manufacture of excelsior packing. The process of manufacture is as follows. The timber is cut into bolts of 18 inches in length. These pieces are then fastened into the frame of the machine, and are operated on by a set of knives which cut longitudinally at a depth of about 1-32 inch and at 1-32 to 1-16 apart. Following this operation comes a single edge planing knife, which takes a shaving off the entire surface, the result being dozens of strips of wood of clean straight edges, but twirled into all kinds of fantastical shapes. The material has been found very valuable and useful for packing purposes, and is in increasing demand.



OBITUARY.

A. F. E. PHILLIPS.

In the death of A. F. E. Phillips, which took place in Winnipeg last month from appendicitis, the lumber trade has lost one of its brightest members, and one who had before him a promising career. Mr. Phillips was only thirty-one



THE LATE A. F. E. PHILLIPS.

years of age, and for the past nine years had been general agent in Manitoba and the North-West Territories for the Pacific Coast Lumber Company and the Brunette Saw Mill Company, of New Westminster, B.C. Previous to that time he was engaged with the Minnesota & Ontario Lumber Company, of Norman

Mr. Phillips was a most successful representative of the Pacific Coast firms, and at the time of his death had worked up a considerable trade. He was one of the smartest travelling lumber salesmen in the North West, and was well liked by everybody. He always took a deep interest in the welfare of the Western Retail Lumbermen's Association, as well as all movements looking to the improvement of the lumber trade in general. He was an enthusiastic member of the Winnipeg branch of the Hoo Hoo Order, which was formed about two years ago.

EDWARD SINCLAIR.

Edward Sinclair, the well known Miramichi lumberman, died at his home in Bridgetown, N.



THE LATE EDWARD SINCLAIR

On May 30th, after an illness of ten weeks. Mr. Sinclair was one of the largest lumber merchants on the north shore. Born at Douglastown, N.B., in 1847 he received his early business training in the office of Colonel Rankin & Company, after which he entered the employ of Peter Mitchell, at that time a lumber mer-

chant and ship builder. Subsequently he started in business for himself. Although meeting with many reverses by the loss of vessels which he built, he finally applied himself exclusively to the lumber business and succeeded, it is said, in laying by a fair share of this world's goods. He shipped largely to the United States and Great Britain.

Mr. Sinclair gave generously and without ostentation to deserving objects. His generosity may be illustrated by citing one of his acts, which was to give the sum of \$1,000 for the professional education of a young man who wished to become a physician but was without means to continue his studies.

As a business man, Mr. Sinclair was shrewd and far sighted. At the time of his death he owned probably 200 miles of Crown timber limits, and was the owner in fee simple of Beaubien's Island, about a mile long and half a mile wide, in the Miramichi river, near his home. This Island is covered with a fine growth of spruce timber. His death is a distinct loss to the social and industrial world.

POINTS IN MAKING SLACK COOPERAGE STOCK.

A correspondent of the Barrel and Box asks the following questions:

1. How many staves will 1,000 ft. of average elm logs make?
2. What per cent. of No. 1 staves is the average?
3. When logs cost \$8.00 a 1,000 how much ought No. 1 and No. 2 staves sell at?
4. What is the value of 1,000 ft. of logs when bolts cost \$2.00 a cord?
5. If logs cost \$6.00 a 1,000 how much are bolts worth?
6. How many staves will a cord of average bolts make.
7. What is the average cost of producing 1,000 staves exclusive of the cost of timber?
8. How many hoops will 1,000 feet of average logs make?

Answers to the above questions are given as follows:

As to the first question, there is no accepted average on the number of staves in 1,000 ft. of logs. We figured it out in February to be about 2,500 staves, but not all, or for that matter none, seem to concur in the figures. There seems to be so much difference in timber that it is difficult to strike an average. Some figures in the writer's note book show productions as high as 3,200 and 3,500 from gum timber, but there is a tinge to these figures, and that is in the fact that the logs were measured by the Doyle rule up to 28 in. and above that size with the Scribner rule—and then this was gum, and it is elm we are talking about. From the best information at hand it would seem that in the North and with elm timber measured as they measure it there one will be doing well to get 2,500 staves on an average. That is what we call mill-run staves, dead culls out.

In the second question, on the average per cent. of No. 1 staves, there is even a more wide variation than in the question of production, for the quality of timber affects the grade even more than it does the quantity of merchantable staves. Referring again to the notebook of the writer an instance comes to view of 75 per cent. of No. 1 stock, and 3,250 staves from 1,000 ft. of logs, but this is qualified by the remark that it was good elm timber. In face of this, and considering the stock of timber available this season, it is our opinion that in the North there will not be a general average of more than about 40 per cent. of No. 1 if the staves are graded as closely as they should be. In the south the average will be considerably higher if proper pains are taken in the process of manufacturing and caring for stock.

To the third question, what ought staves to sell at when logs cost \$28.00 a 1,000, we feel like answering by asking who in the North has been getting logs at \$8.00 this year? That same tell-

tale note book says that the first of the Michigan manufacturers were having to pay 50 for logs. Some logs, not very good, reported at \$9.00, but those who were getting at this price said they could afford to pay for good logs, and on down in Ohio good logs were worth \$15.00 the first of the Now, the way we are going to answer the question is by saying that if logs only cost \$8.00 would be worth more than some seem to be getting them at to-day, and at the prices we logs have been bought at this year, we that a man cannot sell for any such figure could if logs were worth only \$8.00.

Questions 4 and 5 come very near answering each other, and the writer is a little sure that "North Star" wrote them that way on purpose. We are going to "beg" this question however, and let some mill man answer it could go to work and figure some sort of average between comparisons of foot measure to and in this we find a variation from near cords to the 1,000 ft. of lumber to some of less than two cords. The point in this puzzles us is the relation of value between same quantity of wood in the bolt and in log. It occurs to us that a certain amount be obtained in bolts from material which not make logs, and that a difference in times may affect the price at which bolts are bought as compared to logs. Will some mill give us a little light on the subject. Yes, who is it up north who is getting logs for Is not that a sort of joke?

In answering the sixth question, on the number of staves which a cord of bolts will produce we figured it an average of 1,000 at the same and on the same basis which was taken for 2,500 for 1,000 ft. of logs. Neither has this accepted as a general average, for there are sorts of difference in cords and their production. Some people have bolting saws and can get stock than those who split their blocks up do not pile stock up into cords, but measure across the ends of the blocks inside of the and count a cord by tape measure—usually for a cord. All this makes so many variations that there is no such thing as striking a general average that will be of value to work from.

As to the average cost of producing 1,000 staves exclusive of the cost of timber, it is—well, more than many a man thinks it is, or else in the trade do not care for the loss of labor that we have been hearing about. On the labor alone, we find some who say that it is not cost them any more than it did last year but quite a lot more say that the labor cost 20 to 25 per cent. higher than last year. The cost alone, though, does not tell the tale of insurance rate that we have all been talking about. Where is your own time and worry as part of the business? Where are you to get the money invested in the plant and business, and where are a whole lot of things of character to come from if they are not added to the cost of manufacture? We can not sit in the office and tell any man what it costs to make his stock, nor can we strike an average for individual cases vary too much, but we point out that added to all the expenses considered here, which are sometimes overlooked, is this year an additional expense in the selling stock. It costs lots of money to visit the trade, and this year there is to be of that done, for the trade is not seeking it has in years past, so that you can sit in the office and let the stock sell itself. You go on the road, or pay some other man to your stock right at this time, and all this money—and this is legitimately a part of manufacturing cost.

As to the number of hoops 1,000 ft. of logs make on an average, we can only get at it approximately. Some of the leading manufacturers say that there is a difference of about 1,000 between sawing and cutting, and that in the from slitches about 4,000 is an average, 3,000 is a very good average when sawing from the same stock. This does not give us light on cutting by the rotary process, but it give a true basis for hoop calculation. In making hoops some simply buy lumber for work, and many of those who work the lumber themselves do not put all the hoop slitches, being guided largely by the quality of the material and by what else there is a market for that they can use a part of the log. This average figure means hoops of certain lengths, so that in figuring you have to take to consideration the lower price of the many hoops you are forced to make.

THE NEWS

New saw mill at Moyie, B.C., is nearing comple-

McGrath, of Winnipeg, has accepted the posi-

is stated that Joseph Chew purposes establishing

A. Larkin, wholesale lumber dealer, is now lo-

McGrath, of Winnipeg, has accepted the posi-

ex. Cripps, of Crewson's Corners, Ont., has sold

subscriber of THE LUMBERMAN wishes to find a

& R. Ritchie have recently completed their new

Walter & Humberstone have made extensive im-

Thackray & Rawlins have purchased a site at

The Hastings Shingle Manufacturing Company, of

is the intention of Stevens, Hepner & Company,

George Gordon & Company have a splendid saw

Incorporation has been granted to the Huron Lum-

The annual meeting of the A. Gravel Lumber

Davidson & Thackray, of Ottawa, are building a

At the recent Methodist conference in Toronto a

The Rat Portage Lumber Company have purchased

The Department of Interior at Ottawa is ask-

The business of J. D. Shier at Bracebridge, Ont.,

The Brunette Saw Mill Company, of New West-

20,000,000 feet of good timber can be cut in the part of

The Logan Lumber Company is establishing a new

W. H. Higgins has completed his logging contract

PERSONAL.

Mr. Russell A. Alger, jr., of the Laurentide Pulp

Mr. Duncan Sinclair has been appointed represent-

Another well-known member of the lumber trade has

Mr. James C. McNair, president of the Hastings

An interesting wedding was celebrated in the Han-

The employees of the Toronto branch of the Canadian

CASUALTIES.

Louis Cole was instantly killed in the saw mill of R.

Francois Montreuil, a workman employed in J. R.

R. J. Tobin, a sawyer employed in Edmund Hall's

While breaking a log jam on Hope Bay dump, near

QUEBEC TIMBER DUES.

On June 1 a new set of regulations relating

All licenses to cut timber are subject to an

and fire tax in the extent of the limits can be

All licenses expire on the 30th April, after

All wood goods cut in virtue of a license are

Square and waney timber, cubic foot :

Oak and walnut . . . . . 4 cents

Other descriptions . . . . . 2 "

Saw logs, boom and dimension timber per 1,000 feet, B. M., of :

Spruce, hemlock, balsam, cypress, cedar, w. birch and poplar . . . . . 65 "

Red pine . . . . . 80 "

White pine and other varieties . . . . . \$1.30 "

Cordwood (firewood), per cord of 128 cubic feet :

Hardwood . . . . . 20 "

Softwood . . . . . 10 "

Pulp wood per cord of 128 cubic feet, with a reduction of 25 cents per cord on timber manufactured into paper pulp in the Dominion of Canada . . . . . 65 "

Rails not exceeding 12 feet in length per 100 pieces :

Cedar rails . . . . . 30 "

Rails of other varieties of timber . . . . . 15 "

Pickets per 100 pieces :

Cedar pickets . . . . . 15 "

Pickets of other varieties of timber . . . . . 10 "

Cedar or pine shingles per mille :

Short . . . . . 10 "

Long . . . . . 15 "

Poles of all kinds of timber for carrying electric wires, per lineal foot :

Poles 10 ins. diameter or less at the butt . . . . . 1 1/2 "

Over 10 in. diameter at butt . . . . . 1 1/2 "

Railway ties of all kinds of timber, per piece . . . . . 2 "

Hemlock, lathwood, per cord of 128 cubic feet . . . . . 20 "

Hemlock bark, per cord of 128 cubic feet . . . . . 32 "

Futtocks, knees, floors of birch and other ship-building material, and all wood goods not enumerated in foregoing list, an ad valorem duty on the invoice . . . . . 10 p. c.

The cord of 128 cubic feet is considered, for the purposes of this tariff, to be equal to 600 feet B.M.

The present rate of ground rent for licenses to cut timber shall not be increased until the 1st of September, 1910, and all license-holders who have conformed and shall conform to the regulations concerning the administration and sale of timber on Crown lands shall have, up to that date, the privilege of renewing their licences at the same rate of ground rent ; and the dues now exacted by the regulations on all timber cut in virtue of a license shall not be increased before the said date of 1st of September, 1910.



## DOWN ON THE SQUARE TIMBER.

By SID HOWARD, in Toronto Saturday Night

Dan Milo, the raftsman, leans his chest against his cant-hook, his eyes squinting in the sun, while Louis he of the green sweater sits on a block and sees the end of a floating log at the edge of the crib. Dan comes from down below. He wears a tall grey plug hat, the top of which is held on with long stitches of grey yarn; a flannel shirt, and a pair of spiked shoe-packs. He is a compact, nimble little man, with the ease of carriage that comes from running loose logs and balancing oneself in ticklish places. And his eye has the richest twinkle in the world.

"Me?" says Dan. "I wear dis hat for coolness to the head. I do a lot of work in my mind, me, yeas."

"Yo hole dat log," says Louis.

"Certainment, miseu," returns Dan, with concerned politeness. "I love you dat well I will do so."

He flings his cant-hook dexterously over the log, jams the point, and rolls it over for Louis to get at it with the saw.

"This young Louis is a wicket man," says he. "Son, you pay no notice to him. He'll swear and smoke and drink. Yassir. You fell's ain't got some shin, eh? Hollan' shin. No?"

He looks reflectively at his shoe-packs.

"I'll drink Scotch whiskie dat you have some. Whiskey blanc? Yeas. You hev some of dat, eh? No? Dat's too bad."

His eyes grow round presently, round as glass marbles, and the rest of his features vie with each other to express surprise.

"Was I ever on de raf' in de storm? Me? Yeas! H'm. I guess I was so. H'm. Our tow we was sixty miles from de shore. Whitbee—you know Whitbee? Well, sixty miles from dere, straight out from de land."

This would have landed Dan rather high and dry in the State of New York.

"Sixty miles from de land. An' de waves—up an' down—ho!—dere was waves as high, as high—an' de raf'—she groan an' groan, an' de logs bob up an' down, and break away; yassir. De dam raf' bust up!"

The facial contortion during this narrative would certainly lead one to suppose something dreadful indeed had followed out so far in the lake that time.

"What did you do?" we ask, breathlessly.

"Ho, we all get on de boat," says he, calmly.

He looks at us cornerwise.

"Me? I come from Coteau Jonkshen. You been dere! Jee Cree, I live t'ree acre from Coteau. I hev a sixteen-dollar plug hat dere. You should see me walk down street wit' my gal."

"Un hole woman," says Louis.

"What is it?" shrieked Dan.

"You hole dat log," says Louis, chuckling at us.

Three weeks more and Toronto's annual square timber raft, destined eventually for Liverpool, and the English market, will be ready for the lake. Thousands of feet of the finest Canadian elm, seven ribs, or "drams," of rough-hewn logs three tiers deep, will lie at

the Queen's Wharf waiting for the tug-boat. Chained in a string, they will float out some fine morning on the long journey down the lake, through the Thousand Islands and the rapids of the St. Lawrence to the coves of Quebec and the English timber ship. Brought down from the north and west of Old Ontario on the C.P.R. flat cars, shunted out on the long piers, rolled one by one into the bay with a pound and a far-flung splash, the great squared timbers rest for a while in the quiet, limpid waters of the Brock street slip. The old grain elevator casts its shadow over them in the morning, as it has done over many and many a raft of square timber in its time. Bare-footed, skinny-legged urchins run the low-floating logs after school in the afternoon, as many of us, long since staid and stiff, remember doing twenty years ago, when rafting went on in Toronto Bay all summer long.

Dan and Louis and the gang of French-Canadians jump about on the floating timber, pushing and prying in the field of logs, picking out the pieces they want and perilously navigating them under the "binders," which form the raft's framework. With crushed birch sapling withes, twisted by ironwook levers into knots tougher than ropes or chains, they lash each log, once in place, to the "binders." Two more tiers will be hauled up on top of the first one by the engine on the scow, and then, ho! for the open lake and the rapids and the long drift down the St. Lawrence.

"Yaw, hip; yaw, hip. Whoa. Un peu encore. Whoa!"

Dan, jumping six feet from log to log, sinks on a water-soaked timber above his shoe-packs.

"De water's good dis year," says he.

Over behind the elevator the Calvin Company boats from Garden Island are swallowing logs like minnows through the great flap-doors in the bows. The huge dripping timbers are sucked up out of the water and whisked end-on out of the sunshine into interior darkness. The engine away astern clanks and rattles as the hauling cable winds up on the drum. There is a sharp whistle and the clanking ceases. The heavy solid thud of timber comes from the cavern jaws in the bow. The Garden Island loggers shout in broken English away somewhere in the darkness of the hold. There is another whistle, the clanking recommences, and presently the end of the cable is hauled out into the sunshine. The man on the floating boom siezing the hooks, clasps them about the end of a fresh log much as a chunk of ice is gripped with the tongs. There is a shrill whistle and the clank once more of the engine. The cable stretches, and the log, climbing up the skidway, slides ponderously into the darkness. Again comes the shout.

"Whoa, hup?"

The spring softness hangs over the bay, over the low-lying island, over the roofs, tree-tops and steeples of the City of Churches. The three-masted, log-laden "Ceylon," of Kingston, bold and broad in the strong warm light, lies out in the deep water waiting for the breeze that will take her down the lake to the Calvin raft-builders at Garden Island. The Argonaut

eight shoots out the Western Gap to where the open lake glints pale and grey in the afternoon calm. Over everything is the rich warm light of the Canadian spring.

The man on the boom who feeds the swallowing monster hums a song of the St. Lawrence as he stands waiting with his pike-pole.

"What tam is it?" says he, presently.

"Half-past four."

"Jee Cree, is dat all de tam it is? Un peu and a half yet. De clock goes slow, don't she?"

At the raft Dan bade us an affectionate good-bye.

"An' I want you fellows to understand," said Dan, "dat de nex' tam you must bring t'ree ceegars, one for me dat's de boss, one for him—dat's my clairk, and one for his—dat's my paymaster. But dem fell's over dere is to hev none, min' you. Dey's a bad gang, wicked men, dem fell's. Dey won' do what de boss tell dem. I fire all of dem ver' soon, you'll see. T'ree ceegars, min' you. You'd better come down here on McCarter's raf' free for not'ing. No, sair."

## SYSTEM AND EFFICIENCY OF ELECTRIC TRANSMISSION IN FACTORIES AND MILLS.\*

By WILLIAM S. AUBRICH.

The recent progress in the use of electricity for the transmission of power over short distances has developed a new industry. It is fair to rival in magnitude and usefulness the field of long-distance transmission, much earlier developed, and now almost exclusively held by electricity. As applied to factories and mills electricity is simply a means to an end, which is primarily the transmission of power over quite short distances, from 50 to 500 feet, and within one building or a group of buildings. Upon entering this new field has had to contest every inch of its progress with competition with long-established usage, in order to displace the unwieldy and unsightly power transmissions by shafting, belting, and rope drives. In almost all cases of new manufacturing plants, however, the features of electric transmission have received thorough consideration, resulting in many factory installations in which this system is exclusively used.

Some manufacturers have hoped that electricity would solve all of the problems, and, once, upon its introduction into their establishments; others have known it would be no use from the beginning. There are many factories and mills in which the introduction of electricity for power transmission will not pay, under existing conditions; there are no establishments in which it would pay, in spite of an investment in electric transmission which would prove to be a dividend-paying investment. In general rules can be laid down. Each case must be carefully examined, and a most thorough preliminary survey made of all the conditions and requirements.

SYSTEMS OF ELECTRIC DISTRIBUTION FOR FACTORIES.

In choosing a system of electric transmission for manufacturing work, it is not necessary

\*Abstract of a paper read at the Cincinnati meeting of the American Society of Mechanical Engineers.

JULY, 1901

best to have that one system which will the most readily lend itself to all of the work to be performed, for light, heat and power service. A composite system may prove best suited, even in such short-distance transmission. That lighting service will, in general, be more satisfactory, and need not be more expensive, supplied independently of the power service. Direct and alternating currents are equally adapted for factory transmission, and by simple multi-circuit systems of distribution; that is, by two, three, or four-wire systems, as the case may require. Preferably, all distribution should be direct; that is, without the use of storage batteries, rotary converters, or transformers, except for certain lines of work in which it may be necessary to use one or the other of these indirect systems of distribution.

In the matter of voltages a wide range is possible: 110-volt two-wire and 220-volt three-wire systems for use of either direct or alternating currents for light and power; 440-volt two-phase alternating current three or four-wire systems for both light and power; 550-volt direct-current two-wire system, or 550-volt alternating current three-phase three-wire system, chiefly for power service, or the monocyctic system for both light and power. In general, it will not be necessary or advisable to use over 550 volts, direct or alternating current. Shocks arising from accidental contact with wires carrying currents of this voltage are not necessarily dangerous. Experience has shown that workmen respect the distributing wires the higher the voltage. But it is not necessary to command such respect by raising above 550 volts.

#### ELECTRIC TRANSMISSION BY DIRECT CURRENTS.

At the time that electricity was introduced into manufacturing establishments the direct-current system was the only one available. For the peculiar and exacting service required in driving all kinds of machine tools and various workshop appliances, there were difficulties to be overcome with any system. It was necessary to secure satisfactory methods of producing a large starting turning moment, or torque, or varying the speeds as might be required under uniform or variable loads, and for reducing to a minimum the trouble arising from the use of a commutator.

With direct current motors, it was a simple matter to introduce starting boxes (resistances) in the armature circuit to control the torque, as well as rheostats (resistances) in the fields to control the speed in particular. But every such resistance meant an expenditure of energy or otherwise useless heating of the wire or other material of which these resistances might be made. The so-called Ward Leonard system came to the rescue with its two additional machines in order to operate the one given machine as a motor, at practically a constant efficiency under all conditions of load and speed. This system has been very successfully and extensively used in elevators, cranes, etc. By the use of the auxiliary machines the supply voltage may be varied according to the speed desired, and the current supplied according to the torque required, without wasting any energy in heating wasteful resistances. For conditions of factory service permitting of such an

application, two motors may be advantageously used on one machine or set of machines, by means of which it is possible to vary the torque and speed quite as satisfactorily as in street-car working, by the series-parallel method of control.

The difficulties with commutators have been almost entirely overcome and many refinements in design effected, so that the direct-current motor of to-day leaves little to be desired. Such objectionable features as still remain are inherent in the direct-current system used, and are found to lie chiefly in the kind of armature, commutator and brush devices required. These parts are most liable to derangement, require systematic attention for cleanliness and efficiency and renewals of brushes.

#### ELECTRIC TRANSMISSION BY ALTERNATING CURRENTS—INDUCTION MOTORS.

The alternating current system, with its induction motor service, offered practically the only alternative to those engineers and manufacturers who did not care to be troubled with the petty annoyances and delays likely to occur at any time with the direct-current motor. The induction machine as it stands to-day is probably the most perfect motor yet developed from the standpoint of electric transmission in factories and mills. It may be started and operated from any point at any time, at practically any load and speed within its predetermined ranges. It may be used on 110, 220, 440 or 550-volt alternating current circuits of one, two or three phases. It does not require any direct-current supply as the synchronous motor does for its field excitation. It does not require any brushes, commutator or collecting rings. Offsetting these advantages, however, are certain restrictions. The speed of an induction motor falls off slightly as the load is increased. The ability to start an induction motor from rest under a heavy load, as well as the possible speed changes during its operation, are obtained at some sacrifice of efficiency.

Induction motors, moreover, permit of higher lineal speeds than are possible with any other type, from 6,000 to 7,000 feet not being infrequent. By suitable arrangements of its field windings, this type of motor may have its speed altered in regular steps, so reducing it one-half, one-quarter, one-eighth, etc. This makes possible similar changes to gear-wheel combinations, which may therefore be eliminated to the extent that the induction motor is installed to effect such changes. In almost all cases of shop driving, the slip is not objectionable, any more than the increasing slip of the driving belt as the load is thrown on. These motors will stand almost any amount of rough usage and heavy overloads, as they cannot be burned out. If excessively overloaded, the motor slows down and stops, starting up immediately as soon as the load is lightened. Ordinarily, machine tools and almost all classes of shop machinery are started at quite light loads, and the full load is thrown on when the work or the tool is up to the speed desired. For this class of work the induction motor seems specially fitted.

A larger generating power plant is required for an installation of induction motors than

would be the case if direct-current motors were used. This is on account of the energy which is lost in all classes of alternating current circuits in which there is considerable self-induction, whether in the transmission wires or in the appliances used. In the case of induction motors this loss is very appreciable at light loads, becoming much reduced at average and heavy loads, at which it is almost uniform.

#### SYNCHRONOUS MOTORS.

Synchronous motors are admirably adapted to factory service where absolute uniformity of speed is required, and where the extra installation of a direct current supply for their field excitation is not deemed objectionable. While induction motors are always wasteful of some energy, through their high self-induction, synchronous motors may on the other hand be brought into that condition of operation practically equivalent to the use of direct-current motors, at least for a large range of their loads. In other words, the power factor of a synchronous motor may be made almost anything from zero to unity, according to the extent of excitation of its fields by the direct current applied for this purpose.

When made in the revolving field type, synchronous motors are self-starting from rest at light loads. They may be very heavily overloaded, without falling out of synchronism or out of step, and when they do for an instant they may be brought back again by throwing off some of the load. A well-designed synchronous motor will carry at least three times its full normal load, and not drop out of step. If an induction motor is built for such overloads it is likely to have quite low efficiency at ordinary loads.

Higher efficiencies may be obtained with synchronous motors than with induction motors of the same output. In fact, such motors realize the ideal conditions of motor working in which the motor attains almost the same efficiency as the generator. Both induction and synchronous motors have usually higher efficiencies than direct current motors of same size.

#### COMBINED INDUCTION AND SYNCHRONOUS MOTOR WORKING.

The ideal conditions in a factory installation no doubt would be secured where both induction and synchronous motors were used, the former for small machines and direct driving, the latter for operating a set or group of machines. The synchronous motors would be started up just before beginning the work of the day, have at all times a light constant load, and might easily be regulated as to produce an almost balanced system in combination with the induction motors. In such a system of transmission the lagging currents of the induction motors would be offset by the leading currents of the synchronous motors, if the latter were operated to produce such leading currents. The whole system would be operated practically throughout quite a range of load variations, as if it were a simple direct current system. The advantage of such a condition is apparent; it means least installation for any given output, or greatest output for any given capacity of generating plant. The group method of electric driving is much better adapted for small machines, up to and including 2-horse power capacity, and especially where such machines are in almost constant service. Above this size, individual motor driving becomes more and more efficient, particularly if the machines are operated only a fraction of the day.

# WOOD PULP DEPARTMENT

## ELECTRIC LOCOMOTIVE FOR A PULP COMPANY.

The accompanying illustration represents an electric locomotive recently built at the shops of the Quebec Railway, Light & Power Company, of Quebec city, for the Chicoutimi Pulp Company, of Chicoutimi, Que. It is intended for the shunting of regular freight cars about the company's yards, and for hauling the products from the mills to the company's wharves on the Saguenay river. It is also capable of hauling two loaded flat cars from the wharves back to the mills.

The locomotive weighs about 23 tons, and in a trial test hauled twelve of the Quebec Railway, Light & Power Company's passenger cars, aggregating a total weight of 255 tons, at a speed of ten miles per hour with comparative ease. The railway lines of the Chicoutimi Pulp Company consist of about two miles of track, having an average grade of 2 1-2 per cent. The only real heavy grade on the line is 400 feet of 5 per cent. grade and 39 degrees curvature, so that the new electric car will doubtless be capable of performing the work intended of it.

## SUGGESTIONS FOR THE PULP TRADE.

The annual report of the High Commissioner for Canada to the Dominion Government contains two interesting letters concerning the pulp and paper trade. The first is from the British Wood Pulp Association, and reads as follows:

In reply to your communication of the 9th inst. my association desires me to bring the following points under your lordship's notice.

(1.) That it is strongly to be recommended that the sale of wood pulp be placed in the hands of respectable firms in England, well-known to the trade, instead of, as is now frequently the case, through speculative adventurers who have absolutely no knowledge of the article in question. There are several firms well-known in the wood pulp trade of the United Kingdom who will offer every financial and commercial assistance to any Canadian mill, as the desire of the pulp merchants and agents in England is to help forward the Canadian pulp maker by every legitimate means. Incalculable harm is done by irresponsible people in Canada and England offering and selling pulps of which they are not possessed, or on the calculation of which they have made absurd mistakes, such as failure to calculate the freight on the water contained in the pulp, or differentiating between the Canadian ton of 2,000 pounds and the English ton of 2,240 pounds, which ends in considerable friction and confusion in contracts. This tends to the belief, more or less prevalent among paper makers, that they cannot rely upon getting the Canadian pulp they buy, and is most injurious to a developing trade.

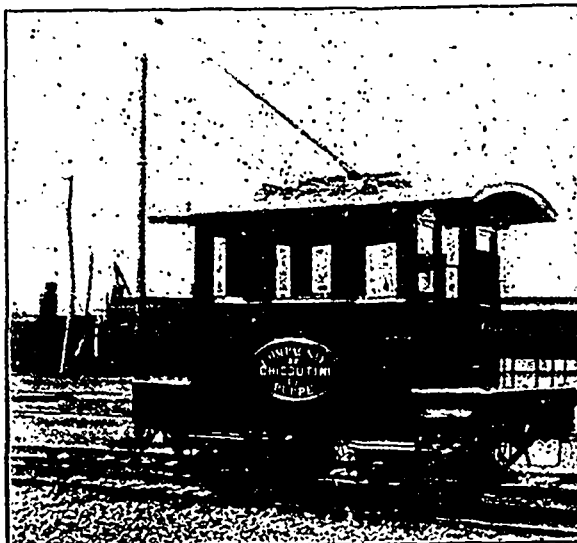
(2.) Nova Scotia and New Brunswick are especially to be recommended for future developments, owing to the facilities for shipping all the year round.

(3.) If the resources of Quebec and the mouth of the St. Lawrence are to be developed as they should be, it is imperative that they should be placed in a position to ship their pulp all the year round. As far as we can see, there is no reason whatever why pulp should not be shipped from this district, and particularly from the Saguenay river, during at least ten months in the year,

and all the year round in favorable seasons. In Scandinavia, where the weather is, at least, as severe, many ports are kept open by ice-breakers. Moist mechanical, containing as it does 50 per cent. of water, cannot possibly be shipped via the winter ports of St. John and Halifax, as the rail rates at their lowest would, when prices are normal, be about one-third of the actual cost of manufacture, and competition at such a charge is impracticable.

No assistance whatever is rendered by the Government to anybody trying to make use of the natural facilities of the Saguenay river in winter, and we have heard of a ship which sailed thence on November 23rd last, when all the buoys were up, and all the lighthouses, we understand, closed. A little assistance from the Government in the way of ice-breakers or subsidies, would enable shipments to be made practically all the year round. At present it is impossible on account of the enormous charge for insurance incurred when navigation is not assisted by buoys and lights.

(4.) Respecting chemical pulp, it cannot be too strongly impressed upon manufacturers that



ELECTRIC LOCOMOTIVE USED BY THE CHICOUTIMI PULP COMPANY.

they should secure the best technical advice, for, though the quality has improved of late, much has still to be done to bring it up to the standard of German and Scandinavian manufacture. The wood and water are everything that can be desired, and there is no reason why the quality should not be of the finest. More care also should be exercised in the drying of the pulp, which is at present, anything but uniform.

It is also regretted that the facilities for dealing with the shipments at the various ports are very defective, it being not an usual thing for goods to be detained there for several weeks before finding shiproom, thereby causing great inconvenience and much annoyance to buyers.

The second letter is from the British Paper Makers' Association, and is printed in part below:

The paper makers of Great Britain are watching very carefully opportunities offered in Canada for pulp and paper making, but while admitting the spruce of Canada (and spruce, up to the present, is the only Canadian wood which can be considered pulp wood) makes first class pulp, in fact almost the best, the British source

of supply is not confined to Canada, as the following figures will show:—

'During 1900 Great Britain's importations of wood and sulphite pulp were as follows:

	Tons	Value
From Scandinavia.....	400,027	£1,415,000
" United States.....	12,006	245,000
" Canada.....	55,592	1,111,827
" Other countries.....	21,202	424,044
Total.....	488,827	£2,295,911

'The question we ask ourselves is, why does not Canada supply a larger proportion of the requirements of Great Britain? The first and most serious obstacle is the question of freight and transportation. Pulp, to meet the requirements of the English paper maker ought to contain 50 per cent. moisture, so that on every ton of ground wood pulp, freight has really to be paid on two tons. The average freight from Scandinavia is about 6s. per wet ton, or equal to 12s. per dry ton. From Canada outside Nova Scotia, last year, from 15s. to 30s. was paid (say 20s. per wet or 40s. per dry ton); this makes a difference of 28s. per dry ton in favor of Norway. From Norway shipments can be made all the year round; from Canada shipments are confined to about six months of the year. This means accumulated stocks which in turn means loss of interest, or the alternative of sending by rail to Halifax or St. John. If the latter course were adopted the difference in favor of Norway would come still greater. This difficulty may be dispensed, if, for instance, Quebec could be made other rivers made navigable in winter by means of ice-breakers; meantime these difficulties could be open as a winter port, and the Saguenay and unless the railway companies will give cheaper rates to the port of shipment than they have yet done, we fear the shipment of pulp during the winter will remain impossible. As a part off-set against this Canada has, of course, cheaper wood than in Scandinavia, but this difference does not fully compensate for the advantages possessed by that country. Further shipments will have to be made to capitalists to invest in the pulp industry, and the first thing they do will be to make the stumpage rebate ineffective. From an interesting paper read at a conference by J. C. Langelier, Superintendent of Forests for Quebec, on March 7th, we are brought face to face with the fact that in the supply of spruce wood from Canada, the American manufacturer is really on more advantageous terms than the manufacturer in Canada himself. It shows how the difficulty of stumpage is got over by bogus settlers stripping the land of its spruce and supplying the American market. Settlers do not pay stumpage and the export duty is only therefore ineffective, but the stumpage in the ordinary way should come to the Government, is lost. The American timber limit being held in fee simple, the manufacturer in the States simply leaves his forest alone until he has drawn every cord of wood he can from Canada at a low price. When it will no longer pay to draw from this source he can fall back on his own forests. This condition of things will encourage the starting of pulp mills in Canada. The trouble does not end here, however; the Canadian has supplied the raw material at a low price to the American manufacturer, and the latter having command of a better class of shipping, he is able to undersell the Canadian paper makers in England with the manufacture of paper. The remedy would seem to be an export duty on all spruce pulp wood both from Government and settlers, limits, or a law passed that must be manufactured into pulp in Canada. If the industry brings another, and if pulp and paper mills were more numerous it would be a great incentive to the starting of other industries. What is wanted in Canada is the manufacture of paper, not the speculation, and the governments of different provinces should protect genuine manufacturers. Let us have authentic reports on this

1901

ers and timber limits. To get these will money, but it seems only common sense a government should know what it is selling away in a concession. Such expenses could form part of the price asked. Water powers as a rule require a large amount spent development, apart altogether from the mills. development of a power sometimes interferes with out, and transfer them to those who make in good faith to establish factories. In the case of water powers owned by the government, steps should be taken to settle the question of vested interests, right away, the going out of same also to form a charge on the property. A great many English firms considered properties in Canada, but when they make enquiries they invariably find that if they were to develop a power, they would flood the land; that if they were going to build a work suitable to that power, they find most

of the surrounding land held by different owners, who are simply waiting for the chance of exacting exorbitant prices for what has cost them with small invested interests, but it is unconceivable that these should be allowed seriously to retard the establishment of large industries! The Government should have power to buy these in little or nothing, and what is really of no value to them apart from the value given to it by other people. English paper makers have not time to spend in overcoming these difficulties; it simply makes purchase impossible. The Government should be in a position to say: Here is a water power; if you buy it we guarantee you all the land necessary for your works, free from claims from flooded land and other risks; our price is so much. This would prevent speculators dealing in properties and would encourage the legitimate capitalist to invest his money in the country, since he would start equipped with

the essentials necessary for success, namely, water power and timber, and a prospect of devoting his time and energy to the building up of a factory, and not, as has too often been the case hitherto, to counteracting the machinations of the crafty speculator or the wiles of the local landowners or option holder."

**NEW PULP WOOD REGULATIONS.**

It is announced that the Quebec Government has decided on a change in its stumpage dues on pulp wood. It will be remembered that last year the Government altered the rate. Up to that time it had been unconditionally 40 cents a cord. It was then changed to \$1.90 a cord, a condition of this rate being that \$1.50 per cord should be refunded on all pulp wood manufactured in the Province. The meaning of this was that pulp wood sent out of the province to be manufactured should bear an additional and discriminatory rate

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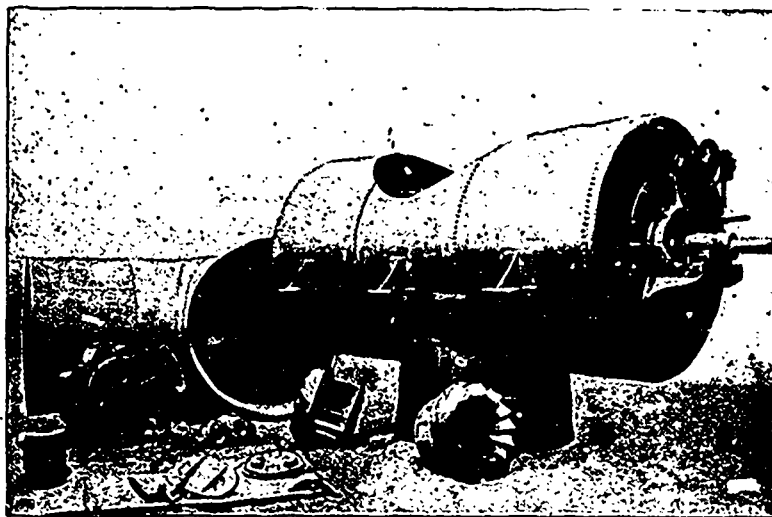
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of \$1 50 per cord. Thus the discrimination, so far as the wording of the act was concerned, did not spare Ontario more than it did the United States. A point to be noted is that the cord, as fixed by the Act, meant 1,000 feet board measure.

Now the Quebec Government proposes to reduce the gross rate from \$1 90 to 15 cents, and make the rebate 25 cents instead of \$1.50, thus leaving the net tax 40 cents a cord, what it was before. But the out tax will really be nearly doubled, if a further part of the announcement is correct, namely, that the cord is to be fixed at only 600 feet board measure. Further the rebate is to be allowed not only on timber manufactured in the province, but anywhere in the Dominion.

**PULP NOTES.**

The wood pulp market in England, both for chemical and mechanical, is quiet and prices rule comparatively low.

The Pulp Manufacturers' Association held a meeting in Boston last week and fixed the price of pulp at \$37.50 a ton.

It is announced that a company has been organized at Seattle, Wash., to develop the pulp industry of British Columbia.

Hatch & Backus, of Chicago, have been negotiating with the Ontario Government for a

water power at Fort Francis, in the Rainy River district, the intention being, it is said, to establish a pulp mill.

It has been decided to wind up the affairs of the Consolidated Pulp & Paper Company, of Toronto, which recently became financially embarrassed. The liabilities amount to \$168,000, with assets below that amount.

New York capitalists are said to be negotiating for the purchase of 30,000 acres of woodland, owned by the Nova Scotia Electric Light Company at Gaspereau, N.S., with the intention of starting pulp and paper mills at White Rock.

The Ouitachouan Pulp Company, of Oniatouan, Que., have let the contract for the necessary water wheels for driving their proposed mill to the Stilwell-Bierce & Smith Vaile Company, of Dayton, Ohio. The mill will have a capacity of 30 tons of pulp per day.

T. G. McMullen, M.P., of Truro, and Alfred Dickie, of Lower Stewiacke, N.S. are the principal promoters of the Grand River Pulp & Paper Company, which is to conduct extensive operations in the manufacture of pulp and paper in Newfoundland and Labrador.

The Blanche River Pulp & Paper Company, which purposes building mills at Mattawa, Ont.,

have, in consideration of an extension of the contract for completion of their work, agreed to expend \$750,000 instead of \$200,000 as originally planned. The company agree to expend \$50,000 by the end of the present year, and to complete their work by October 14, 1905.

We have received a copy of the prospectus of the Boston & Nova Scotia Wood Pulp Company. This company is incorporated under a special charter, and now controls by purchase and option, a total of 10,000 acres of spruce lands running from 25 to 600000 acres. It is proposed to operate at Wentworth, Cumberland county, N.S. Hon. Edward M. Tuck, Lowell, Mass., is president of the company, and Charles M. Meserve resident manager at Wentworth.

The Saguenay Water & Power Company is making progress towards the establishment of a large pulp mill at the Grand Discharge of Lake St. John, in the province of Quebec. The capitalists interested are mostly New Yorkers, the name of B. A. Scott, lumberman, of Robergue, Que., has been mentioned in connection with the scheme. The pulp mill, we are told, will have a daily capacity of 600 tons. The location of the mill limits available is on both sides of the Saguenay river, which is the outlet for Lake St. John, about 230 miles north of Quebec.

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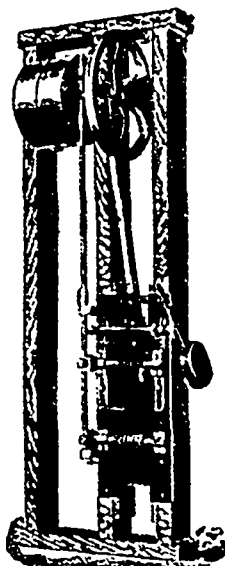
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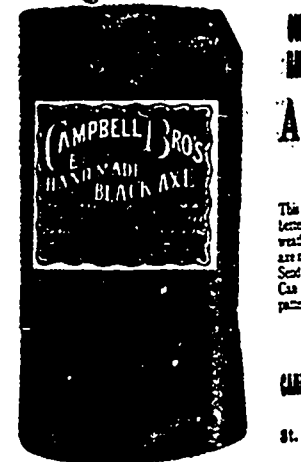
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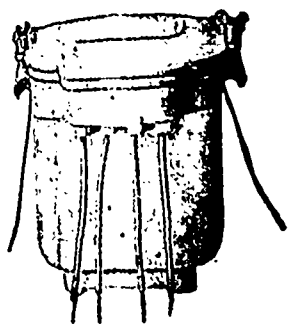
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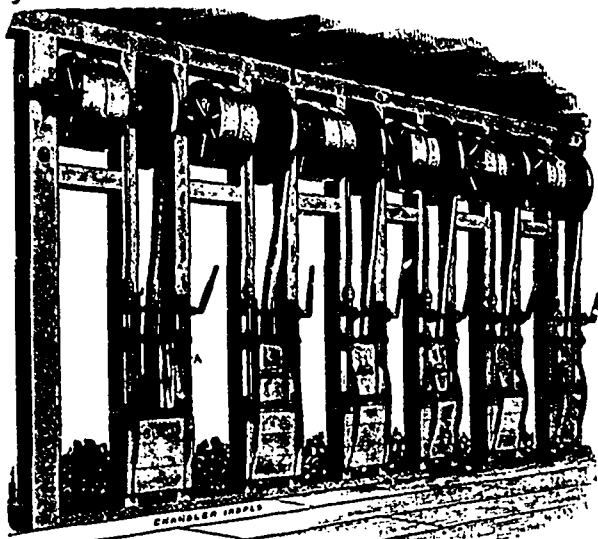
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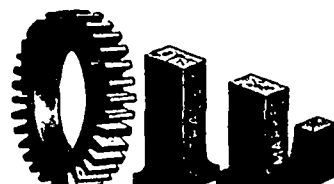
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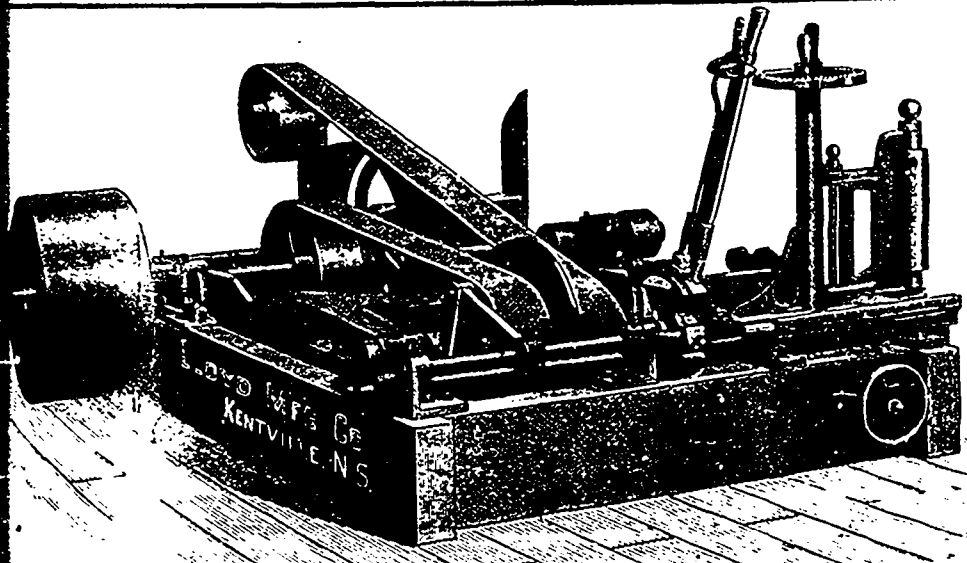
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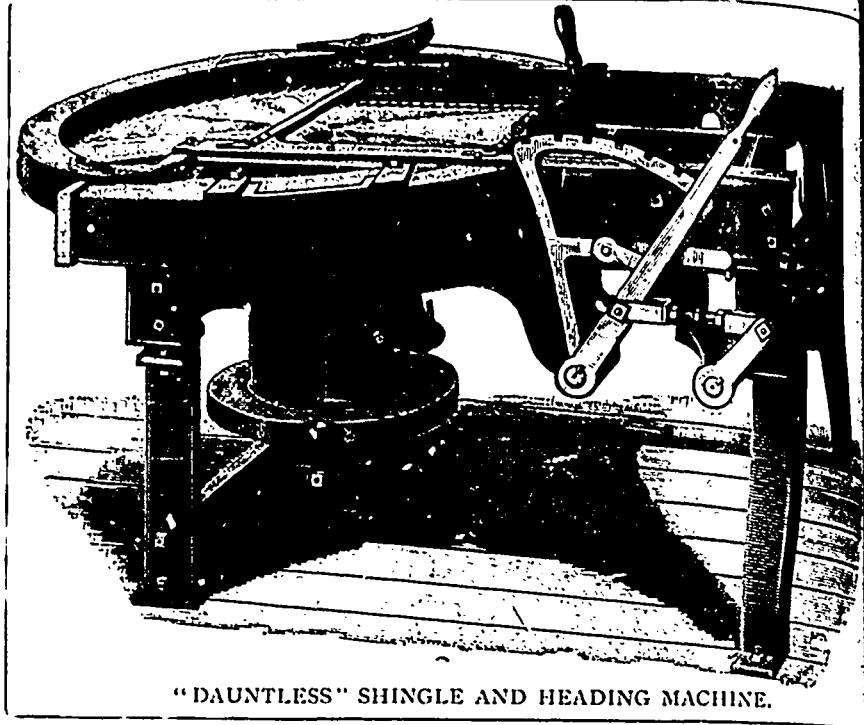
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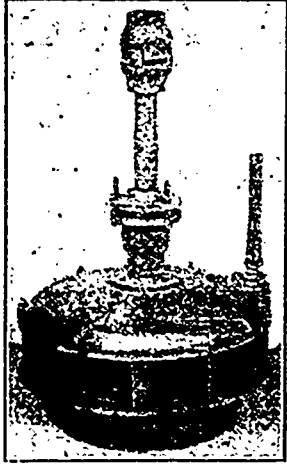


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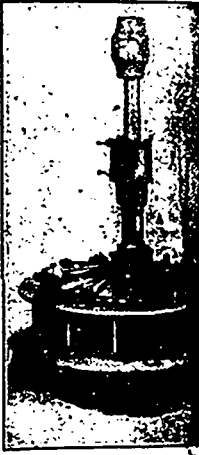


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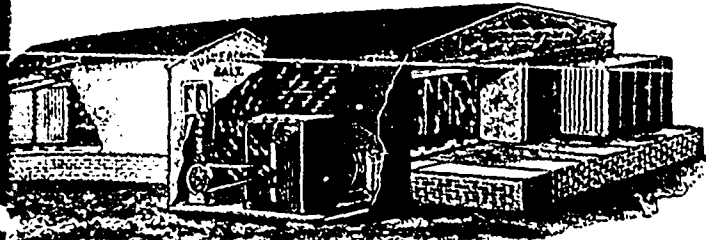
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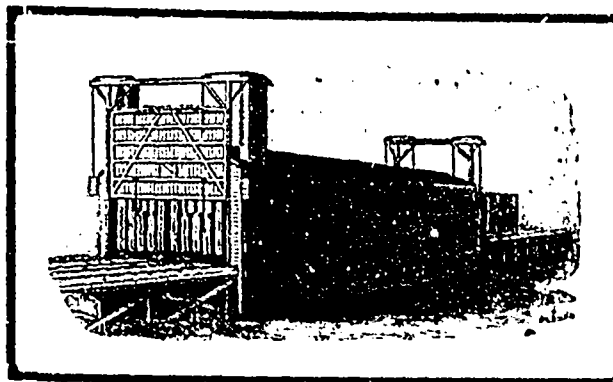
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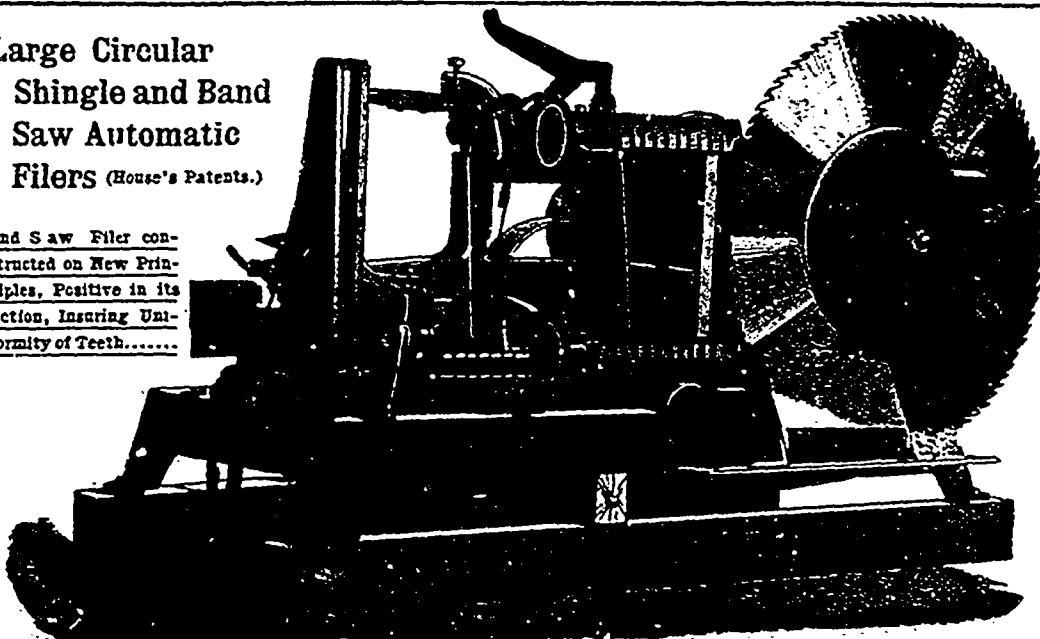
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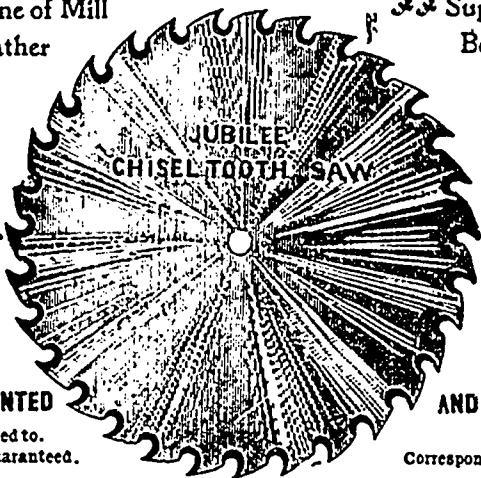
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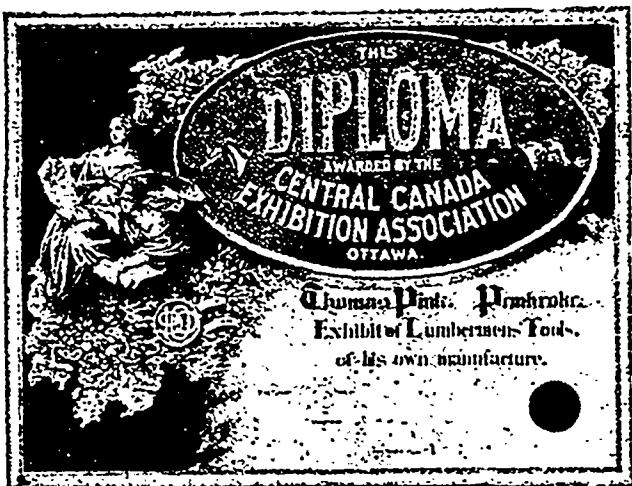
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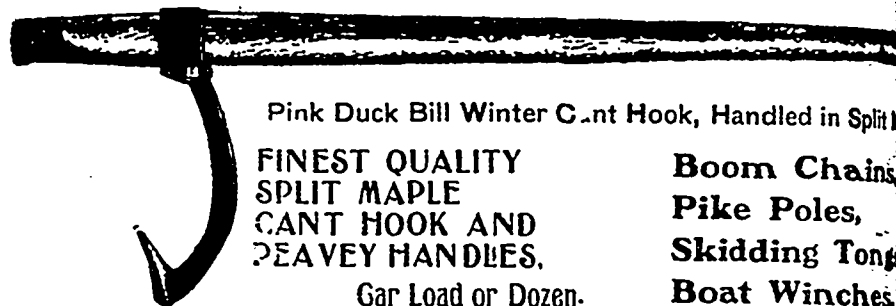
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